SEA ENVIRONMENTAL REPORT

Draft Fourth National Hazardous Waste Management Plan

This report was prepared on behalf of the Environmental Protection Agency

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Introduction

This environmental report has been prepared by RPS on behalf of the EPA as part of the Strategic Environmental Assessment (SEA) of the draft fourth National Hazardous Waste Management Plan (hereafter referred to as the "draft NHWMP" or "the draft Plan") in accordance with the requirements of EU and national legislation on the assessment of the effects of certain plans and programmes on the environment.

A National Hazardous Waste Management Plan is required to be prepared and reviewed every six years under Section 26 of the Waste Management Act 1996, as amended. The fourth iteration of the draft NHWMP is being prepared by the Environmental Protection Agency (EPA) covering the period 2021 – 2027. It sets out the objectives and recommendations to be pursued over the next six years and beyond to improve the management of hazardous waste in Ireland, with a particular emphasis on prevention and reduction principles.

The purpose of this environmental report is therefore to:

- Inform the development of the draft Plan;
- Identify describe and evaluate the likely significant effects of the draft Plan and its reasonable alternatives; and
- Provide an early opportunity for the statutory authorities and the public to offer views on any aspect of this environmental report and accompanying draft Plan documentation, through consultation.

This Environmental Report complies with the requirements of the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) as implemented in Ireland through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. No. 435 of 2004), as amended and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 436 of 2004), as amended.

Contents and Main Objectives of the Plan

The key objectives of the fourth NHWMP 2021 – 2027 are:

1. *Support and drive priority **prevention** actions by industry and the public to reduce the generation of hazardous waste;*
2. *Support the identification of adequate and appropriate **collection** infrastructure for all hazardous wastes with a view to mitigating environmental and health impacts;*
3. *Endorse the **proximity** principle such that hazardous wastes are treated as close to the point of production as possible – including within Ireland, where feasible;*
4. *Support effective **regulation** of the movement and disposal of hazardous wastes in line with national policy priorities; and*
5. *Promotion of safe reuse and recycling pathways in support of the **circular economy**.*

The draft Plan applies to all hazardous wastes generated and managed in Ireland. It articulates a set of recommendations and actions to be implemented by the EPA, governmental departments, regional and local authorities, as well as other agencies and authorities. It makes recommendations for actions and infrastructure based on data analysis and indicates a clear strategic need in order for hazardous waste to be treated in Ireland and exports to be reduced.

The NHWMP's recommendations are summarised under the following headings:

- Policy and Regulation;
- Prevention;
- Collection and Treatment; and
- Implementation.

The Draft Plan provides background and supporting information and include profiles of the types and sources of hazardous waste in Ireland. It details prevention activities and outlines how hazardous waste is collected and treated in Ireland. The draft Plan describes the key waste-related legislation and sets out how enforcement activities are carried out. It also discusses legacy hazardous waste issues as well as the topic of 'difficult wastes' which by their make-up or handling requirements make them more difficult to manage compared to more typical hazardous waste streams.

Previously, third NHWMP 2014 – 2020 set out 27 recommendations for hazardous waste. A progress report detailing the plans implementation against these recommendations are also set out in Appendix A to the draft Plan. The report noted good progress; however a greater focus is being placed on a number of these actions as part of the draft Plan e.g. collection systems, targeted awareness raising, capacity reviews within Ireland to increase self-sufficiency and the development of waste stream and sector-specific guidance.

While encouraging work has been carried out on the previous plan, there is still an increasing trend in the volume of hazardous waste being generated in Ireland; this trend is closely linked to economic activity. Decoupling waste generation from economic trends remains a challenge which makes Plan implementation difficult. This issue is also recognised at European level which emphasises circular economy principles i.e. avoiding excessive generation and subsequent disposal of materials after limited use, and moving towards closing the loop to focus on reuse. It is recognised that other waste streams e.g. farm hazardous waste, expired medicines, healthcare risk waste etc. are a growing issue in Ireland.

The central focus of the draft Plan is on the prevention of hazardous waste, both in terms of hazardous waste generated/ hazardous substances contained in products and materials, and establishing appropriate collection systems. A number of monitoring and implementation bodies carry out and execute the recommendations/actions of the draft Plan.

SEA Methodology

The SEA Directive requires that certain plans and programmes, which are likely to have a significant impact on the environment, be subject to the SEA process. The SEA process is broadly comprised of the following steps, as outlined in **Table 1**.

Table 1: SEA Stages

SEA Step/ Stage	Purpose	Status
Screening	The purpose of this stage of the process was to reach a decision, on whether or not an SEA of the fourth NHWMP was required.	The EPA undertook SEA Screening in 2020 and determined that SEA of the fourth NHWMP would be required.
Scoping and statutory consultation	The purpose of this stage of the process was to clarify the scope and level of detail to be considered in the environmental assessment. This was undertaken in consultation with the defined statutory bodies for SEA in Ireland and other stakeholders. Transboundary consultation was undertaken with the relevant authorities in Northern Ireland, Scotland, Wales, England, Germany, Belgium, France, the Netherlands and Denmark.	This stage was completed October – November 2020.
Environmental assessment and consultation	The purpose of this stage of the process was to assess the likely significant impacts on the environment as a result of implementation of the draft NHWMP and consideration of	This stage was completed in Q2/Q3

SEA Step/ Stage	Purpose	Status
	reasonable alternatives. The output from this stage of the process is an SEA Environmental Report which records this assessment. Consultation on the draft NHWMP and Environmental Report are also part of this stage.	2021 and is the subject of this report.
SEA Statement	The purpose of this stage of the process is to identify how environmental considerations and consultations have been integrated into the final plan, as well as consideration of alternatives and inclusion of an SEA monitoring programme, culminating in the production of an SEA Statement.	To be published with final NHWMP in Q4 2021.

Integration of the SEA and draft Plan was achieved through close involvement of relevant team members in all stages of the project including: SEA Scoping; review of the existing situation; and public consultation. The SEA and plan team also worked closely on developing: the SEA assessment methodology; alternatives to be considered in the SEA; SEA objectives; mitigation measures; and an SEA monitoring programme.

Consultation as part of SEA Scoping was carried out with the statutory environmental authorities for SEA in Ireland and included the development of a Scoping Report and a workshop which took place on 10th November 2020. In addition, as Ireland exports a significant proportion of its hazardous waste for treatment abroad, during Scoping contact was also initiated with the relevant authorities in other jurisdictions, including other Member States as well as the UK.

Taking into consideration feedback from the environmental authorities, a broad assessment of the potential for the draft Plan to influence the environment was carried out. All of the environmental topics listed in the SEA Directive were scoped in for the assessment of the draft Plan. These are:

- Population and Human Health;
- Biodiversity, Flora and Fauna;
- Land and Soils;
- Water;
- Air Quality and Climatic Factors;
- Material Assets;
- Cultural Heritage;
- Landscape; and
- The inter-relationships between the above factors.

The draft NHWMP is a national plan and as such the assessment has been focussed at the strategic national level. The plan will cover the period up to 2027 and in line with the SEA Directive, short, medium and long-term impacts have been considered during the assessment. Based on the requirements of the legislation and guidance, the information provided in the Environmental Report is outlined in **Table 2**.

Table 2: Requirements of the SEA Directive and Relevant Section in the Environmental Report

Requirement of SEA Directive (Article 5(1) Annex I)	Chapter of Environmental Report
An outline of the contents and main objectives of the plan or programme, or modification to a plan or programme, and relationship with other relevant plans or programmes.	**Chapter 2:** Content and Main Objectives of the Plan **Chapter 4:** Review of Relevant Plans and Programmes
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme, or modification to a plan or programme.	**Chapter 5:** Relevant Aspects of the Current State of the Environment *(Baseline)*
The environmental characteristics of areas likely to be significantly affected.	**Chapter 5:** Relevant Aspects of the Current State of the Environment *(Baseline)*
Any existing environmental problems which are relevant to the plan or programme, or modification to a plan or programme, including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive.	**Chapter 5:** Relevant Aspects of the Current State of the Environment *(Baseline)*
The environmental protection objectives, established at international, European Union or national level, which are relevant to the plan or programme, or modification to a plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation.	**Chapter 4:** Review of Relevant Plans and Programmes
The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.	**Chapter 8:** Assessment of Preferred Strategy
The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme, or modification to a plan or programme.	**Chapter 9:** Mitigation and Monitoring
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information	**Chapter 7:** Consideration of Alternatives
A description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan or programme, or modification to a plan or programme	**Chapter 9:** Mitigation and Monitoring
A non-technical summary of the information provided under the above headings	**Non-technical Summary**

In addition to this SEA, there is a requirement under the EU Habitats Directive (92/43/EC) to assess whether the plan has the potential to impact negatively on a European site. These sites include areas designated for the protection and conservation of habitats and of wild flora and fauna, and include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). In parallel to the SEA, an Appropriate Assessment (AA) is being carried out to inform decisions surrounding this issue.

Screening for Appropriate Assessment was carried out by the EPA in January 2020 and a decision was made to carry out a full AA on the draft Plan, which is presented as a Natura Impact Statement (NIS) [published under separate cover]. The findings of the NIS have been considered as part of the SEA and also feeds directly into the assessment of biodiversity, flora and fauna in this SEA.

Review of Relevant Plans and Programmes

In line with the SEA Directive, this section of the report identifies and considers the environmental protection objectives from other relevant plans, programmes and policies in relation to the draft Plan. The draft Plan is a national plan and therefore the review has focused on relevant national, European and international frameworks relating to key areas such as waste, air emissions, nature conservation, and human health, and it takes on board comments made by statutory environmental authorities during the SEA scoping stage.

In exploring the relationships between the draft Plan and other relevant plans and programmes, the following two questions have been borne in mind:

- Does the NHWMP contribute to the fulfilment of environmental protection objectives set in other key plans/ programmes? and

- To what degree are the environmental protection objectives/ measures set in these other key plans/ programmes impacted by the NHWMP?

The NHWMP is Ireland's primary mechanism for providing the national approach to hazardous waste management and for directing the national response to such issues. It provides recommendations and associated actions to reduce the environmental impact of hazardous waste and provides overall direction to policy and decision-makers involved in the prevention and management of hazardous waste.

In this context, there are a number of relevant international and European mechanisms in place relating to the management of hazardous waste and pollutant emissions. At an international level, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is the key instrument for the regulation of transboundary waste movements. At a European level, the EU Waste Framework Directive (2008/98/EC), as amended by Directive (EU) 2018/851, is the key legislative instrument driving waste management in all Member States. Other relevant EU instruments include: the Industrial Emissions Directive [IED] (2010/75/EU), Environmental Liabilities Directive (2004/35/EC), Landfill Directive (99/31/EC), Extractive Industries Waste Directive (2006/21/EC), Urban Waste Water Treatment Directive (91/271/EEC), Restriction on the Use of Certain Hazardous Substances (RoHS) Directive (2011/65/EU), among many others.

Other relevant European instruments include the EU's Second Circular Economy Action Plan (March 2020), which forms one of the pillars of the EU Green Deal – the strategy to make the EU more sustainable by 2050. The Registration, Evaluation, Authorisation and Restriction (REACH) Regulation (EC) 1907/2006 is one of the most comprehensive legislative approaches to chemicals to date, aiming to protect human health and the environment while also aiming to enhance the chemicals market by supporting innovation and reducing hazardous materials. The EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment is closely related to this, aiming for zero pollution, including reducing hazardous waste streams, and to protect human and environmental health, as well as streamlining legislation.

At national level, the Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025, puts the focus on waste management further up the waste hierarchy including reducing hazardous materials while the National Waste Prevention Programme (NWPP) aims to encourage sustainability and circularity. There are several other programmes, schemes and initiatives nationally that are also tackling hazardous waste issues. The NWPP will be incorporated as part of the forthcoming Circular Economy Programme led by the EPA.

At regional level, the Waste Framework Directive sets out the approach for the sustainable management of waste in the Member States and requires the preparation of Regional Waste Management Plans (RWMP's) covering six year cycles. The three RWMP's (Eastern-Midlands, Southern, and Connaught-Ulster) set out a framework for the period 2015-2021 for the prevention and management of waste, including hazardous, and include policies and actions complementary to the NHWMP. For the next waste management planning period, the three regional plans will be consolidated into one national plan, the National Waste Management Plan for a Circular Economy, with implementation and coordination continuing through the regional waste management offices. Alongside the NHWMP, the three regional waste authorities and local authorities are obliged to take the recommendations of the NHWMP into account when reviewing their waste management plans.

Other key influencing plans and programmes include: Waste Management (Shipments of Waste) Regulations 2007; Industrial Emissions Regulations 2013; Climate Action Plan; National Planning Framework; three Regional Spatial and Economic Strategies; Green Procurement Guidance for the Public Sector; and the National Air Pollution Control Programme and draft National Clean Air Strategy.

Relevant Aspects of the Current State of the Environment (Baseline)

This section of the Environmental Report examines the relevant significant issues of the current state of the environment in relation to: Population and Human Health; Biodiversity, Flora and Fauna; Land and Soils; Water; Air Quality and Climatic Factors; Material Assets; Cultural Heritage; Landscape; and the interrelationship between these factors. The baseline has been compiled using available datasets and indicators developed through scoping and the environmental assessment. It is noted that the draft NHWMP is national in its focus and this is mirrored in the level of detail presented for the baseline descriptions.

The baseline description is focused in the first instance on the Republic of Ireland, however given the boundary with Northern Ireland and exports of waste to neighbouring territories, there is potential for environmental impact on e.g. air and water quality in other jurisdictions. As such the description below includes reference, where relevant, to conditions outside the Republic of Ireland.

Ireland's natural environment, although under increasing pressure, generally remains of good quality and represents one of the country's most essential national assets (EPA, 2012, 2016 and 2020). In their 7th and most recent state of the environment review *Ireland's Environment – An Assessment 2020*[1], the EPA outlines a summary scorecard for the progress being made across key environmental policy areas as well as the general trend/outlook. The relevant topic areas are summarised in **Table 3**.

Table 3: Summary assessment and future outlook for selected environmental policy areas and Relevance to the NHWMP

Policy Area	Summary Assessment & Outlook	Relevance to the NHWMP
Climate	**Assessment: Very poor / significant environmental and/or compliance challenges to address** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation** Ireland has made good progress in deploying renewable energy sources and has an ambitious National Energy and Climate Plan, and Climate Action Plan. However Ireland continues to have a high level of greenhouse gas (GHG) emissions and remains above its EU emission limit, missing our target for 2020. Should all the actions in the Climate Action Plan be fully adopted and implemented, the targets for 2050 could be achieved. However significant challenges remain to reaching these goals.	The waste sector overall has a relatively small contribution to Ireland's GHG emissions (1.5% in 2019). Nevertheless, society-wider efforts are urgently needed to reduce GHG emissions. The draft Plan helps support this effort from the waste management sector with the overall aim of preventing and reducing hazardous waste generation in the first instance.
Air Quality & Emissions	**Assessment: Moderate / on track generally / local or occasional challenges** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation** Air quality in Ireland is generally very good and consistently meets its EU limit values. There was however an exceedance in 2019 of nitrogen dioxide at a monitoring station in Dublin, and Ireland at times does not meet the more stringent limit values set by the WHO (namely of fine particulate matter). In terms of transboundary emissions, Ireland is failing to meet EU targets on ammonia emissions under the National Emissions Ceiling (NEC) Directive, of which agriculture is the main source. Progress is mixed progress in terms of reducing emissions from other sectors such as transport and energy. Measures at a national level are required to tackle this and improve the outlook.	Emissions to air from hazardous waste management activities are managed primarily through the licensing of facilities granted under the Waste, Integrated Pollution Control (IPC) and Industrial Emissions Directive (IED) authorisations. The draft Plan supports the work of the EPA Office of Environmental Enforcement which oversees licences authorisations and specific licence conditions, as well as site auditing activities.
Water	**Assessment: Poor / environmental and/or compliance challenges to address**	Some groundwater bodies are not meeting their WFD objectives due to

[1] EPA (2020) Ireland's Environment – An Assessment. Available at: https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/state-of-environment-report-/#

Policy Area	Summary Assessment & Outlook	Relevance to the NHWMP
	Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation In general, trends in water quality are mixed; over the past 20 years, there has been a deterioration in the number of the highest quality water bodies, particularly rivers, and mixed progress in waters achieving the environmental objectives under the water Framework Directive (WFD). Good progress has been made in improving wastewater treatment however issues remain. Nutrient enrichment remains the main significant issue. The outlook is also mixed, and a balance needs to be sought between a growing population and certain sectors in particular, such as intensive agriculture.	legacy industrial activities, including licensed waste facilities (e.g. landfills and sites with ground contamination). As for air quality, the draft Plan supports the work of the Office of Environmental Enforcement which oversees licences authorisations and specific licence conditions, as well as site auditing activities.
Nature	**Assessment: Very poor / significant environmental and/or compliance challenges to address** **Outlook: Largely not on track to meet policy objectives and targets**. The assessment and outlook are overall very poor. Biodiversity losses and habitat changes continue on an international scale. EU conservation status reporting indicates generally declining trends and unfavourable status for many habitats, with 85% having unfavourable status. Many species are faring better, but 15% are in decline at EU level, mostly freshwater species. Agricultural activities remain the key pressure. The outlook is very poor, with climate change adding to challenges and cumulative impacts.	The draft Plan supports the application of the EPA's Code of Practice on the remediation of legacy waste sites, including all applicable environmental considerations. A key aim of the NHWMP is reduction and prevention of hazardous waste, and managing it appropriately when it does arise, and at suitable locations to reduce environmental impacts.
Waste & Circular Economy	**Assessment: Poor / environmental and/or compliance challenges to address** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation** Ireland has made excellent progress in meeting its current EU targets. The generation of waste volumes however remains tied to economic activity which has been growing in recent years. Initiatives such as producer liability and waste prevention and recycling programs have also led to improvements and landfill needs have decreased while waste-to-energy capacity has increased. Challenges remain to shift from a linear economy to a circular one, with circular principles remaining low in Ireland.	A key aim of the draft Plan is reducing the generation of hazardous waste in the first instance, with the overall aim of prevention hazardous waste generation. It supports the use of non-toxic materials and promotes the transition to a circular economy through its waste management principles and awareness-raising from household to national level.

Summary of the Environmental Baseline

While Ireland is currently meeting its legislative waste targets, the move to a circular economy is therefore the primary goal in terms of waste management and increasing resource efficiency. Ireland continues to have high consumption patterns which in turn leads to increased generation of waste, particularly in the absence of circular economy principles.

In general however, hazardous waste represents 2% and 1% of the volume of waste generated from household and commercial residual bins, respectively. The majority of hazardous waste in Ireland is generated by industrial sources. The main challenge in the coming years will be to decouple hazardous waste generation from economic activity, and to transition towards zero pollution and circularity.

Worldwide, over 60% of ecosystem services are being degraded or used unsustainably and this affects natural capital, resource use and climate change resiliency. Habitat degradation, climate change, pollution and invasive or alien species threaten an average of 25% of animals and plants worldwide and up to one million species face extinction as a result according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

In Ireland, nearly half of Ireland's habitats are assessed as being at inadequate conservation status and a large proportion are at bad status. Most species are considered to be stable however a number of key species are declining. Pressures from changes in land use, intensification of agriculture, pollution and

climate change, as well as the impacts of a growing economy, are likely to bring additional pressures on a number of species and habitats in Ireland in the coming years.

Land and soils are valuable resources that perform many ecosystem services with socio-economic as well as environmental importance. Ireland generally has excellent soil quality and the estimated proportion of contaminated land is relatively small. Nationally soil quality is not significantly impacted by contamination issues. Some legacy issues include historic unregulated waste disposal sites, illegal landfills and closed landfills, some of which contain hazardous waste. Land use change is the major pressure on land and soils in Ireland due to urban land-take, intensification, erosion, compaction, and soil sealing.

The key pressures on the water environment continues to be agriculture (nutrient run-off and sediment, point pressures such as farmyards), followed by hydromorphological issues (e.g. land drainage, channelisation), urban wastewater discharges and forestry, among other pressures. There also continues to be a decline in the number of water bodies that are reaching or maintaining High ecological status, and an increase in the number of polluted water bodies. The number of fish kills are also reflective of levels of pollution and sensitivity to the effects of climate change.

In general, Ireland has good air quality and generally meets its EU emissions limit values. However monitoring indicates that some pollutants are exceeding the stricter World Health Organization (WHO) guideline values e.g. fine particulates and ground-level ozone, indicating that air quality problems may be more widespread in Ireland than previously thought. Greenhouse gas emissions in Ireland are also showing a worrying trend, and Ireland continues to have one of the highest per capita emissions in Europe. Emissions have increased overall by 10.1% on 1990 levels, with the trends indicating emissions are increasing as a result of economic activity and employment.

The Waste sector overall is responsible for a small proportion of Ireland's national emissions (1.5% of in 2019). Emissions from the waste sector are currently 43% below 1990 levels, reflective of the decreased quantities of wastes going to landfills The outlook for the waste sector is good, with emissions projected to decrease further. In terms of transboundary emissions, Ireland is failing to meet its EU targets on ammonia emissions, of which agriculture is the main source.

Progress is mixed progress in terms of reducing emissions from other sectors such as transport and energy. Measures at a national level are required to tackle this and improve the outlook, however even with projections looking at scenarios with additional measures applied, some transboundary pollutants are projected to remain above the 2030 targets. In terms of the marine environment, the main source of air pollution is from shipping.

Ireland currently does not have the facilities required to treat the full range of hazardous wastes it produces. A significant amount of hazardous waste continues to be exported to other European countries. The volumes of hazardous material exported from Ireland for treatment abroad has shown an increasing trend year on year since 2015. Shipping remains the primary mode of transporting hazardous waste abroad.

Hazardous waste generated in Ireland is showing an increasing trend in volumes generated since 2015. Existing environmental problems relate to the lack of facilities available in Ireland to collect and treat the full range of hazardous wastes it produces.

Inter-relationships

In accordance with the SEA Directive, the interrelationship between the SEA environmental topics must be taken into account (**Table 4**). The key interrelationships identified in this SEA are set out below.

Table 4: Inter-relationships between SEA Topics

	Biodiversity Flora & Fauna	Population & Human Health	Land & Soils	Water	Air Quality	Climatic Factors	Material Assets	Cultural Heritage	Landscape
Biodiversity, Flora & Fauna									
Population & Human Health	✓								
Land & Soils	✓	✓							
Water	✓	✓	✓						
Air Quality	✓	✓	X	✓					
Climatic Factors	✓	✓	✓	✓	✓				
Material Assets	✓	✓	✓	✓	✓	✓			
Cultural Heritage	X	✓	✓	✓	X	✓	✓		
Landscape	✓	✓	✓	✓	X	✓	✓	✓	

Evolution of the Baseline in the Absence of the NHWMP

The SEA legislation requires that consideration is given to the likely evolution of the current baseline where implementation of the NHWMP does not take place i.e. the third NHWMP 2014-2020 would continue to be implemented into the future. **Table 5** summarises the key issues.

Table 5: Likely Evolution of the Baseline without Implementation of the Fourth NHWMP

Environmental Area	Discussion on the Evolution of the Baseline in the Absence of the draft Plan
Population and Human Health	In the absence of the NHWMP, hazardous waste management activities could not be coordinated as well with other plans, and would potentially lack targeting to the key hazardous waste issues. The general recommendations from the third NHWMP would continue to apply, however this would not reflect the developments in waste policy and that have occurred in the intervening years since 2014, such as the requirements under the amended Waste Framework Directive, the EU Green Deal and Circular economy package, as well as Ireland's new Circular Economy Action Plan. This would affect the strategic direction of the plan and could lead to increases in unmanaged hazardous waste material at local and sectoral levels, and could lead to less effective coordination between relevant government bodies and other agencies. This in turn could give rise to deterioration of air quality, water and soils quality and in turn to impacts on human health which could be avoided through a more coordinated approach on the latest developments in waste management and related technologies generally. In the absence of the plan, other plans and initiatives would continue, such as awareness raising, etc. under for instance the National Waste Prevention Programme, as well as other related plans such as Ireland's Action Plan on Antimicrobial Resistance, and the National Waste Management Plan (in prep. 20021).
Biodiversity, Flora and Fauna	Without the implementation of the Plan, biodiversity, flora and fauna, including protected sites, habitats and species, would continue to exist in much the same pattern, abundance and density as today however there would be continued pressure on biodiversity as a result of ongoing legacy issues from historic landfills, e.g. emissions from leachate effecting soil, groundwater and surface water-dependant ecosystems; illegal dumping; and backyard burning. While the continued implementation of the third NHWMP would offer some protection to biodiversity in targeting waste reduction and prevention, as for population and human health, this would not take account of the latest developments in circular economy policy, or to take on board specific environmental and biodiversity considerations being undertaken as part of the fourth plan review.
Land and Soils	In the absence of the fourth Plan, the programme of remediation of unregulated historic landfills and licensed sites would continue and is currently being implemented through the Regional Waste

Environmental Area	Discussion on the Evolution of the Baseline in the Absence of the draft Plan
	Management Offices, EPA and local authorities. The EPA Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites (EPA, 2007) and the Guidance on contaminated Land and Groundwater at EPA Licensed Sites (EPA, 2013) would continue to be used when assessing unregulated historic landfills, licensed facilities and contaminated sites. The principal aim in dealing with contaminated land and groundwater related issues is to secure the protection of human health, water bodies (including groundwater) and the wider environment.
Water	In the absence of the fourth Plan, water quality in Ireland is likely to continue to improve in line with efforts being made by the RBMP and its Programme of Measures (PoM) throughout Ireland, though trends are mixed. The main challenges would remain: tackling diffuse pollution; eliminating serious pollution associated with point sources; and using the full range of legislative measures in an integrated way to achieve better water quality. Waste management activities in general represent a relatively small proportion of significant pressures on water bodies, which is dominated by agricultural sources, wastewater treatment discharges, and hydromorphological issues. The third cycle of the RBMP and its PoM would be initiated with continued gains expected regardless of the NHWMP.
Air and Climate	Air quality in Ireland is of a good standard across the country, meeting most EU air quality standards, though some pollutants area above WHO limits. The absence of the fourth Plan is not expected to affect this trend. As a result of anthropogenic greenhouse gas emissions generation, climate change is predicted to occur in the future regardless of action. The UN Intergovernmental Panel on Climate Change predicts sea level rise, changes in rainfall patterns and temperatures as well as changes in the frequency of droughts and extreme weather events, such as increased flooding. The potential impacts from sea level increases, increased flooding, summer droughts, etc. may impact on existing and any future hazardous waste management activities.
Material assets	The fourth Plan incorporates the requirements of existing European and national directives, regulations and measures to reduce and prevent hazardous waste generation. It provides for the coordination of these controls to reduce impacts to the environment and examines how hazardous waste management activities are impacting the wider environment and the measures needed to address these negative effects. In the absence of the fourth Plan, hazardous waste management might be managed in a less coordinated manner, thus the cumulative and synergistic impacts on the environment of increasing hazardous waste figures nationally would continue. The Industrial Emissions Directive is the primary initiative regulating industrial and licensed facilities. However it tends to be more focused on the management and regulation of process emissions rather than circular economy principles. Critically the new plan will allow for a more coordinated approach to assessing and supporting more sustainable hazardous waste management approaches within the state.
Cultural Heritage	In the absence of the fourth Plan, cultural heritage concerns would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.
Landscape	In the absence of the fourth Plan, landscape and visual concerns would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.

Framework for Assessment

There are essentially three types of objectives considered as part of this SEA. The first relates to the objectives of the draft Plan. The second relates to wider environmental objectives i.e. environmental protection objectives at a national, European and international level, and finally there are the Strategic Environmental Objectives (SEO), which were devised to test the effects of the draft Plan on the wider environment.

The assessment is an objectives-led assessment which involves comparing the proposed alternatives against defined SEOs for each of the identified issue areas. The selected SEOs for this SEA are set out in **Table 6**. These environmental objectives are based on the current understanding of the key environmental issues having regard to the environmental protection objectives outlined in **Chapter 6** of the main Environmental Report. A draft set of objectives was included in the SEA Scoping Report prepared for the draft Plan which underwent statutory consultation in 2020. The objectives have been updated prior to the assessment based on feedback from statutory environmental authorities.

Table 6: Strategic Environmental Objectives for the Assessment

Related to SEA Topic(s)	Strategic Environmental Objective(s)	To what extent will the draft NHWMP…	Relevant UN Sustainable Development Goal(s)
Population and Human Health (PHH)	**Objective 1:** *To protect human health from hazardous waste.*	• Reduce and promote better management of hazardous waste in household settings • Promote awareness and knowledge of hazardous waste issues • Support the protection of human health from hazardous substances and waste • Support and enable appropriate collection platforms	***GOAL 3:** Ensure healthy lives and promote well-being for all at all ages*  ***GOAL 12:** Ensure sustainable consumption and production patterns* 
Biodiversity, Flora and Fauna (BFF)	**Objective 2:** *Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU designated sites and protected species (including transboundary considerations) and integrate biodiversity considerations wherever possible into the NHWMP.*	• Support the protection of biodiversity from hazardous waste management activities • Support the regulatory processes for licensed facilities	***GOAL 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss* 
Land and Soil (LS)	**Objective 3(a):** *Safeguard soil quality and quantity (including geo-heritage sites) from hazardous waste.* **Objective 3(b):** *Reduce and eliminate soil contamination.*	• Protect the national soil resource from hazardous waste management activities • Remediate legacy sites where hazardous waste is present • Support increased remediation of contaminated soil within Ireland	***GOAL 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss* 
Water (W)	**Objective 4:** *Protect and restore water quality (surface waters, groundwaters and marine waters) from hazardous waste (including transboundary considerations).*	• Support the protection of water quality from hazardous waste management activities • Support the regulatory processes for licensed facilities	***GOAL 6:** Ensure availability and sustainable management of water and sanitation for all*  ***GOAL 14:** Conserve and sustainably use the oceans, seas and marine resources for sustainable development* 
Air Quality (AQ)	**Objective 5(a):** *Protect air quality, including transboundary considerations, from hazardous waste and/ or reduce air pollution or limit to levels that do not*	• Support the proximity principle • Support reductions in air and noise emissions from	***GOAL 11:** Make cities and human settlements inclusive, safe, resilient and sustainable*

Related to SEA Topic(s)	Strategic Environmental Objective(s)	To what extent will the draft NHWMP…	Relevant UN Sustainable Development Goal(s)
	damage the natural environment or human health. **Objective 5(b):** *Maintain and promote continuing improvement in air quality through the reduction of emissions, including transboundary considerations.*	hazardous waste management activities • Support the regulatory processes for licensed facilities	
Climatic Factors (CF)	**Objective 6:** *Minimise emissions of greenhouse gases associated with hazardous waste management (including other waste treatment activities, transport, industry, agriculture and energy).*	• Support the proximity principle • Support reductions in GHG emissions from hazardous waste management activities	***GOAL 13:*** *Take urgent action to combat climate change and its impacts* 
Material Assets (MA)	**Objective 7(a):** *Prevent and minimise the generation of hazardous waste.* **Objective 7(b):** *Optimise use of existing infrastructure/ built environment, raw materials and energy.* **Objective 7(c):** *Minimise the export of hazardous waste for treatment and/ or disposal and reduce emissions due to transportation.* **Objective 7(d):** *Support and promote the use of waste as a resource.* **Objective 7(e):** *Support sustainable activities without conflicting with other environmental protection objectives.*	• Promote and contribute to implementing circular economy principles • Reduce and ultimately prevent generation of hazardous waste • Promote resource efficiency • Support self-sufficiency in hazardous waste management • Support the regulatory processes for licensed facilities • Reduce and promote better management of hazardous waste in business and commercial settings • Support and enable appropriate collection platforms	***GOAL 8:*** *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*  ***GOAL 9:*** *Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*  ***GOAL 11:*** *Make cities and human settlements inclusive, safe, resilient and sustainable*  ***GOAL 12:*** *Ensure sustainable consumption and production patterns* 
Cultural Heritage (CH)	**Objective 8:** *Protect places, features, buildings and landscapes of cultural, historical archaeological or architectural heritage.*	*More appropriately dealt with at lower planning tiers.*	***GOAL 11:*** *Make cities and human settlements inclusive, safe, resilient and sustainable* 
Landscape (LandS)	**Objective 9:** *Protect and maintain the national landscape character, including geoheritage.*	*More appropriately dealt with at lower planning tiers.*	

Consideration of Alternatives

The consideration of alternatives is a requirement of the SEA Directive. Given that the draft Plan is a high-level national plan, it has been important that alternatives are reflective of its strategic nature.

Consideration of alternatives commenced early in the development of the draft NHWMP. High level alternative types were initially considered at SEA Scoping stage in the context under the headings of: Strategic; Value and Effects Oriented; Spatial; Modal; and Sectoral and/or Temporal Prioritisation.

Following consideration of these alternative types, strategic and modal alternatives were developed as presented in **Table 7**.

Table 7: Alternatives Considered

Alternative Type	Alternative Scenario	Description of Alternative
Strategic	***Business as Usual vs. Modified Business as Usual***	**(S1)** Business as usual scenario whereby the policies and objectives of the previous plan are continued.
		(S2) A modified business as usual scenario whereby the policies and objectives of the previous plan are updated to reflect evolving policy and legislation and with a particular emphasis on hazardous waste prevention.
	All-Island Approach vs. National Approach	**(S3)** Implement the NHWMP and track treatment need and capacity in partnership with Northern Ireland to develop an all-island capacity database and market for collection and treatment of hazardous wastes.
		(S4) Establish the NHWMP on a purely national basis where volumes of hazardous waste generation and treatment capacity are reported for the Republic of Ireland only.
Modal	***Indigenous Capacity vs. Export***	**(M1)** Implement specific policies aimed at reducing the level of hazardous waste export from the State to other jurisdictions to drive for greater self-sufficiency in hazardous waste management.
		(M2) Maintain the business as usual approach and allow market forces to dictate the economic merits of indigenous treatment versus export.
	Infrastructure Specific vs. Infrastructure Supportive	**(I1)** Present specific policies and objectives on the nature and extent of required hazardous waste infrastructure within the NHWMP to provide policy support for the current infrastructure gaps.
		(I2) Provide a general support for required hazardous waste infrastructure but do not specify policies and any individual hazardous waste stream or infrastructure within the NHWMP.

The preferred strategic alternative bright forward is a combination of S2, the modified business as usual alternative in combination with S3. Alternative S2 builds on the work of the previous NHWMP, implements circular economy principles and continues to identify and target priority sectors. Alternative S3 is aimed at more sustainably managing hazardous wastes, whereby cooperation with Northern Ireland offers a number of significant benefits both in terms of waste policy, emissions to air and material assets.

The preferred modal preferred alternative brought forward is a combination of M2 and I2. Given the level of market uncertainty in the export market and the generally lower cost for export of hazardous wastes, it is not currently feasible at this point to include policies to limit the export opportunities in favour of indigenous capacity. As such, Alternative M2 is the preferred environmental alternative in economic grounds despite that relatively poor climate impact and loss of resources for the State. However, alternative I2 is designed to improve knowledge of hazardous waste capacity to inform infrastructure development priorities and contingency planning. The draft Plan specifies that a review and update of hazardous waste capacity in the State should be undertaken, and this may be used to inform the relevant infrastructure requirements more clearly.

Assessment of Preferred Scenario

This section evaluates as far as possible the likely significant effects on the environment and to set out measures envisaged to prevent, reduce and as far as possible offset any significant adverse effects of implementing the draft Plan. **Table 8** summarises the draft Plan and presents an overview of the environmental assessment of the recommendations and associated actions.

Table 8: Summary of the Environmental Assessment

Plan Action Area	Summary of Draft Plan Actions and Assessment	Mitigation?
Policy & Regulation	Includes Recommendations 1 to 4 and 9 actions. The actions relate to coordinated national approaches on hazardous waste management in the context of circular economy principles, with a particular focus on hazardous waste prevention. The actions also aim to deliver on enforcement approaches, to support all-island approaches to hazardous waste issues, and to strengthen resilience in hazardous waste management in light of the Covid-19 pandemic. The recommendations and associated actions are considered to be broadly positive, and deemed to have a positive effect on environmental objectives, particularly in the long term. A reduction and improvement of the management of hazardous waste through regulatory and legislative reviews, sharing of best practice and keeping emerging issues under review, as well as establishing a working group with Northern Ireland should lead to more holistic and efficient approaches to hazardous waste management.	✓
Prevention	Includes Recommendations 7 to 8 and 10 actions. These comprise awareness raising, knowledge development and sharing, utilising existing regulatory regimes to promote prevention and reduction of hazardous waste in industry processes in particular, provision of research funding and support for green public procurement (GPP). These are generally deemed to have a positive effect on environmental objectives, particularly in the long term. Data gathering and research, as well as behavioural insights can help identify knowledge gaps and indicate where further work or information campaigns are needed. By promoting measures to reduce household hazardous waste consumption, encouraging the use of non-toxic alternatives in production chains, supporting research and innovation and using green public procurement, the resulting benefits of public awareness and promotion of a circular economy would consequently have a positive impact on the environment generally.	✓
Collection & Treatment	Includes Recommendations 9 to 17 and 14 actions. These relate to conducting a review of hazardous waste capacity in the state, looking at the waste licensing/permitting legislation to help facilitate better management of small hazardous waste sources, improving management of commercial sources, developing and implementing collection platforms for particular waste streams (household, farm, asbestos, paint and unused medicine hazardous wastes), continued remediation of historic disposal sites containing hazardous waste, as well as identifying options for the safe storage of orphan radioactive wastes. These have broadly positive impacts on environmental objectives; however some negative impacts have been identified. In the short-term, there is potential for negative impacts on air quality, material assets and population and human health due to indirect impacts associated with transport of waste and noise/ disturbance from segregation activities. Any collection or storage area however has the potential to give rise to contaminated run-off if stored inappropriately, or give rise to e.g. spillage risks if sited inappropriately. This may give rise to risk to soils and water in particular with indirect impacts for biodiversity and human health. However in the medium to long term, facilitating collection options and infrastructure is positive as it will lead to improved and better management of both household and commercial hazardous waste streams through suitable collection facilities, which offers greater environmental benefit along with a reduction in the quantity of hazardous wastes being mismanaged and potentially entering the environment or impacting on human health.	✓
Implementation	Includes Recommendations 18 and 19 and 5 actions. These relate to implementation of the draft Plan, with actions related to reporting protocols,	✓

Plan Action Area	Summary of Draft Plan Actions and Assessment	Mitigation?
	establishing a working group for the Plan and reporting on its progress, as well as conducting data-gathering, such as hazardous waste characterisation surveys. These are generally positive, particularly in the medium to long term, as these actions will assist in informing national waste management and prevention policies, facilitate better knowledge from the survey work, and better monitoring and implementation approaches to the fourth NHWMP. These actions should allow for the Plan to take cognisance of emerging issues and for projecting changes down the line, allowing for more overall effective decision-making.	

Mitigation and Monitoring

The Environmental Report has highlighted the more significant potential positive and negative environmental impacts from the implementation of the draft NHWMP. It has also had regard to the assessment work carried out to inform the Appropriate Assessment of the draft NHWMP. Chapter 9 of this environmental report presents mitigation measures for both SEA and AA which are envisaged to prevent, reduce and as fully as possible offset and significant adverse effects on the environment of implementing the plan.

A general summary of the mitigation measures for SEA include: any plans/projects requiring consent that may arise from the draft Plan should be subject to relevant environment assessments as appropriate; recommending the use of available online tools e.g. environmental sensitivity mapping tool and GeoTool; updating the hazardous waste capacity review; recommending the undertaking of environmental risk assessments prior to establishing new collection and/or storage infrastructure/platforms for hazardous waste streams; and recommending the development of guidance or a code of practice on the approaches to storing radioactive wastes. The SEA also recommends the plan-makers have regard to the key data gaps identified and work towards filling these e.g. better quantification of unmanaged and difficult wastes nationally. Similarly to the SEA recommendations, the AA recommends that the draft Plan ensures that the actions undertaken (e.g. collection facilities, storage facilities and temporary storage) do not have an adverse effects on European Sites, such that plans or projects arising from the draft Plan which require consent are subject to requirements of the EU Habitats Directive.

Monitoring will focus on aspects of the environment that are likely to be significantly impacted by the implementation of the draft Plan, and are summarised in **Table 9** below. It is the responsibility of the EPA to coordinate the monitoring of their plan however it is acknowledged that EPA will, to a large extent, rely on existing monitoring programmes managed, for instance, by other relevant sections within the agency itself.

Table 9: Proposed SEA Monitoring Programme

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
Monitoring Objective 1: To protect human and environmental health from inappropriately managed HW. ***Cross-cutting Areas:*** *Population & Human Health* *Biodiversity, Flora & Fauna* *Air Quality* *Water* *Land & Soil* *Material Assets*	• Levels of mismanaged hazardous waste. • Increasing trends in small HW streams. • Need improvements in awareness and compliance in households and key sectors e.g. unused medicines, healthcare, farms.	• Decrease in the current known levels of mismanaged hazardous waste in tonnes/annum	• Continued downward trends in levels of mismanaged HW. • % of EPA budget allocation for the NWPP which is allocated to HW education and awareness. • Number of hits to HW website and mywaste.ie. • Quantitative progress towards the 2025 target on establishing separate collection of HW generated by households under Art. 20 of the revised Waste Framework Directive.	• Hazardous waste statistics Environmental Protection Agency (EPA). • National Waste Bulletin, published annually (EPA). • National Waste Prevention Programme/ Circular Economy Programme (EPA).	• Carry out specific compliance tests on key waste streams e.g. medicines, farm hazardous waste etc. • Should the quantities of mismanaged hazardous waste for certain waste streams be unknown, carry out characterisation surveys. • Track the level of engagement with the websites and review areas for improvement e.g. work with waste collection providers to disseminate HW information.
Monitoring Objective 2: Reduce and eliminate legacy hazardous waste issues. ***Cross-cutting Areas:*** *Biodiversity, Flora & Fauna* *Land & Soil* *Water*	• The degree to which closed/ illegal landfills and dumping sites with HW that are being remediated.	• Reduce the level of mismanaged HW (*See targets under Objective 1*). • Remediation of all known illegal sites with HW that pose a risk to the achievement of the objectives of the Habitats Directive, Birds Directive, and Water Framework Directive.	• % of known illegal sites with HW where remediation has commenced.	• EPA. • Regional Waste Management Offices (RWMO's). • Local Authorities (LA's).	• EPA should engage with the RWMO's and LA's to identify any bottlenecks in the process and develop a tailored response.
Monitoring Objective 3: Safeguard soil quality and quantity from hazardous waste, reduce and eliminate soil contamination, and reduce	• Trends in the volumes of contaminated soil being generated. • Trends in the volumes of contaminated soil	• Aim for an overall % decrease in contaminated soil being generated per annum.	• Volume of hazardous soil accepted and managed at authorised facilities.	• RWMO's. • LA's.	• Where increasing trends in contaminated soil generation has been identified, the EPA should implement the

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
exports/ loss of the soil resource. ***Cross-cutting Areas:*** *Land & Soil* *Biodiversity, Flora & Fauna* *Water* *Material Assets*	being exported for treatment.	• Retain the national soil resource as much as possible.	• % decrease in contaminated soil being exported per annum. • % increase in volumes being treated to non-hazardous status within Ireland to preserve the soil resource.		recommendations of the Revised Capacity Review.
Monitoring Objective 4: Improve air quality and reduce emissions to air from the key issues: backyard/ illegal burning and from transport emissions from moving HW. ***Cross-cutting Areas:*** *Air Quality* *Climatic Factors* *Human Health*	• Trends in the level of illegal/ backyard burning. • Trends in the levels of transport of HW as a proxy for emissions to air.	• Aim for an overall decrease in levels of illegal/ backyard burning. • Minimise the distance travelled for HW (*see also Objective 5*).	• Number of complaints/ enquiries made on illegal and backyard burning. • Quantify the kilometres travelled by hazardous waste both within the State and through exports (*see also Objective 5*).	• Enforcement Unit statistics (EPA). • Annual hazardous waste statistics (EPA).	• Review awareness campaigns/ initiatives in relation to air quality issues to improve knowledge and awareness. • Transport statistics requires additional quantification of this distance travelled in the annual EPA hazardous waste statistics. (*see also Objective 5*).
Monitoring Objective 5: Minimise emissions of greenhouse gases associated with hazardous waste management. ***Cross-cutting Areas:*** *Climatic Factors* *Air Quality* *Material Assets*	• Overall reduction in hazardous waste generation *(see Objective 6)*.	• In line with the proximity principle, minimise the distance for the transport of hazardous waste for treatment.	• Quantify the kilometres travelled by hazardous waste both within the State and through exports. • Quantify the type of transport used where possible to reflect any shifts to low-carbon/ carbon-neutral fuels.	• Annual hazardous waste statistics (EPA).	• Requires additional quantification of this distance travelled and the transport types in the annual EPA hazardous waste statistics.
Monitoring Objective 6: Prevent and minimise the generation of HW, minimise exports and	• Trends towards waste prevention and reduction in various sectors, particularly in the key identified	• % decrease in HW generated per sector.	• Continued downward trends in levels of sectoral HW.	• Hazardous waste statistics (EPA). • National Waste Bulletin, published annually (EPA).	• Should the quantities of sectoral HW waste streams be unknown/ uncertain, characterisation surveys should be carried out.

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
promote circular economy principles. ***Cross-cutting Areas:*** *Material Assets* *Climatic Factors* *Population and Human Health*	priority sectors: medicines, healthcare, farms. *(Links closely to Objective 1 on mismanagement).*			• National Waste Prevention Programme/ Circular economy Programme (EPA). • Reporting on healthcare risk waste (HSE).	• For specific issues which show a rising trend, (e.g. increased HW generation arising from the COVID response in the healthcare sector), work with the relevant stakeholders to develop a tailored response (e.g. target awareness and guidance aimed at prevention and management). • The EPA should implement the recommendations of the Revised Capacity Review.

Next Steps

There is some important work to be done before the fourth National Hazardous Waste Management Plan can be adopted. The next step in the SEA and draft NHWMP process will be a public consultation period.

Witten submission or observation on the draft NHWMP or associated environmental reports can be made **by 5pm on Friday 17th September 2021** via:

1. **Email to the following email address:** hazwaste@epa.ie

2. **Writing to the following address:** National Hazardous Waste Management Plan Submissions, Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co Wexford, Y35 W821.

These submissions/ observations will be taken into consideration before finalisation of the draft NHWMP. Early responses would be appreciated to allow more time to clarify and resolve issues that may arise.

It should be noted that in the interests of transparency, written submissions received may be made publicly available on the EPA's website. Receipt of submissions will be acknowledged but it will not be possible to issue individual responses.

1 INTRODUCTION

This environmental report has been prepared by RPS on behalf of the Environmental Protection Agency (EPA) as part of the Strategic Environmental Assessment (SEA) of the fourth National Hazardous Waste Management Plan (hereafter referred to as the 'NHWMP' or 'the Plan'), in accordance with the requirements of EU and national legislation on the assessment of the effects of certain plans and programmes on the environment. The Environmental Protection Agency (EPA) is preparing the NHWMP which will cover a six year period from 2021 – 2027. It will set out the objectives and recommendations to be pursued over the next six years and beyond to improve the management of hazardous waste in Ireland, taking into account the progress made since the third iteration of the plan, as well as changes that have occurred since the previous plan was published in 2014.

The purpose of this environmental report is to:

- Inform the development of the NHWMP;
- Identify describe and evaluate the likely significant effects of the implementation of the NHWMP and its reasonable alternatives; and
- Provide an early opportunity for the statutory authorities and the public to offer views on any aspect of this environmental report and accompanying NHWMP documentation, through consultation.

1.1 Background

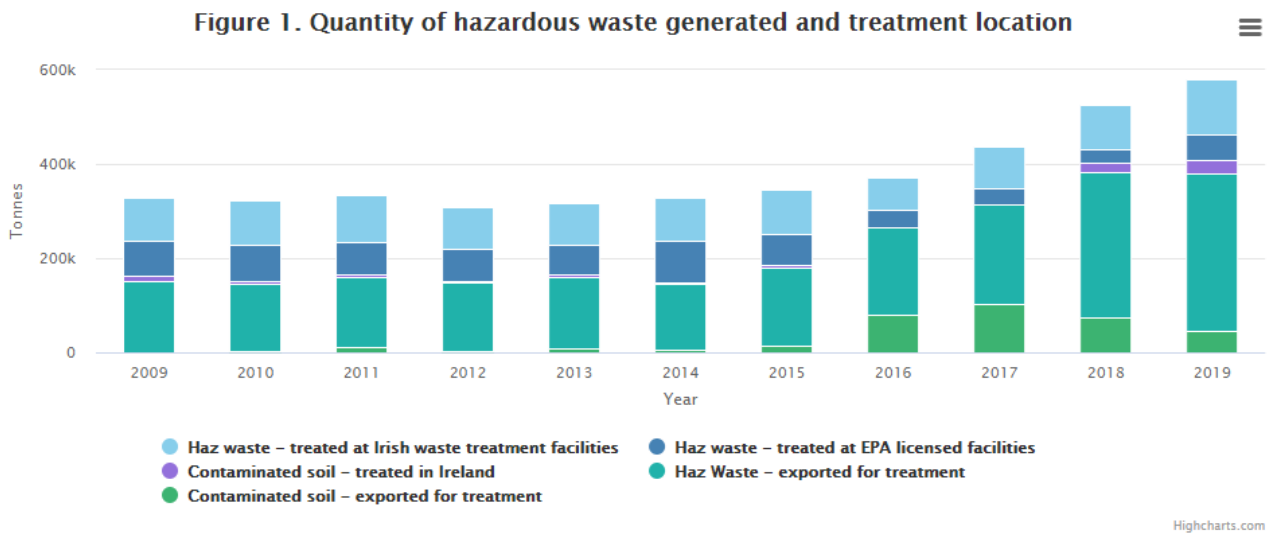
Section 26 of the Waste Management Act 1996, as amended, requires a Hazardous Waste Management Plan to be prepared and reviewed every six years. Plan development is led by the EPA and the first such plan was published in 2001. The EPA is now preparing a new NHWMP covering the period 2021 – 2027. The Plan is rooted in the waste hierarchy with an emphasis on circular economy principles including waste prevention and closing material loops.

Waste is classified as being hazardous when it displays one or more of the hazardous properties listed in the Second Schedule of the Waste Management Acts, as amended (e.g. explosive, oxidizing, flammable, irritant, harmful, toxic, carcinogenic). Hazardous waste is controlled by strict regulations to protect against the threat to people and the environment.

The largest quantity of hazardous waste in Ireland is generated by industry (approx. 80%) including industrial solvents, waste oils, industrial sludges and chemical wastes. However, households, small businesses, farms, healthcare and construction sectors also generate quantities of hazardous waste including batteries, electrical equipment, healthcare risk waste, solvent-based paint and varnish waste, sheep dip, asbestos and fluorescent lamps.

In 2019, approximately 580,977 tonnes of hazardous waste were generated in Ireland; this represents an increase of over 54,000 tonnes compared to 2018. **Figure 1.1** shows the increasing trend in hazardous waste generation for the past 10 years over the period 2009-2019, demonstrating a noticeable increase in waste generation post-recession. Also evident is the increasing role of the export of hazardous waste for treatment abroad, with circa 65% exported in 2019 (compared with 73% in 2018).

The generation, transport and treatment of hazardous wastes have the potential for environmental effects on the human, natural and built environments. As such, the appropriate management of hazardous waste, as well as monitoring, collection and treatment is essential to ensure that the protection of the environment is central to the management of these wastes.



Source: *EPA Waste Statistics, Figure 1 from: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/*

Figure 1.1: Trends in Hazardous Waste Generation in Ireland (2009 – 2019)

2 CONTENTS AND MAIN OBJECTIVES OF THE PLAN

This chapter provides an overview of the draft NHWMP, its actions/recommendations which have been subject to the SEA and AA process as documented in this Environmental Report and as part of the Natura Impact Statement (NIS) [available under separate cover]. The material assessed and presented in this environmental report relates to the draft NHWMP published for public consultation.

2.1 Key Objectives of the NHWMP

Overall, the NHWMP articulates a strategic vision for best-practice in hazardous waste management in Ireland. The purpose of the plan is to protect the environment and human health in Ireland through best-practice management of hazardous wastes through the following objectives:

1. *Support and drive priority **prevention** actions by industry and the public to reduce the generation of hazardous waste;*

2. *Support the identification of adequate and appropriate **collection** infrastructure for all hazardous wastes with a view to mitigating environmental and health impacts;*

3. *Endorse the **proximity** principle such that hazardous wastes are treated as close to the point of production as possible – including within Ireland, where feasible;*

4. *Support effective **regulation** of the movement and disposal of hazardous wastes in line with national policy priorities; and*

5. *Promotion of safe reuse and recycling pathways in support of the **circular economy**.*

The Plan makes recommendations, in accordance with Section 26(2) of the Waste Management Act 1996 as amended, for actions and infrastructure that the EPA considers necessary and appropriate to achieve the stated Plan objectives. The recommendations are based on an analysis of statistical data and the policy and business environment surrounding hazardous waste management.

2.2 Audience

The NHWMP applies to all hazardous wastes generated and managed in Ireland, and the plan articulates a set of actions to be implemented by the EPA, government, regional and local authorities, as well as other agencies and authorities. It is recognised that the plan can only influence, but not control, private sector investment decisions. Through the implementation of its recommendations, the plan seeks to influence private-sector priorities, practices and investment decisions with regard to hazardous waste management.

2.3 Scope and Function of the Plan

The following is a summary of the NHWMP's recommendations:

Policy and Regulation

The policy context for hazardous waste management is rooted in environmental protection as set out in the EU Environmental Action Plans; in national waste management policy; and in the circular economy concept as articulated in the European Green Deal. Management of hazardous waste is controlled through a comprehensive suite of legislation which originates in EU directives and regulations and is implemented in Ireland by the Waste Management Act, related statutory instruments and other acts.

Prevention

All waste disposal options have some impact on the environment, and so prevention is positioned at the top of the waste hierarchy. In this area, waste prevention includes using smaller quantities of potentially harmful materials, or using substances that are less toxic with a view to reducing the volumes of hazardous waste The recommendations presented in this section focus on key sources of hazardous waste with targeted prevention actions.

Collection and Treatment

Major sources of hazardous waste in Ireland are generally well managed by the waste producers and waste management companies. This activity is overseen by a robust regulatory environment involving the EPA; local authorities and other public bodies. However, there is a significant number of non-regulated smaller sources of hazardous wastes such as small businesses, farms and households that require further attention in terms of collection infrastructure and regulation.

Much of Ireland's hazardous waste is exported for treatment. The relatively small-scale of waste generation in the country has mitigated against the establishment of treatment facilities for hazardous wastes; and export to existing facilities in Europe has provided a cost effective disposal and recovery solution. However, widespread use of this approach does not align with the proximity principle and exposes Ireland to a risk from a deficiency in waste management capacity should export routes be closed.

Implementation

A number of working arrangements and supporting measures are set out in the recommendations to drive and coordinate responses to the priority issues noted in the plan and to allow for monitoring and reporting with regard to progress on these. Implementation of this plan will require appropriate financial and personnel resources to ensure that all recommendations in the NHWMP are acted upon by the nominated bodies within acceptable timescales.

2.4 Content of the National Hazardous Waste Management Plan

The draft NHWMP is organised under the following chapter headings with a summary of the content covered be each:

Table 2-1: Summary of the Content of the Draft NHWMP

Chapter	Summary of Content
Executive Summary	• Hazardous Waste Generation and Management • Policy Developments • Strategic Environmental Assessment and Appropriate Assessment • Plan Recommendations
Chapter 1: Introduction	• Environmental Assessment • Progress on previous Plan • Preparation and Layout of 2021-2027 Plan
Chapter 2: Objectives and Recommendations	• Plan Objectives • Plan Recommendations • Recommendations of National Hazardous Waste Management Plan (2021-2027) - Outlines the key actions for the NHWMP for the next six year period, grouped under the headings of: – Policy and Regulation – Prevention – Collection and Treatment – Implementation
Chapter 3: Hazardous Waste Management	• Hazardous waste in Ireland • Hazardous waste treatment in Ireland • Hazardous waste capacity • Exports of hazardous waste • Characterisation of household and commercial hazardous waste • Unreported hazardous waste • Covid-19 Impacts
Chapter 4: Prevention of Hazardous Waste	• Key prevention sectors – Household hazardous waste – Healthcare risk waste – Chemical and pharmaceutical industry • Green public procurement

Chapter	Summary of Content
	• EU Chemicals Strategy • Labelling • Research and innovation
Chapter 5: Hazardous Waste Collection	• Household hazardous waste • Surplus medicines • Farm hazardous waste • Asbestos • Waste oils • Solvents • Radioactive waste • Waste from electrical and electronic equipment and batteries • Contaminated soils • Difficult wastes
Chapter 6: Hazardous Waste Treatment	• Proximity Principle • Treatment Processes
Chapter 7: Policy and Regulation	• Policy Context • International regulatory environment • National legislation • Classification of hazardous waste • Enforcement of hazardous waste • Closed Landfills
Appendix A	Properties of waste that render it hazardous
Appendix B	Progress on Recommendations in the 2014 to 2020 National Hazardous Waste Management Plan
Appendix C	EU and National Hazardous Waste Legislation

2.5 Review of the Progress made on the Third NHWMP Recommendations

The third NHWMP 2014-2020 set out 27 recommendations for the prevention, collection and treatment of hazardous waste. A progress report on the implementation of the plan was published in 2018.[2] Details of the progress against each of the 27 recommendations are set out in Appendix B to the draft NHWMP 2021-2027. While good progress was carried out on the previous plan, a greater focus on a number of actions is being looked at as part of the fourth Plan iteration, namely:

i. Developing a network of collection and transfer facilities to suit user needs to capture small-scale quantities of legacy wastes

ii. Providing increased hazardous waste collection facilities and appropriate awareness raising for households and small businesses

iii. Development of new producer responsibility obligations or initiatives for certain hazardous waste streams

iv. Increasing Ireland's level of capacity for self-sufficiency with regard to the treatment and management of hazardous waste

v. Greater development of waste stream and sector-specific indicators.

[2] EPA (2018) Progress Report National Hazardous Waste Management Plan (2014-2020). Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/hazardous-waste/

2.6 Implementation

While much encouraging work has been carried out on the previous plan, the volume of hazardous waste is increasing, and decoupling the generation of hazardous waste from economic activity continues to be a significant challenge. Policy change at European and national levels has placed more emphasis on reducing the hazardous nature of products placed on the market and improving the collection and treatment of hazardous waste streams.

Other waste streams remain problematic, with insufficient collection infrastructure, e.g. farm hazardous waste and out of date and unused medicines. While the Plan will endeavour to progress these issues, its central focus will be on the prevention of hazardous waste in terms of both hazardous waste generated and hazardous substances contained in products and materials.

Effective enforcement of hazardous waste legislation is essential to protect human health and the environment, to address specific problems, such as unauthorised disposal of hazardous waste and the management of priority waste streams, to implement policy objectives, to ensure a level playing field within the regulated waste sector, to maintain the integrity of the regulatory system and to create a deterrent effect. The key actors on hazardous waste enforcement are:

- Department of the Environment, Climate & Communications;
- Environmental Protection Agency;
- Local Authorities;
- National Waste Collection Permit Office;
- Producer Responsibility Organisations; and
- National Transfrontier Shipment Office.

3 STRATEGIC ENVIRONMENTAL ASSESSMENT METHODOLOGY

3.1 The SEA Process

The SEA Directive requires that certain plans and programmes, which are likely to have a significant impact on the environment, be subject to the SEA process. The SEA process is broadly comprised of the following steps, as outlined in **Table 3-1**.

Table 3-1: SEA Stages

SEA Step/ Stage	Purpose	Status
Screening	The purpose of this stage of the process was to reach a decision, on whether or not an SEA of the fourth NHWMP was required.	The EPA undertook SEA Screening in 2020 and determined that SEA of the fourth NHWMP would be required.
Scoping and statutory consultation	The purpose of this stage of the process was to clarify the scope and level of detail to be considered in the environmental assessment. This was undertaken in consultation with the defined statutory bodies for SEA in Ireland and other stakeholders. Transboundary consultation was undertaken with the relevant authorities in Northern Ireland, Scotland, Wales, England, Germany, Belgium, France, the Netherlands and Denmark.	This stage was completed October – November 2020.
Environmental assessment and consultation	The purpose of this stage of the process was to assess the likely significant impacts on the environment as a result of implementation of the draft NHWMP and consideration of reasonable alternatives. The output from this stage of the process is an SEA Environmental Report which records this assessment. Consultation on the draft NHWMP and Environmental Report are also part of this stage.	This stage was completed in Q2/Q3 2021 and is the subject of this report.
SEA Statement	The purpose of this stage of the process is to identify how environmental considerations and consultations have been integrated into the final plan, as well as consideration of alternatives and inclusion of an SEA monitoring programme, culminating in the production of an SEA Statement.	To be published with final NHWMP in Q4 2021.

3.2 Work Completed to Date

3.2.1 Screening

The SEA Directive requires that certain plans and programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, be subject to the SEA process. An SEA screening of the fourth NHWMP was undertaken by the EPA in 2020 after which it was concluded that SEA would be required.

3.2.2 Scoping

Scoping was carried out and a draft Scoping Report was prepared in September 2020 to help inform statutory scoping. The Scoping Report outlined the geographical and temporal scope of the NHWMP and identified the scope and level of detail of the proposed environmental assessment. The scoping report confirmed the following:

Geographical Scope: The aim of the NHWMP is a strategic national-level plan. It sits near the top of the waste hierarchy, under the national waste policy statement (Waste Action Plan for a Circular Economy, 2020) in Ireland and supports lower-tier planning such as the current Regional Waste Management Plans/ regional implementation, and local authority land use plans in their consideration of hazardous waste management. Its broad goals are the prevention and reduction of hazardous waste in the first instance, maximise collection of such waste and to manage it properly, increase self-sufficiency in Ireland, and to minimise environmental, health, social and economic impacts of hazardous waste generation and management.

The plan does not specify geographically where hazardous waste infrastructure should be sited, nor locations where actions concerning historic unregulated waste disposal sites should be undertaken (the latter is undertaken by the Regional waste Planning Offices). As such, the assessment is primarily focused at activities occurring on the national scale.

Temporal Scope: Section 26 of the Waste Management Act 1996, as amended, requires a Hazardous Waste Management Plan to be prepared and reviewed every six years. The first NHWMP was published in 2001. This fourth iteration of the plan covers the period 2021 – 2027. The recommendations put forward in the NHWMP have a longer perspective and some may take a number of years for certain aspects to be implemented and take effect.

As a result, the timelines proposed for assessment of long-term impacts extends beyond the timeframe of the actual plan. For the purpose of the SEA, assessments have been made for 2021 – 2023 (as a short term horizon), up to 2027 (as a medium term horizon) and post 2027 (as a long term horizon).

Scoping of SEA Environmental Topics: The environmental topics in the SEA Directive that were scoped in for the assessment of the NHWMP following SEA scoping in consultation with the statutory consultees for the SEA were: Biodiversity, Flora and Fauna; Population and Human Health; Land and Soils; Water; Air Quality; Climatic Factors; Material Assets; Cultural Heritage; Landscape; and the interrelationship between the above factors.

In line with the SEA Directive, specific environmental authorities (statutory consultees) were consulted on the scope and level of detail of the information to be included in the Environmental Report. The potential for transboundary effects was identified early in the process, and as such contact was initiated at scoping stage with the following jurisdictions: Northern Ireland, Scotland, Wales, England, Germany, Belgium, France, the Netherlands and Denmark. See **Section 3.2.2.1** for further details on consultation.

3.2.2.1 SEA Scoping Consultation

Table 3-2 and **Table 3-3** provides a summary of the consultation responses from the statutory consultees and transboundary consultees respectively received during SEA consultation.

Table 3-2: Statutory Consultee Scoping Responses

Consultee	Summary of Points Raised
Environmental Protection Agency (EPA)	• This submission highlights a number of key environmental issues to consider in preparing the Plan and SEA. • The relevant aspects of the key actions for Ireland (identified by the EPA- 'Ireland's Environment- An Assessment 2016') and SDG's should be taken into account when preparing the plan and the SEA. This will ensure the Plan aligns with SDG's and EPA ambitions. • The NPF, RSES and Regional WMP's should also be considered. • Key issues and challenges described within the EPA's State of the Environment Report (EPA, 2016) and imminent new report (when published) *[Note: this is Ireland's Environment – An Integrated Assessment, 2020]* should also be taken into account. • Plan should align with climate change adaptation and mitigation such as national commitments, relevant adaptation plans and the Waste Action Plan for a Circular Economy. • The Plan should clearly set out the scope, remit and implementation related elements of the Plan as these will guide the level assessment for the SEA. • The Environmental Report should explain where the proposed Plan will be implemented via other plans, which themselves have been or will be subject to SEA and should be accounted for the in the assessment.

Consultee	Summary of Points Raised
	• Further detail should be provided in the Environmental Report and Plan on specific mentioned measures on the relevant environmental assessments at the project stage and mitigation measures. Exploring this further with Environmental Authorities may provide merit during plan preparation and SEA processes. • The EPA recommend that the plan includes summary tables outlining the key findings of the SEA and linking environmental effects identified to the proposed mitigation measures, monitoring programme and Plan. • Schematics in the Plan are recommended to show the link with other plans. • Suggest including a separate section on 'Monitoring, Review and Reporting' in the Plan. • Suggest including a parallel implementation plan- would facilitate monitoring the implementation of NHWMP actions, its environmental performance, timelines and reviews. As part of this and between review periods the EPA recommends annual/bi-annual implementation reports to provide transparency and allow evaluation of environmental performance. • The Plan should identify any significant data and knowledge gaps including how these can be addresses while the plan is being implemented. It will strengthen future plans. • Recommendation to use available EPA resources, e.g. guidance and resources, the ESM webtool the, EPA SEA WebGIS Tool, the EPA WFD Application, the EPA Appropriate Assessment GeoTool and environmental authorities as per the SEA Regulations. • The Plan should clearly address what substances and materials constitute hazardous waste, the legislation to which the plan is aligned and a clear delineation of what substances and materials are excluded. • Table 3.1 of the Scoping Report should be updated to reflect the correct names of the relevant government departments, e.g. sections of the DHLGH relating to architectural or archaeological heritage and nature conservation should be consulted. • Transboundary consultations are welcomed and the EPA encourage similar extensive transboundary consultation to be carried out at the draft Plan stage as feedback garnered from such consultation will be useful. • The EPA attended the scoping workshop on 10 November and welcomed the active participation from stakeholders and it may also be worth considering combining the two remaining workshops on alternatives and monitoring. • There may be merit in including a horizon scanning exercise as part of the preparation of the Plan and incorporating this into the implementation plan. • The draft Plan should consider how hazardous wastes, currently shipped either to NI or mainland UK for treatment or disposal, might be treated or disposed. • A number of plans, policies and programmes have been suggested for inclusion into Table 4.1 of the Scoping Report that should be considered, e.g. at international, European and regional level. • Farm hazardous waste should be considered, e.g. lands and soil and the link with human health. • Reference in the scoping report to potential increases in contaminated soil due to brownfield redevelopment is welcomed and should be assessed in the SEA. • There is a gap in the information addressed in terms of batteries and electronic waste. • Risks posed by active waste management facilities should refer to recovery installations and facilities, as well as disposal sites. • The emissions from waste treatment and recovery facilities should also incorporate those installations that treat and recover hazardous waste. • Improper storage of hazardous wastes, pesticides and storage and disposal of medicines should also be considered. • Consideration should be given to the potential impacts from co-incineration of hazardous wastes at cement kilns. • Hazardous residues identified in port sediments should consider the data available from dumping at sea and foreshore authorisations. • Objective no. 3 should refer to reducing and eliminating soil contamination. • Objective no. 4 should refer to protect and restore water quality. • Objective no. 6 - there may be merit in considering the inclusion of other areas such as industry, waste treatment, agriculture and energy in relation to minimising GHG's.

Consultee	Summary of Points Raised
	• Objective no. 7 - would merit reference to preventing and minimising the generation of hazardous waste. This would align with the strategic objective of the waste action plan to design waste out of systems. • The Plan/SEA and alternatives considered should evaluate and consider the different modes by which separate collection of household hazardous waste could be delivered. • The alternatives should consider the implications of circular economy legislation being transposed, such as the collection of waste oils legislation. • It should be noted that the Department of Environment, Climate and Communications are currently preparing a Circular Economy Strategy which may be useful to consider in the preparation of the plan. • The EPA acknowledges that the NHWMP will not specify geographically where hazardous waste infrastructure should be sited but consideration should be given to the impacts on climate, air quality, biodiversity and land and soil. • The Plan should also consider island of Ireland alternatives when looking at potential for indigenous treatment and reducing transports for treatment and whether or not this could be possible in the context of Brexit. • The potential for eco-design and prevention of hazardous materials being incorporated into products should be given consideration to avoid end of life waste issues.
Department of Environment, Climate and Communications (DECC) Geological Survey Ireland (GSI)	• Geo-heritage could also be considered as part of 'Objective 9: Protect landscape character and visual amenity', within the plan. This is due to the inclusion of geological landforms and landscapes within the County Geological Sites (CGS) which are now included in County Development Plans. • With regard to Flood Risk Management, there is a need to identify areas for integrated constructed wetlands. We recommend using the GSI's National Aquifer, Vulnerability and Recharge maps on the Map viewer to this end. • The GWFlood project is a groundwater flood monitoring and mapping programme and may provide information to benefit the proposed plan. DECC recommends using the GWFlood tools found under programme activities (in conjunction with OPW data) to this end. • The data sets mentioned could also be used as part of Objective 3 and Objective 4. • DECC encourages the use bedrock and subsoil data sets for future assessments. The subsoil data set could be used as part of Objective 3. • Geohazard data sets (landslides, groundwater flooding, coastal flooding) could be used as part of Objective 3 and Objective 4. • DECC welcomes the reference to mineral locations and aggregate potential in Section 3.7 of the Scoping Report. • Natural resource data sets (quarries, aggregate potential and mineral localities) could be used as part of Objectives 7(a) and 7(b). • Marine and coastal data sets (INFOMAR, GIS MapViewer and CHERISH) could be used in relation to Objective 4.
Inland Fisheries Ireland (IFI)	• IFI notes the 'overarching' goals in the scoping report including the goal that 'environmental impact is minimised ' and also the accompanying 'planned actions', most notably to 'ensure that all significant streams of hazardous waste are collected and treated safely'. • The proposed plan and associated SEA, AA and EIA reports should fully consider aquatic biological diversity, the fisheries resource and stakeholder interest. • SEA, AA and EIA documents should recognise that protection of the aquatic environment requires both water quality protection and the protection/maintenance of physical habitat, hydrological processes and regimes. • It is advocated that such plans prioritise maintenance and restoration of ecological status in all surface waters with a particular emphasis on high quality Q5 sites and systems. • Plan and decision makers must take account of climate disruption / the biodiversity crisis and associated mitigation measures when considering any strategic plans / frameworks or proposals. • The potential negative impacts of any strategic plan framework on aquatic habitats should also be addressed. • IFI advocates consideration for a number of areas within relevance to fishery resources in Ireland. Particularly those outlined in Table 5.1 of the Scoping Report; Biodiversity, Flora and Fauna, Land and Soils, Water, Climatic Factors, and several others such as Biological diversity, Climate Disruption, Water quality, Surface water hydrology and Fish spawning and nursery areas, etc.

Consultee	Summary of Points Raised
	• IFI advocates future development of the fourth NHWMP framework as outlined in 'Outline of Alternatives' 2' (Section 7.3 of the Scoping Report) - to fully take account of and reflect results of the public consultation. • IFI endorses the selection of topics as outlined in Table 5.1 of the Scoping Report. • IFI advocates application of the precautionary principle when considering the fisheries resource in the current process. In addition, 'Blue Dots Catchment Programme' should be considered and supported.

Table 3-3: Transboundary Consultee Scoping Responses

Consultee	Summary of Points Raised
Department of Agriculture, Environment and Rural Affairs Northern Ireland (DAERA)	• A number of useful information sources that highlight the current state of the environment in Northern Ireland at a regional level and which could be referenced are: Northern Ireland State of the Environment Reports: https://www.daerani.gov.uk/publications/state-environment-report-2013 and the Northern Ireland Environmental Statistics Reports: https://www.daerani.gov.uk/articles/northern-ireland-environmental-statistics-report. • It is suggested that Marine Policy documents relevant to NI are considered in the SEA report in order to take account of transboundary aspects and that they should also be considered to be listed under key plans, policies and programmes. • Historic Environment Division recommend the following as worthy of inclusion: Convention for the Protection of the Archaeological Heritage of Europe (Valletta 1992); Convention for the Protection of the Architectural Heritage of Europe (Granada 1985); European Landscape Convention (Florence 2000). • When refining targets, the potential disturbance to/impact on NI/RoI migratory/mobile species such as salmon, Hen Harriers, Marsh Fritillary and bats should be considered. Cross border habitats and pathways also require special attention, such as ecological functionality and 'views' of landscape cross political boundaries. • All necessary steps are taken to ensure the potential impacts on drinking water supplies in Northern Ireland (public or private) is included in the scope. • It is important to consider potential effects on cultural heritage characteristics, their transboundary qualities and relationships. • The sub-topics of the SEA topics and the draft SEA Objectives should be revisited to give further consideration to potential impacts on both the marine environment and the transboundary nature of marine effects. This will strengthen the overall assessment. • Marine aspects within the sub-topics of the SEA sub-topics are welcomed as it provides a pathway for transboundary effects, e.g. reference to marine waters in SEA Objective 4. • Marine effects could be drawn out further across the SEA topics and the draft SEA objectives, e.g. reference could be made to coastal landscapes or seascapes within the Landscape topic and the corresponding draft SEA Objective 9. • In relation to Objective 4: Greater assurance could be given to cross border water quality to ensure all Drinking Water Protected Areas and Zones of Contribution protected.
Scottish Environment Protection Agency (SEPA)	• On the basis of the information provided, it is considered that the plan is unlikely to have significant adverse impacts on Scottish interests (air, soil, water, human health, material assets and climatic factors) in terms of transboundary issues.
Nature Scot (Scotland)	• Confirmed no comments to be made on the Scoping Report.
Historic Environment Scotland (HES)	• Expressed that the objectives and actions contained in the plan are unlikely to have significant adverse impacts on historic environment interests. • Content for transboundary effects on the historic environment in Scotland to be scoped out of the assessment.
Cadw / Historic Environment Service / Welsh Government (Wales)	• Confirmed no comments to be made on the Scoping Report.
Rijkswaterstaat (The Netherlands)	• Confirmed no comments to be made on the Scoping Report. • Expressed interest in the draft plan when published and requested to be notified of same.

3.3 Environmental Assessment

3.3.1 Assessment Approach

SEA is as its name suggests, set at a strategic level therefore it is not possible for the baseline environment to be described (and assessed) in as much detail as could be done for a project-level environmental impact assessment. SEA instead uses a system of *objectives* to rationalise information for the purposes of assessment. The environmental assessment is also focussed at the level of detail contained within the plan.

In order to streamline the assessment process, this report has used broad themes, based on the environmental topics listed in the SEA Directive, to group large environmental datasets, e.g. human health, air quality, land and soils etc. Assigned to each of these themes is at least one high-level Strategic Environmental Objective (SEO) that specifies a desired direction for change (e.g. reduce soil contamination) against which the future impacts of the NHWMP can be measured. These high-level SEOs are then paired with specific assessment criteria. The environmental assessment includes a combination of qualitative and quantitative assessment and expert judgement. It also considered the use of GIS to support the assessment including the use of sensitivity mapping; this illustrated that some sites are adjacent to or are already within specific environmentally sensitive areas. It is noted that the plan does not include specific spatial policies and this has influenced the nature of the assessment which can be undertaken.

3.3.2 SEA Environmental Report

This Environmental Report complies with the requirements of the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) as implemented in Ireland through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. No. 435/2004), as amended. Based on the legislation and guidance, the Environmental Report must include the information outlined in **Table 3-4**.

Table 3-4: Requirements of the SEA Directive and Relevant Section in Environmental Report

Requirement of SEA Directive (Article 5(1) Annex I)	Chapter of Environmental Report
An outline of the contents and main objectives of the plan or programme, or modification to a plan or programme, and relationship with other relevant plans or programmes.	**Chapter 2:** Content and Main Objectives of the Plan **Chapter 4:** Review of Relevant Plans and Programmes
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme, or modification to a plan or programme.	**Chapter 5:** Relevant Aspects of the Current State of the Environment (Baseline)
The environmental characteristics of areas likely to be significantly affected.	**Chapter 5:** Relevant Aspects of the Current State of the Environment (Baseline)
Any existing environmental problems which are relevant to the plan or programme, or modification to a plan or programme, including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive.	**Chapter 5:** Relevant Aspects of the Current State of the Environment (Baseline)
The environmental protection objectives, established at international, European Union or national level, which are relevant to the plan or programme, or modification to a plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation.	**Chapter 4:** Review of Relevant Plans and Programmes
The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.	**Chapter 8:** Assessment of Preferred Scenario
The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme, or modification to a plan or programme.	**Chapter 9:** Mitigation and Monitoring

Requirement of SEA Directive (Article 5(1) Annex I)	Chapter of Environmental Report
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information	**Chapter 7:** Consideration of Alternatives
A description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan or programme, or modification to a plan or programme	**Chapter 9:** Mitigation and Monitoring
A non-technical summary of the information provided under the above headings	**Non-technical Summary**

3.3.3 Links between the SEA and AA Process

The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) obliges member states to designate Special Areas of Conservation (SACs) to protect and conserve habitats and species of importance in a European Union context. Article 6 is one of the most important articles of the Habitats Directive in determining the relationship between conservation and site use. Article 6(3) requires that '*any plan or project not directly connected with or necessary to the conservation of a site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment (AA) of its implications for the site in view of the site's conservation objectives*.'

The Habitats Directive has been transposed into Irish law by the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). In the context of the draft NHWMP, the governing legislation is principally Regulation 27 of the Birds and Natural Habitats Regulations 2011 (as amended) which sets out the general duties of public authorities in relation to the nature directive and nature conservation. Public authorities are obliged, when exercising their functions, to take appropriate steps to avoid the deterioration of natural habitats and the habitats of species in European Sites, as well as disturbance of species for which a site has been designated insofar as this disturbance could be significant in relation to the objectives of the Habitats Directive.

An NIS has been prepared for the draft NHWMP, and an appropriate assessment is being carried out in parallel with the SEA process. An AA determination will be made by the EPA prior to the adoption of the Plan. Assessment and analyses in the NIS have been used to guide the development of the alternatives to be considered as part of the SEA. The NIS also feeds directly into the assessment of biodiversity, flora and fauna in this SEA.

Other aspects of the Habitats Directive, in addition to Art. 6(3) and 6(4), in relation to the conservation, protection and management of (European) sites are also noted including Art. 6(1) and Art 6(2). The EU considers the role of these supporting sub-articles in Art. 6 as: *Article 6(1) makes provision for the establishment of the necessary conservation measures, and is focused on positive and proactive interventions. Article 6(2) makes provision for avoidance of habitat deterioration and significant species disturbance. Its emphasis is therefore preventive.*[3]

Article 10 of the Habitats Directive refers to features of the landscape outside designated sites which are of major importance for wild flora and fauna. It is noted that the requirements of Article 10 of the Habitats Directive are not specifically considered under the AA (except in so far as they support a qualifying feature) but it is noted such features have been considered in the SEA under the broader heading of Biodiversity, Flora and Fauna.

Article 12 of the Habitats Directive refers to protection of species listed in Annex IV. This requires measures to establish a system of strict protection in their natural range. The requirements of Article 12 are not specifically considered under the AA (except in so far as they support a qualifying feature) but it is noted such features have been considered in the SEA under the broader heading of Biodiversity, Flora and Fauna.

[3] European Commission (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the Habitats Directive 92/43/EC.

In addition, there are objectives under other related directives, such as the Water Framework Directive, which are of relevance.

3.3.4 Data Gaps / Difficulties Encountered

The following difficulties and data gaps were encountered:

- Lack of geographic specificity for plan recommendations;
- The assessment is more qualitative as quantitative assessment is made difficult due to the very strategic level of the policy objectives proposed and lack of spatial dimension;
- The latest hazardous waste treatment capacity report is three years old (2018) and may not accurately reflect the current capacity; and
- Lack of data on the quantity of unmanaged/illegal waste being disposed of nationally, as well as other 'difficult waste' streams, e.g. unexploded ordnance.

3.4 SEA Statement

The main purpose of the SEA Statement is to provide information on the decision-making process and to document how environmental considerations, i.e. the views of consultees and the recommendations of the Environmental Report, have been taken into account in the NHWMP. The SEA Statement will illustrate how decisions were taken, making the process more transparent, including consideration of alternatives and will include the SEA monitoring programme. The SEA Statement for the final NHWMP will be compiled after the statutory consultation on the draft NHWMP and Environmental Report has been completed, and once the NHWMP has been finalised.

4 REVIEW OF RELEVANT PLANS AND PROGRAMMES

4.1 Introduction

As documented in the SEA Directive, the purpose of SEA is '*to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations in the preparation and adoption of plans and programmes with a view to promoting sustainable development*'. Therefore it is imperative that environmental considerations are documented and taken into account in the development of the NHWMP. In order to do this, the environmental protection objectives from relevant key plans, programmes and policy must be first identified and then explored in relation to the NHWMP. The emphasis in this section is on relevant plans and programmes relating to waste, air emissions, water quality, biodiversity, land use and climate. Plans and programmes from other key sectors and topics are also discussed.

The SEA Directive also states in Article 5(1) of Annex 1, that the environmental assessment must identify '*the environmental protection objectives, established at International, European Union or national level, which are relevant to the plan or programme, or modification to the plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation*'. Therefore the main objectives of the draft NHWMP must be outlined along with the '*relationship with other relevant plans or programmes*.'

This chapter follows on from the overview of the NHWMP provided in **Chapter 2**. The purpose of this chapter is to set out how the draft NHWMP interacts with other key relevant plans and programmes and their environmental protection objectives. A list of key relevant plans and programmes has been compiled in **Appendix A**. This chapter and appendix are not intended to represent a comprehensive list of all legislation or plans/ programmes/ policies, but rather a collation of the most relevant waste-related and key environmental references.

4.2 Methodology

During the SEA scoping stage key plans and programmes were identified and this chapter seeks to consider the objectives/measures within such plans/ programmes which will directly drive and influence or be influenced by the draft NHWMP during its development. As the draft NHWMP is a national strategic plan, this review has focused on relevant regional, national, European and international plans and frameworks. Such plans and programmes have been explored under specific topic headings addressing sectors such as: waste, spatial planning, climate change, air, water, and nature conservation. In order to set a framework for exploring the relationship between the draft NHWMP and key plans/ programmes the following two questions were borne in mind:

- Does the NHWMP contribute to the fulfilment of environmental protection objectives set in other key plans/programmes? and
- To what degree are the environmental protection objectives/ measures set in these other key plans/programmes impacted by the NHWMP?

In addition, this chapter seeks to take on board comments made on plans/programmes during the SEA scoping stage.

4.3 Key Existing Mechanisms of Relevance for Hazardous Waste

There are a number of mechanisms already in place of relevance to the management of hazardous waste, include the following:

- At international level, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is the key instrument for the regulation of transboundary waste movements;
- EU Waste Framework Directive (2008/98/EC), as amended, is the key legislative instrument driving waste management in all member states;
- Industrial Emissions Directive (2010/75/EU);

- Restriction of Hazardous Substances Directive (2002/95/EC)
- EU Landfill Directive (1999/31/EC); and
- The Waste Action Plan for a Circular Economy, which is Ireland's roadmap for waste planning and management published in 2020.

The NHWMP is a strategic national-level document which provides overall direction to policy and decision-makers involved in the prevention and management of hazardous waste. Recommendations arising from the plan aim to reduce the environmental impact of hazardous waste. The three regional waste authorities as well as local authorities are obliged to take these recommendations into account when reviewing their waste management plans. The three Regional Waste Management Plans (2015-2021) are currently being consolidated into one National Waste Management Plan.

The NHWMP will be administered wholly within the Republic of Ireland, therefore the planning hierarchy in Ireland must be considered when placing the plan in context. Within Ireland, the planning hierarchy is understood as set out in **Figure 4.1**.

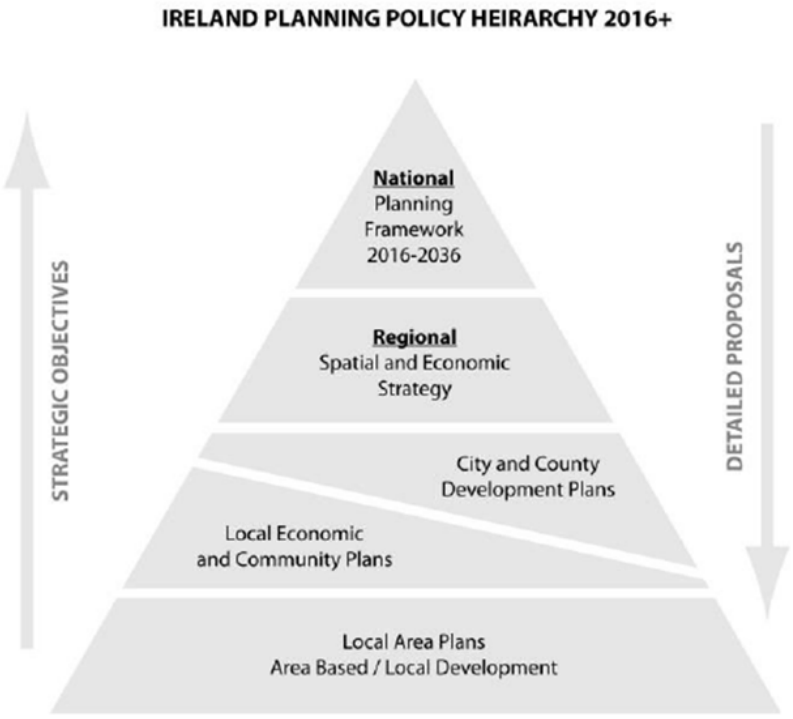


Figure 4.1: Ireland's Planning Hierarchy

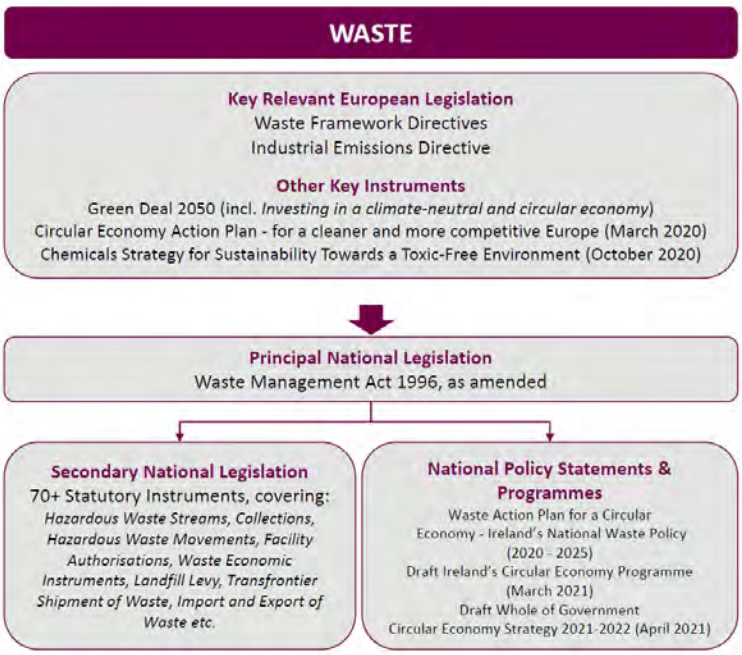


Figure 4.2: Key Waste Legislation and Other Documents

Due to the complexity of waste policy and regulation in Ireland a number of departments and agencies are involved in the process, including the Department of the Environment, Climate and Communications (DECC), the National Waste Prevention Committee, the Environmental Protection Agency (EPA) and local authorities.

Figure 4.2 summarises key waste legislation and documents.

4.3.1 Key International Instrument – Basel Convention

The **Basel Convention (1989)** regulates the transboundary movements of hazardous wastes and other wastes and obliges its parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. Its overarching objective is to protect human health and the environment against the adverse effects of hazardous wastes. The provisions of the convention centre around the following principal aims regarding hazardous waste: to reduce its generation and promote its environmentally-sound management; restrict transboundary movement unless in accordance with sound management; and the application of a regulatory system where transboundary movements are permissible.

4.3.2 Key European Instrument – Waste Framework Directive

Waste management at EU level is regulated by the **Waste Framework Directive (2008/98/EC)**. The Directive lays down measures to protect the environment and human health by preventing or reducing the adverse impacts due to the generation and management of waste. Waste management must be carried out without risk to water, air, soil, plants or animals; without causing a nuisance through noise or odours; and without adversely affecting the countryside or places of special interest.

This directive streamlined and consolidated previous EU waste legislation by replacing the three existing waste directives: the previous **Waste Framework Directive (75/442/EC)**, the **Hazardous Waste Directive (91/689/EC)** and the **Waste Oils Directive (75/439/EC)**.

Figure 4.3 outlines the waste hierarchy in order of priority for managing waste.

Figure 4.3: The Waste Hierarchy (Source: EPA)

The EU's first **Circular Economy Action Plan** was completed in 2019, with much progress made on its 54 actions. The new Circular Economy Action Plan was published in March 2020 and forms one of the pillars of the **European Green Deal** – the strategy to make the EU more sustainable by 2050. As part of this Action Plan, the Waste Framework Directive was amended in 2018 by **Amending Directive (EU) 2018/851**. The revised directive places responsibility on EU member states to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource. Some of the key issues addressed in the amending directive are as follows:

- Minimum operating requirements for extended producer-responsibility schemes including fee modulation. These can also include organisational responsibility and a responsibility to contribute to waste prevention and to the reusability and recyclability of products.
- Strengthened rules on waste prevention. For waste generation, member states must take measures to:
  - Support sustainable production and consumption models;
  - Encourage the design, manufacturing and use of products that are resource efficient, durable, reparable, reusable and capable of being upgraded;
  - Target products containing critical raw materials to prevent those materials becoming waste;
  - Encourage availability of spare parts, instruction manuals/ technical information, or other means enabling the repair and reuse of products without compromising their quality and safety;
  - Promote the reduction of the content of hazardous substances in materials and products; and
  - Stop the generation of marine litter.

- Highlights examples of incentives to apply the waste hierarchy, such as landfill and incineration charges and pay-as-you-throw schemes.

- Sets new municipal-waste-recycling targets. By 2025, at least 55% of municipal waste by weight must be recycled, with the target rising to 60% by 2030 and 65% by 2035.

- In relation to hazardous waste and biowaste:

  – By 1 January 2025, member states must establish separate collection of textiles and hazardous waste generated by households. By 31 December 2023, biowaste must be collected separately or recycled at source, e.g. composting.

  – Tasks the European Chemicals Agency (ECHA) with developing a database on articles containing substances of very high concern (SVHCs). New substances are regularly added to the Candidate List under the EC REACH Regulation (see **Section 4.3.3** below). From 5 January 2021, companies that produce, import or supply articles being placed on the EU market, and containing substances on this list, have to submit information on these articles to the Substances of Concern in Articles or in complex objects (Products) [the SCIP database].

4.3.3 Other Relevant European Instruments

A number of EU directives and regulations are of relevance to the draft NHWMP in terms of hazardous waste management and in the prevention of hazardous waste (namely by restricting substances and reducing pollution). The **Environmental Liabilities Directive (2004/35/EC)** implements the 'polluter pays principle'. The aim of the directive is to hold those whose activities have caused environmental damage financially liable for remedying this damage.

The **Landfill Directive (99/31/EC)** aims to prevent or reduce as far as possible negative effects on the environment from the landfill of waste. It introduced strict technical requirements for waste and landfills. It sets out the definition of different categories of waste (municipal, hazardous, non-hazardous and inert) and applies to all landfills. The **Extractive Industries Waste Directive (2006/21/EC)** on the management of waste from extractive industries aims to reduce and eliminate effect on the environmental and health arising from such activities, e.g. residual waste after treatment of tailings, waste solids/slurries, waste rock/overburden and topsoil.

The **Urban Waste Water Treatment Directive (91/271/EEC)** states that sludge arising from wastewater treatment shall be reused whenever appropriate. Where it is reused, the vast majority of sludge treatment standards and legislation relates to its reuse in agriculture. The main legislation in relation to the use of such sludge is the **Sewage Sludge Directive (86/278/EEC)** on the protection of the environment, and in particular of the soil.

Persistent Organic Pollutants (POPs) are defined in the **Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Stockholm Convention)**. POPs are highly stable but toxic in the environment, as they bioaccumulate. **EU Regulation No. 2019/1021** therefore aims to protect human health and the environment by eliminating or restricting the production and use of POPs in products. Waste containing POPs at certain concentrations must be managed so as to destroy or transform the POP content/characteristics of the waste. These management measures can however make the waste more difficult to recycle. Producers or holders of waste must also avoid the waste being contaminated with substances listed in Annex IV of the Regulation.

The **PCB/PCT [polychlorinated biphenyls and polychlorinated terphenyls] Directive (96/59/EC)** requires the disposal of these highly toxic substances, as well as decontamination or disposal of equipment containing PCBs. Their use has been heavily restricted in Europe since 1985.

The **Industrial Emissions Directive [IED] (2010/75/EU)** sets out the licensing procedures and criteria for certain industrial activities, aiming to reduce harmful emissions, in particular through the application of Best Available Techniques (BAT) in terms of environmental performance. BATs are being continually revised with BAT conclusions then being adopted by the EC as Implementing Decisions. IED licences also make specific provision for the prevention of waste and for its proper management. The IED revises and merges seven separate existing directives related to industrial emissions, including the Integrated Pollution Prevention and

Control (IPPC) Directive (2008/1/EC), Volatile Organic Compounds (VOCs) and Solvents Directive (99/13/EC), Waste Incineration Directive (2000/76/EC), Large Combustion Plants (LCPs) Directive (2001/80/EC) and Titanium Dioxide Directives (78/176/EEC, 82/883/EEC and 92/112/EEC).

The **Registration, Evaluation, Authorisation and Restriction (REACH) Regulation (EC) 1907/2006** is one of the most comprehensive legislative approaches to chemicals to date. It aims to protect human health and the environment while also aiming to enhance the chemicals market by supporting innovation, e.g. substitution of hazardous with less hazardous substances and/or technologies. Closely related to this is the **EU's Chemicals Strategy for Sustainability Towards a Toxic-Free Environment** published in October 2020. Global chemical use is projected to double by 2030, and while essential for life, chemicals can also have hazardous properties and can be toxic to human health and the environment. As such, the EU has prepared this strategy which also ties into the Green Deal and the Circular Economy Action Plan. It aims for zero pollution, including reducing hazardous waste streams, and to protect human and environmental health. It aims to streamline the coherence between waste, chemicals and products legislation, aiming to close gaps in how hazardous substances may be handled differently under different legislation.

The **Restriction on the Use of Certain Hazardous Substances (RoHS) Directive (2011/65/EU)** limits the concentrations of certain hazardous substances in electrical and electronic equipment (EEE), with some exemptions. It aims to protect the environment and human health, particularly workers in waste electrical and electronic equipment (WEEE) recycling facilities. The reduction in the use of the specified hazardous substances at source has positive impacts by allowing increased recycling of WEEE products.

The **Packaging Directive (94/62/EC)** places restrictions on the concentration of certain heavy metals (lead, cadmium, mercury and hexavalent chromium) in packaging. Requirements are also set out for manufacturing requirements so that noxious/ hazardous substances in packaging residues are minimised following treatment or landfilling. **Amending Directive (EU) 2018/852** aims to prevent packaging waste production in the first place to support the circular economy transition, including limiting the weight of packaging and designs that increase reusability/ recyclability, as well as reducing the content of hazardous substances. Related to this, the consolidated **Classification, Labelling and Packaging of Substances and Mixtures Regulation (EC) 1272/2008** uses a criteria and label classification system which has been agreed internationally. It not only facilitates trade but allows for a consistent labelling of substances and therefore coherent efforts to protect environmental and human health.

Directive (EU) 2018/849 amends the **end-of-life vehicles [ELV] Directive 2000/53/EC**, the **Batteries Directive (2006/66/EC)** on batteries and accumulators and waste batteries and accumulators, and the **Waste Electrical and Electronic Equipment [WEEE] Directive (2012/19/EU)**. These restrict the use of certain hazardous substances in these items. The ELV and Batteries Directives place various obligations on collection, treatment, reuse and recovery. The WEEE Directive imposes producer-responsibility obligations on management of electrical waste, of which some categories are classed as hazardous. The amending directive establishes monitoring and reporting requirements for member states on reuse and recovery goals for ELVs, batteries/accumulators and WEEE.

The **Pollutant Release and Transfer Register (PRTR) Regulation (EC) 166/2006**, as amended, sets out the requirements for a European PRTR which contains information on releases of 91 pollutants to the environment (air, water, land, and off-site transfers of pollutants present in waste and wastewater). These include GHGs, pesticides, heavy metals, and chlorinated organic substances.

The **Decorative Paints Directive (2004/42/EC)** limits the solvent content of several classes of paint product. A scheme using Inspection Contractors is in place to monitor vehicle refinishing activities, which includes disposal of wastes containing volatile organic compounds (VOCs). From July 2021, the monitoring and reporting requirements of the directive are to be repealed and replaced by **Regulation (EU) 2019/1020** with a market surveillance and compliance strategy to allow free movement of goods while keeping non-compliant/ unsafe products from being placed on the EU market. The **Use, Storage and Trade of Mercury Regulation (EU) 2017/852** sets out the requirements on the banning of exports, imports and use of certain mercury compounds and mixtures of mercury, as well as the safe storage of metallic mercury.

On transboundary movements of waste, the **Transfrontier Shipment of Waste Regulation (EC) 1013/2006** imposes controls on the import, export and transit of waste, including hazardous waste. The **Port Reception Facilities Directive (EU) 2019/883** imposes controls at EU ports receiving waste from ships in order to protect the marine environment, through improving the availability and use of port reception facilities.

The **Animal Remedies Directive (2001/82/EC)** regulates the authorisation, manufacturing, supervision, sale, distribution and use of medicinal veterinary products. It puts in place appropriate collection systems for unused or expired veterinary medicinal products. This directive will be repealed and replaced by **Regulation (EU) 2019/6** from January 2022. The **Animal By-Products Regulations (EC) 1069/2009** and **Regulation (EC) 142/2011** set out the disposal requirements of animal by-products. The **Sustainable Use of Pesticides Directive (2009/128/EC)** aims to ensure proper use of pesticides as well as promoting alternative and non-chemical approaches to pest management. **Biocidal Products Regulation [BPR] (EU) No 528/2012** aims to ensure a high level of protection for people and the environment from the risks posed by biocidal products, which are chemical or biological substances designed to destroy or render harmless a harmful organism e.g. disinfectants, preservatives etc. The directive is regularly updated as new products are manufactured and authorised. The **EU's Farm To Fork Strategy** is part of the Green Deal and commits to reducing the overall use and risk of all chemical pesticides by 50% by 2030.

4.3.4 National and Regional Legislation, Plans and Programmes

The EU Waste Framework Directive sets out the approach for the sustainable management of waste in the Member States. This has been transposed into Irish law by the **Waste Management Act 1996, as amended**, and the **Waste Directive Regulations 2011 (S.I. No. 126/2011), as amended**. This legislation requires the preparation of a national hazardous waste management plan and regional waste management plans for the state. The Waste Framework Directive was amended in 2018 by **Amending Directive (EU) 2018/851**, and transposed into Irish legislation under the **Waste Directive Regulations 2020 (S.I. No. 323/2020)**.

The preparation of **Regional Waste Management Plans (RWMP's)** are a requirement of the Waste Management Act, as amended. The three RWMPs for the Eastern-Midlands Regional, Southern Region and Connaught-Ulster Region were published in 2015 and cover the period to 2021. They provide a framework for the prevention and management of wastes for the three defined regional areas, including hazardous waste. The overarching policy objectives include promoting the prevention of hazardous waste, as well as improved separate collection of hazardous waste. These documents include policies and actions complementary to the NHWMP, in particular those addressing remediation of historic and illegal landfills and the promotion of reduction and reuse and recycling. One of the environmental actions of the RWMPs was to produce Siting Guidelines for Waste Facilities, as this would ensure that infrastructure was properly sited in the first instance while also taking account of environmental considerations. As part of the next review cycle of regional waste management planning, the three RWMPs will be consolidated into one national plan which is due for preparation starting in 2021, and will continue to be supported and implemented by the three Regional Waste Management Authorities. Some local authorities have published their own guidance, such as the ***Dublin Local Authority Siting Guidelines for Waste Facilities***.

In 2020, the Department of Environment, Climate and Communications (DECC) launched a new national waste policy, **A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025**. It builds on Ireland's previous national waste policy, *A Resource Opportunity – waste management policy in Ireland*. The new action plan puts the focus on waste management further up the waste hierarchy, shifting away from disposal and treatment of waste towards circular product design, including reducing hazardous materials. The plan has over 200 measures across various sectors including the circular economy transition, protection of consumers, green procurement, plastics and packaging, municipal waste etc. It will also examine the feasibility of introducing an Extended Producer Responsibility Scheme (EPR) for paints, medicines and farm hazardous waste.

More recently, in April 2021 the government published a **Draft Whole of Government Circular Economy Strategy 2021-2022**. This strategy acknowledges that climate action requires reducing consumption of natural resources which also has benefits for better sustainability and reduction of environmental pressures associated with extraction, manufacturing, and disposal of products and waste. Further, in March 2021, the EPA published the **draft Circular Economy Programme**. This programme will be the successor to the EPA's National Waste Prevention Programme (NWPP), and comes on foot of the Waste Action Plan for a Circular Economy calling for the NWPP to be to be established as a Circular Economy Programme. The EPA have therefore set out the new Circular Economy Programme which incorporates the NWPP. It will operate across four key pillars of: advocacy, insights and coordination; innovation and demonstration; delivering through partnerships; and regulatory framework for circularity.

The IED was transposed into Irish law by the **European Union (Industrial Emissions) Regulations 2013 (S.I. No. 138/2013), as amended**. This also introduced amendments to the **EPA Acts** and **Waste Management Acts**, and the **Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013 (S.I. No. 137/2013), as amended**, which introduced the new mechanism for licensing activities that come under the directive. Waste facilities applying to the EPA for an Industrial Emissions Licence are required to consider the principles of waste prevention specified in the Waste Management Act 1996, as amended.

In relation to transboundary shipment of waste, the **Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419/2007), as amended**, address the administrative provisions to implement the EU TFS Regulation. Similarly in Northern Ireland, following Brexit, Northern Ireland will continue to apply Regulation (EC) No 1013/2006 for the duration of the Northern Ireland Protocol. EU waste shipment controls will therefore continue to apply to shipments of waste between Northern Ireland and EU Member States.

The **National Waste Prevention Programme (NWPP)** is a government initiative which is led by the EPA. It supports national programmes and aims to encourage sustainability and circularity, and targets funding at programmes that support these aspects. Reports are published annually and the 2018 annual report identified the need for greater focus on the following areas of hazardous waste prevention as follows:

- Developing a network of collection and transfer facilities to suit user needs to capture small scale quantities of legacy wastes (e.g. asbestos arisings from DIY and small contracting jobs);
- Providing increased hazardous waste collection facilities and appropriate awareness raising for households and small businesses;
- Development of new producer responsibility obligations or initiatives for certain hazardous waste streams (e.g. take back schemes);
- Increasing Ireland's level of capacity for self-sufficiency for the treatment and management of hazardous waste;
- Carry out a study to evaluate and recommend an appropriate regulatory mechanism and relevant guidance for the management and disposal of spent sheep dip; and
- Greater development of waste stream and sector specific indicators.

The NWPP is also preparing Sectoral Sustainability Factsheets and Case Studies for businesses and enterprises including the construction sector and the food waste sector.

There are several other programmes, schemes and initiatives nationally that are also tackling hazardous waste issues, including:

- **Government of Ireland Initiative:** provides increased Enterprise Ireland support for smaller companies to invest in technology for clean processes, waste, and energy efficiency.
- **Green Healthcare Programme:** The National Health Sustainability Office works with Irish hospitals to reduce healthcare risk waste and increase recycling.
- **Green Enterprise Programme:** Through its national research activity, the EPA offers specific support via this programme to businesses who wish to pursue cleaner technology solutions.
- **Mywaste.ie:** An information portal and Ireland's official guide for householders on managing waste. It provides information and advice on managing waste in a responsible and efficient manner.
- **Producer Responsibility Initiatives:** Such initiatives are generally enforced by the EPA and include WEEE, waste batteries and accumulators and restriction of hazardous substances (RoHS).

- **Farm Hazardous Waste Collection Campaign:** A pilot scheme led by the EPA (2013-2017), the initiative aimed to investigate the feasibility, logistics and demand associated with the operation of a collection scheme for the hazardous wastes associated with farming.

- **Disposal of Unused Medicines Properly (DUMP) initiative:** Developed by the HSE, it encourages the public to return surplus or out-of-date medications to participating pharmacies, free of charge.

- **Rediscover Paint:** A new initiative that works for the prevention of paint waste, by collecting and redistributing non-hazardous paint to community groups.

- **Retail take back schemes:** These are limited at present and are largely related to waste electrical and electronic equipment (WEEE).

As part of the national policy hierarchy on waste management, the NHWMP should continue to ensure that lower waste management planning tiers have regard to its actions and recommendations.

4.4 Review of Relevant Plans, Programmes and Policies

4.4.1 Sustainability

The concept of a circular economy is one in which materials are used sustainably, resources are conserved, and waste is managed in such a way as to promote secondary raw materials and recycling while ensuring minimal environmental and human health impacts through the use of products and materials. In response to the challenges faced regarding the sustainable use of resources linking issues such as the extraction of raw materials, the production and use of products and how we handle waste, the EU signed up to a **Circular Economy Package** in December 2015. The package involved four adopted directives on waste, landfill waste, end of life for vehicles, and batteries and packaging waste. The policies and legislative proposals contained therein and in the new **EU Circular Economy Action Plan (2020)** are designed to aid the transition towards a circular economy and provide the legal framework to enable the circular economy.

Since 2015, Ireland has been a signatory to the **United Nations Sustainable Development Goals (SDGs)**, which frame national agendas and policies to 2030 (see **Figure 4.4**). These goals are mirrored through EU strategies such as Horizon Europe and the European Regional Development Fund (ERDF) which emphasise smart, sustainable, and inclusive growth. Sustainability is at the heart of long-term planning therefore it is important that the SDGs are integrated into the Irish planning hierarchy from the top tier down.

By 2050, three planet earths would be required to meet resource demands. Evolving a circular economy and reducing resource consumption underpin many of the Goals, and relate closely to the objectives of the draft Plan, particularly Goals 3, 9, 11 and 12.

Figure 4.4: United Nations Sustainable Development Goals [Source: United Nations]

The **EC's 7th Environment Action Programme (EAP) to 2020** states how hazardous waste will need to be managed so as to minimise significant adverse effects on human health and the environment. In October 2020, the EC published a proposal for the **EC's 8th EAP to 2030**, which would support and build on the environmental aspects of the Green Deal to 2050. It has six priority objectives:

- Restoring biodiversity and enhancing natural capital/ ecosystems;
- Achieve greenhouse gas reduction targets and for the EU to be climate neutral by 2050;
- Enhance adaptiveness and increase resiliency to the effects of climate change;
- To decouple economic growth from resource use and therefore degradation of the environment, while transitioning to a circular economy;
- Aiming for a zero-pollution environment and to protect the health and wellbeing of all Europeans; and
- To reduce pressures on the environment and the climate from consumption/production, namely industry, energy , buildings, infrastructure, mobility and food systems.

In 2014, the EPA published ***Green Procurement Guidance for the Public Sector***. This guidance helps inform public bodies by giving a practical overview across eight priority sectors of green procurement issues. It includes best practice and examples, along with the key environmental impacts to be considered in procurement and how the guidance criteria can address these.

The NHWMP should continue to contribute to the national effort of achieving the SDGs and the priorities of the EAPs in its efforts to prevent, reduce and eliminate hazardous waste.

4.4.2 Human Health and Wellbeing

Hazardous wastes pose a greater risk to the environment and human health than non-hazardous waste and thus require a stricter control regime. Ireland's hazardous waste is treated either on-site at the industrial facility where the waste was generated (under conditions of EPA licence), off-site at hazardous waste treatment facilities in Ireland or at facilities in other countries.

Healthy Ireland 2015-2025 is the HSE's framework strategy for improving health and wellbeing. The main aims of Healthy Ireland therefore are to: increase the numbers of people experiencing good health (mental and physical) at all life stages; reduce health inequalities with a focus on social factors; protect the public and increase preparedness for threats to public health; and to encourage every individual and society as a whole to collaboratively engage with its own health and wellbeing. While hazardous substances may, by their very nature, present risks to human health and/or the environment, some substances are afforded particular attention due to the high, or in some cases unknown, levels of risks they pose. There are numerous international and European directives and regulations in place controlling different aspects of hazardous waste (principally by restriction of substances); refer to **Section 4.3** which covers many of these of relevance to human health interactions.

Ireland's **Action Plan for Antimicrobial Resistance** highlights the importance of avoiding the placement of medical waste in household waste bins, and the need to improve collection of human and veterinary medicines. The NHWMP supports this as it includes an action to facilitate the separate collection of surplus and out-of-date medicines from the household waste stream.

The EU also has a directive regarding the control of major accident hazards, commonly known as the **Seveso III Directive (2012/18/EC)**. This was transposed into Irish law through the **Control of Major Accident Hazards Involving Dangerous Substances (COMAH) Regulations 2015 (S.I. No. 209/205)**. The aims are to prevent major accident hazards involving dangerous substances and chemicals and the limitation of their consequences for people and the environment. Local authorities implement the provisions of the directive in conjunction with the Health and Safety Authority (HSA). Seveso sites are defined as industrial sites which, because of the presence of sufficient quantities of dangerous or hazardous substances, must be regulated under this EU directive. If there are planning applications for development occurring within a certain distance of the perimeter of a Seveso site, the HSA provides appropriate advice to the planning authorities in respect of development within a distance of these sites. Seveso sites are categorised as Upper Tier or Lower Tier depending on the size of the site and the quantities of dangerous/hazardous material present.

4.4.3 Air Quality

The **Gothenburg Protocol 1999 (as amended)** is part of the **Convention on Long-Range Transboundary Air Pollution (CLRTAP)** and aims to control and reduce local and long-range air pollution. The protocol is enacted in **Regulation (EU) 2016/2284** on the reduction of national emissions of certain atmospheric pollutants, repealing the first **National Emissions Ceiling Directive [NECD] (2001/81/EC)** and replacing it with a **new NECD (2016/2284/EU)**. The new NECD specifies a reduction of national emissions of certain atmospheric pollutants and sets national reduction commitments from 2020 to 2029 and from 2030 onwards for five pollutants: sulphur oxides (SO_x), nitrogen oxides (NO_x), fine particulate matter ($PM_{2.5}$), non-methane VOCs (NMVOCs), and ammonia. These are responsible for long-range transboundary air pollution such as acidification, eutrophication and ground-level ozone pollution. These revisions came about from a comprehensive review of EU air quality policies which resulted in the **EU Clean Air Package**, adopted in December 2013. A directive, the **Medium Combustion Plant Directive [MCPD] (EU) 2015/2193** was also adopted in 2015 to reduce pollutants from combustion installations with a thermal capacity of 1-50 MW.

The **Ambient Air Quality and Cleaner Air for Europe [CAFE] Directive (2008/50/EC)** sets out the requirements for ambient air quality to protect human health and the environment as a whole; it replaced the Air Framework Directive and the First, Second and Third Daughter Directives. The **Fourth Daughter Directive (2004/107/EC)** will be included in CAFE at a later stage (covering polyaromatic hydrocarbons, arsenic, nickel, cadmium and mercury in ambient air). The CAFE Directive has been implemented in Ireland through the **Air Quality Standards Regulations 2011 (S.I. No. 180/2011), as amended**, and the Fourth Daughter Directive via **S.I. No. 58/2009, as amended**. These regulations set ambient air quality limits and target values for air pollutants. The World Health Organisation (WHO) also publish **Global Air Quality Guidelines** for PM, ozone, nitrogen dioxide (NO_2) and sulphur dioxide (SO_2), with the latest revision published in 2020. The WHO guidelines contain stricter air quality limits than the EU directives. The Stockholm Convention on POPs entered into force in Ireland in 2010, requiring that the state protect human health and the environment from POPs.

Air quality in Ireland is regulated both at the local level through ambient air quality limits and at the national level through emission ceilings. Ireland's reporting under the NECD is part of the **National Air Pollution Control Programme (NAPCP)**. In April 2017, Ireland published the draft **National Clean Air Strategy**. It

aims to '*provide the strategic policy framework necessary to identify and promote the integrated measures across government policy that are required to reduce air pollution and promote cleaner air while delivering on wider national objectives.'* Ireland also has a **National Ambient Air Quality Monitoring Programme 2017-2022**.

The current challenge to air quality from increased particulates is from the transport sector which is the biggest contributors (diesel and petrol burning in combustion engines). Both through the Clean Air Strategy and the **National Policy Framework on Alternative Fuels Infrastructure for Transport (Department of Transport, 2019)** have identified measures to move transportation away from fossil fuel sources. As a key mode for the transport of hazardous waste, air pollution from shipping is currently regulated by the **MARPOL Convention**, specifically Annex VI which limits the main air pollutants from ships, SO_x, NO_x, PM, and prohibition of the deliberate release of ozone-depleting substances. Incineration on ships and emissions of VOCs are also regulated. The objectives are for progressive reductions in air pollution from shipping. In 2020, new limits on the sulphur content in ship fuels aims to further significantly reduce SO_x emissions. In Ireland, the **Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419/2007), as amended**, address the administrative provisions to implement the EU TFS Regulation (EC) No 1013/2006.

The IED was transposed into Irish law under the **Industrial Emissions Regulations (S.I. No. 138/2013)** seeks '*the reduction and control of emissions to the atmosphere arising from industrial activities through established permit procedures.'* The directive is particularly focused on the application of 'best available techniques' (BAT) to industrial sources licensed by the EPA. Incineration of hazardous waste generates treatment residues which must be subsequently managed to protect human health and the environment, these include incinerator bottom ash (IBA), flue gases and air pollution control residues (APCR). Waste incineration and co-incineration plants that fall within the industrial emissions licensing regime are required to comply with the **Waste Incineration and Waste Co-incineration Plants Regulations 2013 (S.I. No. 148/2013)**.

In addition, waste incineration plants will also be required to comply with the provisions of the **BAT Conclusions for the Waste Incineration Sector**[4] which were published in November 2019 and which must be implemented within four years of publication. This requirement extends to any licenced facility engaged in waste incineration as well as plants that co-incinerate wastes and mandatory rules are set out on the management, abatement and emissions from such plants (including both emissions to atmosphere and all other environmental pathways).

Similarly, plants licenced under the IED for other waste treatment will be required to comply with the with the provisions of the ***BAT Conclusions for the Waste Treatment Sector***[5] which were published in August 2018. These requirements apply to all other licensed waste activities including such treatment techniques as biological treatment, physical treatment, solvent reclamation/regeneration, oil re-refining, etc. These requirements include for air quality as well as all other environmental media, such as discharges to water, ground, waste etc.

The draft NHWMP should therefore ensure the implementation of hazardous waste planning policy continues to support Ireland's commitments in relation to national and international air quality targets.

4.4.4 Noise

Regulation of noise comes under the remit of the **Environmental Noise Directive (2002/49/EC)**, with the requirement for member states to produce noise maps and compile noise action plans based on those maps. It was amended by **Directive (EU) 2015/996** establishing common noise assessment methods and replacing Annex II of the 2002 END. END is transposed in Ireland through the **Environmental Noise Regulations 2018 (S.I. No. 549/2018)**. Local authorities publish Noise Action Plans on a regular basis. Environmental noise is unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport (road, rail and air traffic), and from sites of industrial activity including the categories of activities

[4] Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration.

[5] Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council.

specified in Annex I to the IED. Nuisance noise is dealt with under the **Environmental Protection Agency Act 1992, as amended**.

Noise emissions can be generated during waste management and recycling activities. Material recovery facilities have processes which emit high noise levels. These noise emissions can be controlled by a range of mitigation measures including control of noise at the source. Noise emissions from waste management facilities are managed primarily through the licensing of facilities granted under IPC, Waste and IED authorisations. Depending on the type of waste management facility, there can be localised noise issues.

4.4.5 Climate

A key-interdependency for the NHWMP is how climate change will impact on or be impacted by waste management activities, as well as its contribution to circular economy principles on resource/energy use, which includes consideration of moving to climate neutrality. The United Nations Intergovernmental Panel on Climate Change (IPCC) states that there is now unequivocal evidence of climate change. There is marked evidence that Ireland's climate is changing with projections for Ireland indicating that there is a likelihood of a rise in sea levels, changes in rainfall events, increased frequency of storm events, changes to air and soil temperate and periods of increased drought. These events will directly impact on urban, terrestrial and aquatic systems and the lands' abilities to deal with the potential extreme weather events and other pressures.

At the **Conference of the Parties in Paris** (COP21), for which Ireland is a member, the **Paris Agreement (2015)** was produced. This agreement includes '*holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels*' as its overarching objective. As a member state Ireland will have to adhere to the goals and targets set by the EU in relation to climate and energy.

In 2011, the EC developed long-term goals through the *Roadmap for moving to a competitive low carbon economy in 2050*, which states the EU's target of reducing greenhouse gas emissions by 80-95% below 1990 levels by 2050. As such, European goals and targets to tackle climate and energy have been set in the form of the **EU Climate and Energy Packages**. Key areas of focus are the future increase in the development of renewables and the reduction in greenhouse gas (GHG) emissions released to the atmosphere. The **EU 20-20-20 Agreement** set the following three key targets: a 20% cut in EU GHG emissions on 1990 levels; 20% of EU energy from renewable energy sources; and a 20% improvement in energy efficiency. The **2030 EU Climate and Energy Package** continues on from the base set out in the 20-20-20 Agreement and sets new targets and measures to make the EU's economy and energy system more competitive, secure and sustainable. It includes targets for reducing GHG emissions and increasing use of renewable energy, and proposes a new governance system and performance indicators. This framework outlines three key targets for the year 2030 of at least: 40% cut in GHG emissions on 1990 levels; 27% share of renewable energy; and 27% improvement in energy efficiency. A review clause by 2023 allows for a potential upward revision of the EU level target. The agreement on the 2030 framework, specifically the EU domestic GHG reduction target of at least 40%, forms the basis of the EU's contribution to global climate change.

The **Ozone Depleting Substances Regulation (EC) No 1005/2009** prohibits and restricts the use of certain controlled substances that can deplete the ozone layer. These include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide and carbon tetrachloride. Similarly, the **Fluorinated Greenhouse Gas Regulation (EU) No 517/2014** regulates the containment, use, recovery and destruction of fluorinated greenhouse gases (f-gases), such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluorides (SF_6). As these f-gases have a very high global warming potential, the regulations control the phasing down of supply of bulk HFCs, and prohibit certain products and equipment.

At national level, Ireland has committed to meeting ambitious targets for reducing greenhouse gas emissions in the short (2020), medium (2030) and longer term (2050), and the State is at a critical juncture in relation to rolling out policies and actions to achieve these ambitions. The **National Policy Position on Climate Action and Low Carbon Development (2014)** sets a fundamental national objective to achieve the transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050. Ireland developed a suite of documents including the **National Mitigation Plan [NMP]** (2017, now quashed by the courts), **National Climate and Energy Plan (2021-2030)**, and **Climate Action Plan [CAP] (2019)**. An updated CAP is currently being developed for 2021, with the former NMP process being replaced by annual

updates to the CAP. These annual revisions will focus on the short and medium term perspectives; will be aligned with the government's carbon budget programme; and are to provide a roadmap of actions needed to comply with said budgets and sectoral emission ceilings. The **Climate Action and Low Carbon Development (Amendment) Bill 2021** aims to amend the **Climate Action and Low Carbon Development Act 2015** in order to strengthen the governance framework on climate action by the State.

These national strategic documents are being fulfilled by sectoral level strategies arising from the National Adaptation Framework (2018), such as the **Climate Adaptation Plan for the Transport Sector (2019)**, **Biodiversity (2019)**, **Electricity and Gas Sector (2019)**, among others. It is noted, there is currently no adaption plan for the waste sector. Related to these national plans is the drive to increase the use and uptake of electric vehicles (EV) in order to replace fossil-fuel powered vehicles. Currently, the rapid rate of growth in EV battery manufacturing could have implications for managing the recycling of this particular battery stream (e.g. infrastructure deficit for processing lithium ion batteries with complex cell configurations compared to traditional lead-acid batteries).

In addition to terrestrial sources, shipping is the key activity responsible for GHG emissions in the maritime environment. Under the **Kyoto Protocol (1999)**, shipping represents a complex global activity, emissions from which are not easily attributable to any one country. The International Maritime Organisation (IMO) however is pursuing emissions reductions from the shipping sector.

The NHWMP will support climate action by encouraging prevention, recycling and management of hazardous waste with a view to becoming resource-efficient and contributing to a low-carbon economy.

4.4.6 Biodiversity and Nature Conservation

Ireland is a party to the **UN Convention on Biological Diversity** and is therefore committed to measures to conserve biodiversity. The measures include conservation of ecosystems, habitats and species in their natural surroundings both inside and outside protected areas, conservation of the components of biological diversity outside their natural habitats and impact assessment.

The **EU Biodiversity Strategy to 2020** aimed to halt the loss of biodiversity and the degradation of ecosystems in the European Union (EU) by 2020. The new **Biodiversity Strategy to 2030** aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet. In the context of the post-COVID-19 pandemic, it aims to build resilience to future threats, including climate change, security of food supplies, forest fires, outbreaks of disease and combating the illegal trade in wildlife. It aims to increase the Natura 2000 network, and will launch an EU restoration plan by the end of 2021. To enable implementation, it also aims to allow better tracking of progress, improving knowledge transfer and emphasising 'respect for nature' in public and business decision-making.

The **Habitats Directive (92/43/EC)** and the **Birds Directive (2009/147/EC)** are transposed into Irish law principally through the **Birds and Natural Habitats Regulations 2011, as amended**, which consolidates the **Natural Habitats Regulations 1997 to 2005** and the **Birds and Natural Habitats (Control of Recreational Activities) Regulations 2010** which provide for high-level European protection. Article 6 of the Habitats Directive requires that any plan or project, (which includes the NHWMP) be screened for Appropriate Assessment to determine if it, alone or in combination with other plans and projects, is likely to have a significant effect on a European Site. This screening has been undertaken in parallel to development of the draft NHWMP and it was concluded that a Stage 2 Appropriate Assessment was required due to the potential for impacts arising from the NHWMP. Further detail can be found in the Natura Impact Statement (NIS) which accompanies this SEA Environmental Report and the draft NHWMP.

At a national level, protection and conservation is outlined in the **National Biodiversity Plan** and the **National Parks and Wildlife (NPWS) Conservation Plans for SACs and SPAs**. Ireland's third **National Biodiversity Action Plan 2017-2021** outlines Ireland's vision for biodiversity protection and management. The **National Peatlands Strategy** has been developed to give direction to Ireland's approach to peatland management including bog conservation and restoration, over the coming decades. In addition to this strategy, the NPWS have published the **National Raised Bog Special Areas of Conservation (SAC) Management Plan 2017-2022** outlines the approach to be taken specifically for the conservation and management of the 53 raised bog SAC sites.

The NHWMP should continue to contribute to the protection of biodiversity and the wider environment by continuing to tackle hazardous waste generation through policies that focus on reduction in waste generation and prevention in particular, the circular economy and the proper handling and management of hazardous waste.

4.4.7 Spatial Planning and Land Use

Project Ireland 2040 is the government's long-term strategy for sustainable development in Ireland to 2040. It is comprised of the **National Planning Framework (NPF)** and the **National Development Plan (NDP) 2018-2027**. The NPF sets out a high-level vision to shape the future growth and development of Ireland expressed as ten National Strategic Outcomes (NSOs), a shared set of goals and benefits that the plan can deliver if implemented according to the identified National Policy Objectives (NPOs). The NDP outlines the investment priorities which underpin the NPF, which includes for investment in waste management infrastructure. The NPF, together with the NDP, sets the context for each of Ireland's three regional assemblies to develop the three **Regional Spatial and Economic Strategies** for the Eastern & Midlands Region, Southern Region, and Northern & Western Region, taking account of and co-ordinating local authority City and County Development Plans in a manner that will ensure national, regional and local plans align.

A key interaction with the implementation of the NHWMP will therefore be with the NPF, which requires 40% of new housing development to be on brownfield/infill sites. While this encourages compact and consolidated development in existing built-up areas, there is potential for volumes of hazardous waste to increase as brownfield/ industrial sites are redeveloped and contaminated land, asbestos, chemicals or other wastes may be encountered, particularly in urban areas where there have been historic industrial uses or old dumping sites.

4.4.8 Agriculture

The agri-food sector is a growing sector within Ireland and **Food Wise 2025** outlines the key actions to ensure that this sector maximises its contribution to agricultural growth and exports. Achieving the objectives within Food Wise 2025 has the potential to apply increased pressure on the environment in localised areas through the intensification of farming. The successor strategy will be the **Agri-Food Strategy to 2030**, and a draft was published by DAFM for consultation in April 2021.

The common set of objectives, principles and rules through which the European Union co-ordinates support for European agriculture is outlined in the **Rural Development Programme (RDP) 2014-2020** under the **Common Agricultural Policy (CAP)**. The RDP contains a suite of measures and has been designed to enhance the competitiveness of the agri-food sector, achieve more sustainable management of natural resources and ensure a more balanced development of rural areas. The next programming period will cover 2021-2027 and will also emphasise sustainable use of resources as part of Ireland's new **CAP Strategic Plan 2023-2027**, which is currently being prepared by DAFM.

Where wastewater sludge is reused, the vast majority of sludge treatment standards and legislation relate to agricultural reuse. The Sewage Sludge Directive (86/278/EEC) was transposed into Irish law by the **Waste Management (Use of Sewage Sludge in Agriculture) Regulations (S.I. No 148/1988), as amended**. These prescribe standards for the use of wastewater sludge in agriculture, seeks to encourage the appropriate use of sludge in agriculture. Restrictions to its application are imposed where naturally-occurring background levels of heavy metals exceed the maximum levels set out in the regulations and sludge is not to be used except in accordance with a Nutrient Management Plan. All local authorities were required to prepare sludge management plans; however the majority of plans are now outdated and obsolete.

Ireland is obliged under the **Nitrates Directive (91/676/EEC)** to prepare a **National Nitrates Action Programme (NAP)** to protect water quality from pollution by agricultural sources and to promote good farming practice. The Fourth Nap is in place until 2021; the Fifth NAP is in preparation and will cover the period 2022-2025. The **Good Agricultural Practice for Protection of Waters Regulations 2006 (S.I. No. 378/2006), as amended**, give legal effect to the NAP and directly contribute to the protection of water quality and meeting the objectives of the WFD.

4.4.9 Water and Flooding

The **Water Framework Directive [WFD] (2000/60/EC)** is the key instrument for protecting and improving the aquatic environment and as such it applies to surface water bodies such as rivers, lakes, estuaries, coastal waters, as well as groundwater bodies. Member states are required to achieve at least good status in all waters and must ensure that status does not deteriorate, with a requirement for water quality management to be centred on river basin districts (RBDs). A key development in meeting the requirements of the WFD has been the publication of **River Basin Management Plans (RBMPs)** which have provided a coordinated approach to water management across Europe and in Ireland. The second cycle RBMP covers the period 2018-2021 and its Programme of Measures is being implemented by local authorities to allow for the protection of at least good status, or the restoration of good status, for all water bodies. The outcomes are then monitored in order to feed into further characterisation and setting of measures as the cycle moves forward. The third cycle RBMP is in preparation and will cover the period 2021-2027.

Similarly for marine waters, the **Marine Strategy Framework Directive [MSFD] (2008/56/EC)** has adopted an ecosystem-based approach to protect and manage the marine environment. This forms an integral component of maritime spatial planning within the EU and requires Member States to develop a strategy to achieve or maintain good environmental status (GES) in their marine waters by 2020. Ireland has developed an MSFD Programme of Measures that aims to meet the targets set in order to achieve or maintain GES. Under the **Maritime Spatial Planning Directive (2014/89/EU)** Ireland has taken a first step to producing a marine spatial plan for Irish maritime waters with the production of the **National Marine Planning Framework (DHLGH)**, published in 2021. It aims to support the achievement of GES by setting out a framework for the sustainable development of sectoral activities within Irish waters.

Floods are a natural and inevitable part of life that can pose a risk to human life and well-being, property and the environment, and this includes coastal areas, and related impacts from climate change, sea level rise and erosion. Flood risk can be minimised or avoided on land to a degree through careful selection of areas for development. The Office of Public Works (OPW) is responsible for the implementation of the **Floods Directive (2007/60/EC)** which is being carried out through the **Catchment-based Flood Risk Assessment and Management Studies (CFRAMS)**. The OPW undertook Preliminary Flood Risk Assessments to identify areas of existing or potentially significant future flood risk and to prepare flood hazard and risk maps for these areas. Following this, 29 **Flood Risk Management Plans** were developed for these areas setting objectives for managing the flood risk and setting out a prioritised set of measures to achieve the objectives. The protection measures from each of the plans form a national priority list which will inform the development of a programme of implementation for capital works. The work to date as part of CFRAMS has had a direct strategic influence on land use planning and siting of developments, ensuring that future infrastructure growth is positioned in the appropriate locations, taking flood risk into account.

The NHWMP should continue to contribute to the fulfilment of the environmental protection objectives required under the above directives by supporting hazardous waste prevention in the first instance and by supporting appropriate planning and development at lower planning tiers.

4.4.10 Landscape and Cultural Heritage

The **National Landscape Strategy for Ireland (2015-2025)** was produced in line with Ireland's obligations under the European Landscape Convention. The strategy aims to assist with future decision-making processes in Ireland, ensuring that decisions are made on the basis of factual evidence collected and that there is consistency in the decision making across the country.

Heritage sector is comprised of many different sub-sectors and interests. **Culture 2025** is a Framework Policy to 2025 which sets the vision for the future of culture and the arts in Ireland and prioritises actions. It recognises the diverse and multi-faceted nature of culture in Ireland and the contribution of 'culture' to sense of self, national identity and the arts. The Government has also commenced development on the successor to the National Heritage Plan (2002-2007), **Heritage Ireland 2030**. At the project level, specific archaeology/ architecture plans become more relevant.

Hazardous waste quantities and management activities resulting from economic growth and increasing population may place pressure on sites or features of heritage and scenic value. As such, a number of the actions outlined within these strategies may have an indirect influence on hazardous waste management activities e.g. the siting of any infrastructure.

5 RELEVANT ASPECTS OF THE CURRENT STATE OF THE ENVIRONMENT

5.1 Introduction

This section of the Environmental Report examines the relevant significant issues of the current state of the environment in relation to Biodiversity, Flora and Fauna, Population and Human Health, Water, Land and Soils, Air Quality, Climatic Factors, Material Assets, Cultural Heritage, Landscape, and the interrelationship between these factors. The baseline has been compiled using available datasets and indicators developed through scoping and this environmental assessment. It is noted that the draft NHWMP is national in its focus and this is mirrored in the level of detail presented for the baseline description which follows.

The baseline description is focused in the first instance on the Republic of Ireland, however given the boundary with Northern Ireland and neighbouring territories, there is potential for environmental impact on e.g. air and water quality in other jurisdictions. As such the description below includes reference, where relevant, to conditions outside the Republic of Ireland. The characteristics of areas likely to be significantly affected and existing environmental problems are summarised for each topic heading.

5.2 State of the Environment Overview – Republic of Ireland

Ireland's natural environment, although under increasing pressure, generally remains of good quality and represents one of the country's most essential national assets (EPA, 2012, 2016 and 2020). However it is acknowledged that problems and challenges still remain. In the 7th and most recent state of the environment review *Ireland's Environment – An Assessment 2020*[6], the EPA outlines a summary scorecard for the progress being made across key environmental policy areas as well as the general trend/outlook. The relevant topics are summarised below in **Table 5-1**.

Table 5-1: Summary assessment and future outlook for selected environmental policy areas and Relevance to the NHWMP

Policy Area	Summary Assessment & Outlook	Relationship to the NHWMP
Climate	**Assessment: Very poor / significant environmental and/or compliance challenges to address** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation**	The waste sector overall has a relatively small contribution to Ireland's GHG emissions (1.5% in 2019). Nevertheless, society-wider efforts are urgently needed to reduce GHG emissions. The draft Plan helps support this effort from the waste management sector with the overall aim of preventing and reducing hazardous waste generation in the first instance.
	Ireland has made good progress in deploying renewable energy sources and has an ambitious National Energy and Climate Plan, and Climate Action Plan. However Ireland continues to have a high level of greenhouse gas (GHG) emissions and remains above its EU emission limit, missing our target for 2020. Should all the actions in the Climate Action Plan be fully adopted and implemented, the targets for 2050 could be achieved. However significant challenges remain to reaching these goals.	
Air Quality & Emissions	**Assessment: Moderate / on track generally / local or occasional challenges** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation**	Emissions to air from hazardous waste management activities are managed primarily through the licensing of facilities granted under the Waste, Integrated Pollution Control (IPC) and Industrial Emissions Directive (IED) authorisations. The draft Plan supports the work of the EPA Office of Environmental Enforcement which oversees licences authorisations and specific
	Air quality in Ireland is generally very good and consistently meets its EU limit values. There was however an exceedance in 2019 of nitrogen dioxide at a monitoring station in Dublin, and Ireland at times does not meet the more stringent limit values set by the WHO (namely of fine particulate matter). In terms of transboundary emissions, Ireland is failing to meet EU targets on ammonia emissions under the National Emissions Ceiling	

[6] EPA (2020) Ireland's Environment – An Assessment. Available at: https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/state-of-environment-report-/#

Policy Area	Summary Assessment & Outlook	Relationship to the NHWMP
	(NEC) Directive, of which agriculture is the main source. Progress is mixed progress in terms of reducing emissions from other sectors such as transport and energy. Measures at a national level are required to tackle this and improve the outlook.	licence conditions, as well as site auditing activities.
Water	**Assessment: Poor / environmental and/or compliance challenges to address** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation** In general, trends in water quality are mixed; over the past 20 years, there has been a deterioration in the number of the highest quality water bodies, particularly rivers, and mixed progress in waters achieving the environmental objectives under the water Framework Directive (WFD). Good progress has been made in improving wastewater treatment however issues remain. Nutrient enrichment remains the main significant issue. The outlook is also mixed, and a balance needs to be sought between a growing population and certain sectors in particular, such as intensive agriculture.	Some groundwater bodies are not meeting their WFD objectives due to legacy industrial activities, including licensed waste facilities (e.g. landfills and sites with ground contamination). As for air quality, the draft Plan supports the work of the Office of Environmental Enforcement which oversees licences authorisations and specific licence conditions, as well as site auditing activities.
Nature	**Assessment: Very poor / significant environmental and/or compliance challenges to address** **Outlook: Largely not on track to meet policy objectives and targets**. The assessment and outlook are overall very poor. Biodiversity losses and habitat changes continue on an international scale. EU conservation status reporting indicates generally declining trends and unfavourable status for many habitats, with 85% having unfavourable status. Many species are faring better, but 15% are in decline at EU level, mostly freshwater species. Agricultural activities remain the key pressure. The outlook is very poor, with climate change adding to challenges and cumulative impacts.	The draft Plan supports the application of the EPA's Code of Practice on the remediation of legacy waste sites, including all applicable environmental considerations. A key aim of the NHWMP is reduction and prevention of hazardous waste, and managing it appropriately when it does arise, and at suitable locations to reduce environmental impacts.
Waste & Circular Economy	**Assessment: Poor / environmental and/or compliance challenges to address** **Outlook: Partially on track to achieving full compliance or measures in place or planned that will improve the situation** Ireland has made excellent progress in meeting its current EU targets. The generation of waste volumes however remains tied to economic activity which has been growing in recent years. Initiatives such as producer liability and waste prevention and recycling programs have also led to improvements and landfill needs have decreased while waste-to-energy capacity has increased. Challenges remain to shift from a linear economy to a circular one, with circular principles remaining low in Ireland.	A key aim of the draft Plan is reducing the generation of hazardous waste in the first instance, with the overall aim of prevention hazardous waste generation. It supports the use of non-toxic materials and promotes the transition to a circular economy through its waste management principles and awareness-raising from household to national level.

In addition, thirteen key State of the Environment (SOE) messages that require vision and full implementation to be successful are outlined by the EPA for Ireland in order to protect the environment, health, and wellbeing. These comprise:

- **SOE 1 – Environmental Policy Position:** The various links and dependencies between environmental policies and legislation could be reinforced, to lead to better overall environmental outcomes.
- **SOE 2 – Full Implementation:** There needs to be an improvement in tracking plans and policies, as well as compliance with several directives and legislation. Continued targeting of non-compliances by environmental enforcement bodies is needed, as is improving coordination across different bodies.
- **SOE 3 – Health & Wellbeing:** Recognition that protecting and maintaining a good quality environment is directly linked to health and wellbeing. Protecting the environment from pollutants is important, as is access to green and blue spaces.

- **SOE 4 – Climate:** The response to climate change needs to be accelerated - we urgently need to act to transform our energy systems in order to meet national, European and international decarbonisation goals, and to limit global temperature increases.

- **SOE 5 – Air Quality:** Adoption of the WHO's air quality guideline limits as part of Ireland's Clean Air Strategy. This strategy is needed to combat air pollution, as the WHO limits are more stringent than the values at European level. Integrating these measures along with noise mitigation and climate action are also key related measures.

- **SOE 6 – Nature:** Biodiversity networks and nature must be protected and safeguarded as a national priority. Habitat and biodiversity loss continue. It is considered that the next Biodiversity Action Plan should be more ambitious.

- **SOE 7 – Water Quality:** Water pollution needs to continue to be addressed both locally and at catchment level, particularly to address the key impact, which is primarily nutrients. Measures should continue to be implemented to achieve WFD protection objectives for all water bodies through evidence-based measures, projects and research.

- **SOE 8 – Marine:** The target should be to reduce anthropogenic pressures on the marine environment. Given Ireland's large marine area, one of the largest in continental Europe, robust governance and planning is needed to ensure its protection.

- **SOE 9 – Clean Energy:** Ireland needs to rapidly decarbonise and move away from fossil fuel combustion across heating, electricity and transport, to a suite of clean energy systems**.**

- **SOE 10 – Environmentally-sustainable Agriculture:** A more integrated and holistic approach to farming alongside catchment-level water management is needed which reduces its environmental footprint, and moves towards carbon neutral food production.

- **SOE 11 – Water Services:** Water and wastewater systems need to meet the needs of society while providing for a high-level of environmental protection in terms of abstractions and treatment of water/wastewater. National-level action is needed to address priority areas and shortcomings, as well as consideration given to climate impacts and the resiliency of infrastructure.

- **SOE 12 – Circular Economy:** The move to climate-neutral circular economy is urgently needed to preserve resources, reduce consumption, and reduce waste at all levels of society.

- **SOE 13 – Land Use:** Moving towards and integrated land use mapping approach is needed to support better decision making and promoting a better understanding of environmental issues and allowing for consideration of competing land use interests (e.g. preserving carbon sinks, tourism, land use planning etc.)

A summary of the relevant aspects of the current state of the environment in Ireland, as presented in the *Ireland's Environment – An Assessment 2020* (EPA, 2020) has been provided in **Table 5-2**. It should be noted this is intended to be general summary of the current environmental issues in Ireland across various sectors. It reflects the latest data referenced in that report i.e. up to 2020. As far as possible, more detail and up to date information is discussed throughout **Section 5.3**.

Table 5-2: Summary of the EPA Current State of the Environment 2020

Theme	Key Findings
Water Quality	Almost half of Ireland's surface water bodies (river, lake, transitional and coastal) are failing to meet their objectives under the WFD. For the water quality reporting period 2013-2018, just over half of Ireland's water bodies (53%) were at Good or High status ecological status. The remaining water bodies were at Moderate, Poor or Bad status. Most of Ireland's coastal water bodies are of Good ecological status or better (80%), followed by rivers (53%), lakes (50.5%) and estuaries (38%), which are the surface water bodies with the worst water quality. Only 16.5% (242 of 1,460) of At Risk water bodies achieved their WFD objectives. There continues to be a decline in the number of water bodies reaching or maintaining High ecological status, with only 20 sites reaching Q5 status compared to 500 30 years ago, and an increase in the number of the most polluted water bodies. A number of fish kills were also recorded; 40 in 2018 compared to a historic low of 14 in 2017; this is attributed to higher summer temperatures, low flow conditions and reduced ambient oxygen. This highlights that healthy water bodies are more resilient to the effects of climate change. In terms of chemical status in surface waters, while some ubiquitous priority substances (e.g. hydrocarbons) continue to be present in some water bodies, use of herbicides is widespread. Three-quarters of surface water bodies assessed for chemical status over the 2013-2018 period had Good chemical status. The majority of groundwaters (92%) have Good chemical status, and 99% have Good quantitative status i.e. rainfall replenishment of groundwater is generally able to sustainably support current abstraction volumes. The Cycle 2 RBMP flagged 6% of groundwater bodies as requiring further assessment for abstraction pressures. In 2019, the majority of bathing waters had good or excellent quality (97%) and five locations had poor bathing water quality. The key pressures on water bodies continues to be agriculture (nutrient run-off and sediment, point pressures such as farmyards), followed by hydromorphological issues (e.g. land drainage, channelisation), urban wastewater discharges and forestry, as well as other pressures. The key nutrients pressures are from phosphorus (the dominant nutrient of concern for surface waters) and nitrate (a particular problem in the south and south-east, as well as for groundwaters). Invasive or alien species remain a problem. The second cycle River Basin Management Plan (RBMP) and its Programme of Measures covers the period 2018-2021. The Third Cycle RBMP is underway and covers the period 2021-2027. The implementation and enforcement of the Nitrates Action Programme is the most important measure to address diffuse agricultural pollution of freshwaters. This includes a code of Good Agricultural Practice (GAP) which is mandatory for all farms. Other measures such as the Agricultural Sustainability Support and Advisory Programme, Agricultural Catchments Programme and the Blue Dot Programme. A suite of DAFM forestry policies and procedures, as well as the National Inspection Plan for domestic waste water systems, in addition to improvements to urban waste water discharges, are also key for tackling point and diffuse sources of pollution. ***Relevance to the NHWMP:*** *Summary overview of surface and groundwater quality; the key issue for hazardous waste management and the water environment is emissions from waste management/remediation activities to this receptor. See* ***Section 5.3.4*** *(Water) for further discussion.*
The Marine Environment	Ireland has one of the largest marine and MSFD assessment areas in Europe, at approx. 488,762 $km^{2.}$ There is also an overlap between the waters under the WFD and the MSFD for one nautical mile from the high water mark. The latest MSFD assessment found that Ireland's coastal and marine waters are generally clean and healthy, but pressures persist, including from increasing development in marine waters. Under the WFD, 80% of coastal and 38% of transitional water bodies have achieved or maintained at least Good ecological status. Nutrient loading (namely of phosphorus and nitrogen) from freshwater sources to the marine environment have increased since 2012. However assessment of Ireland's marine waters shows the absence of eutrophication and have reached GES for this indicator. Under the MSFD, 11 qualitative descriptors are required for establishing Good Environmental Status (GES). Five are compatible with GES (D2 Non-indigenous species; D5 Eutrophication; D7 Hydrographical conditions; D8 Contaminants; and D9 Contaminants in seafood), two are

Theme	Key Findings
	compatible for the elements assessed (D10 marine litter and D11 Energy, including underwater noise), three have some elements compatible with GES (D1 Biodiversity; D3 Commercial fish and shellfish; and D6 Sea-floor integrity) and one is unknown (D4 Food webs). Under MSFD Descriptors 8 and 9, Ireland's initial assessment indicates contaminant concentrations in shellfish and commercial fish are elevated above background levels but not enough for significant adverse effects. For biodiversity, some marine fish and bird species are either threatened/vulnerable, or in poor condition; six of 58 cartilaginous fish are critically endangered. For non-commercial fish, 11 species are achieving GES, 18 are not and 23 species have unknown status. Of seabird populations, 17 of 20 monitored species have increased populations, two are stable and one has decreased. Numbers of some winter/migratory species on coastal/estuary sites are showing continued and increasing population declines. There is a current lack of long-term monitoring data for a number of cetacean species, but recent data indicates higher population numbers for some species than previously thought. Bycatch remains a pressure but for several species this does not appear to be impacting significantly on their populations. Grey and harbour seals are considered to have achieved GES. For Marine Protected Areas (MPAs), only 2.1% of Ireland's assessment area is designated as an MPA (which includes existing SACs). Ireland's Habitats Directive Article 17 Report (NPWS, 2019) indicates only five of the 23 coastal/marine habitats have favourable status. The key pressures are nearshore eutrophication, loss of key species (e.g. seagrass and maërl), anthropogenic impacts and invasive species. The key drivers of pressures and impacts arise from anthropogenic sources such as litter, climate change, noise and pollution events. Ocean warming and acidification are driven mainly by climate change. These pressures can exacerbate other issues such as impacting native biodiversity, facilitating expansion or spread of invasive or opportunistic species. Increased flows in rivers could also facilitate increased nutrient transport to the marine environment, combined with climate change, are expected to increase the risk of algal blooms. Marine litter affects ocean life and pollutes beaches, the water column and the seafloor. Dredging and dumping at sea is required for maintaining ports and navigational channels and is a licensable activity in Irish waters. Underwater noise is also increasing globally and related primarily to human activities (e.g. for drilling, extraction, navigation and data imaging purposes). Marine life is often sensitive to noise impacts, particularly whales and dolphins. Seaweed harvesting is another human activity which may impact on coastal biodiversity, particularly where large-scale commercial activity takes place. Commercial fisheries and aquaculture also place pressure on the marine environment through overfishing/discards of target species and bycatch of non-target species, disruption/destruction of habitats and species from trawling and dredging. Discharges of waste from fish farms is another issue, as is introduction of non-native species or pharmaceuticals for parasite control/anti-fouling agents. Escaped farmed species for instance may impact on the genetic integrity of wild stocks, and there are also landscape/seascape impacts from aquaculture gear. Irish fish stocks have declined due to overfishing and disturbance. Key aspects such as the locations/use of some nursery habitat/feeding areas remains poorly understood; 34 stocks (18%) achieved GES, 44 (22%) did not, with the status of 99 stocks unknown. Disturbance and impacts to seafloor habitats (e.g. from bottom trawl fishing gear) are widespread in Ireland's continental shelf area (46% of the assessed area is highly disturbed), but not all of the maritime area has been assessed. The key responses to tackling these marine issues are the United Nations Sustainable Development Goals (SDGs, particularly Goal 14, Life Below Water). The EU also identified priority actions for Ireland, with particular regard to MSFD implementation. Spatial planning plays a key role, taking the form of the National Marine Planning Framework, the publication of Ireland's first marine spatial planning policy, as well as the Marine Planning and Development Management Bill. Monitoring and assessment under the MSFD is ongoing. The Common Fisheries Policy (CFP) is also a key tool for managing fish quotas. The National Strategic Plan for Aquaculture was published in 2015, and is currently being updated. Climate change mitigation and adaptation policy is also critical for helping ensure marine health. Continued marine research, mapping and characterising of Ireland's seabed and water column is critical. There are also plans to expand the MPA network in Ireland, a key objective in the National Biodiversity Action Plan 2017-2021. ***Relevance to the NHWMP:*** *Summary overview of the quality of the marine environment, as shipping is the key mode for the export of Ireland's hazardous waste. See* ***Sections 5.3.4*** *(Water) and* ***5.3.6*** *(Material Assets) for further discussion.*

Theme	Key Findings
Climate Change	Irish per capita greenhouse gas (GHG) emissions remain among the highest in Europe, with emission levels remaining coupled with economic activity. The overall trend for Ireland is mixed; emissions have increased overall by 10.1% on 1990 levels, but have been lower since the 2008 recession, with emissions declining 4.5% on 2018 levels. However Ireland will still likely exceed its 2020 target under the EU's effort Sharing Decision. Agriculture is the largest source accounting for 35.3% of total national emissions, with transport contributing 20.3%. Sectors such as energy are showing decreases in GHGs due to increased use of renewables and improving standards. In 2019 emissions from energy industries decreased by 11.2% on 2018, this decrease was driven by the replacement of fossil fuels with renewable energy. The GHG emissions from energy industries accounted for 15.8% of the total emissions nationally in 2019. Emissions from agriculture also decreased by 3.9% in 2019 driven by a reduction in fertiliser use; however this welcome reduction may prove challenging to sustain with the planned increase in national dairy herd numbers. At an international level, reductions of 45% on 2010 emission levels are needed to limit global temperature rise to 1.5°C by 2030, aiming for net zero emissions by 2050. The National Mitigation Plan (NMP) was the first step in addressing measures across various sectors to tackle climate change mitigation. Ireland's first statutory National Adaptation Framework (NAF) published in 2018 then set out the national strategy to reduce Ireland's vulnerability to the effects of climate change. The 2019 Climate Action Plan outlines how Ireland will reduce its total GHG emissions by up to 25% by 2030 compared to 2020 levels, with full implementation of the policies and measures. Further reductions are urgently needed across all sectors. Longer term horizons pose a serious challenge for Ireland based on current trajectories, as Ireland is not on track to meeting its National Policy Position of 80% reduction in CO_2 emissions by 2050. Behavioural changes across all levels of society will also be required; an EPA survey indicated 58% of adults believe climate change is one of the top three environmental concerns requiring action. Ireland's Climate Action Plan aims to reach climate neutrality by 2050, which is an ambitious goal. ***Relevance to the NHWMP:*** *Summary overview of climate change issues for Ireland. The waste sector overall is a relatively small contributor to Ireland's national emissions. However as waste (including hazardous waste) generation is closely linked to economic and employment activity, this sector has potential to contribute further emissions. As shipping and road transport are the key modes for moving and transporting hazardous waste this has implications for climatic considerations. See* ***Section 5.3.5*** *(Air and Climatic Factors) for further discussion.*
Air Quality	While air quality is of a good standard compared to other EU member states, monitoring shows that local levels of some pollutants, e.g. nitrogen dioxide (particularly in cities) are at concentrations that may impact on health. Trends of polycyclic aromatic hydrocarbons (PAH) levels in Ireland are a concern, with four breaches of EEA limits recorded in 2019, and two breaches of WHO limits on ground-level ozone. The latest figures from the EEA report, *Air Quality in Europe 2019*, indicates that there have been approx. 1,300 premature deaths in Ireland that could be linked to air pollution (compared to 1,200 estimated deaths in 2012). This indicates that air quality problems may be more widespread in Ireland than previously thought. Continued effort is being made to reduce air pollution through the phasing out of coal and peat burning for energy and space heating. Particulate matter also arises from the burning of any solid fuel, e.g. for the heating sector, including household sources such as wood fires and stoves. Incentives in recent years to change from petrol to diesel in the personal car fleet has had unforeseen and significant effects on air quality, increasing key pollutants in cities especially particulate matter (PM_{10} and $PM_{2.5}$). Measures such as increasing uptake of electric vehicles and heating upgrades will help tackle these issues. Air quality is also a transboundary issue; air pollution events continue to impact Ireland annually from sources such as ozone and particulate matter from continental Europe. In terms of the marine environment, the main source of air pollution is from shipping, namely of sulphur oxides, nitrogen oxides and particulate matter, as well as volatile organic carbons (VOCs). Given the transboundary nature of shipping and the difficultly of attributing emissions to individual countries, emissions from shipping is regulated under the international MARPOL Convention. From January 2020, new sulphur limits apply for ship fuels, which will lead to improvements in maritime air quality and for human health, for particularly settlements in proximity to ports. Ammonia emissions from agriculture is also a domestic as well as a transboundary issue

Theme	Key Findings
	(particularly for sensitive habitats where atmospheric deposition can cause impacts), and Ireland continues to exceed its EU limits for ammonia emissions. Given the strong economic drivers for growth in the agricultural and food production sectors, urgent action is needed. The adoption of the National Clean Air Strategy for Ireland (2019) that integrates the WHO emission standards is needed. Ireland may need to adopt these stricter WHO guidelines, namely for particulate matter and ozone (particularly in the summer months), as compliance with the EU limit values is still not considered enough to protect health. In this regard, Dublin has become the first Irish city to sign up to the WHO *Breathe Life* campaign which requires a commitment to meet WHO guideline values by 2030, which are stricter than those currently set at EU level. Monitoring of air quality in Ireland has however been expanded under the Air quality National Ambient Air Quality Monitoring Programme. The Dublin local authorities will also implement an Air Quality Action Plan for Dublin. Continued citizen engagement on air quality issues is also key for raising awareness, such as the GLOBE Programme, as well as continued research in air quality issues. ***Relevance to the NHWMP:*** *Summary overview of air quality; the key issue for hazardous waste management and air are emissions from waste management activities to this receptor, as well as transport emissions from movements/exports of hazardous waste. See* ***Section 5.3.5*** *(Air and Climatic Factors) for further discussion.*
Environmental Noise	Environmental noise arises from human activities and is considered unwanted or a nuisance. Exposure to environmental noise long-term can have adverse effects on human health as a source of annoyance and for disturbing sleep, as well as affecting overall mental wellbeing. Environmental noise can also disturb species. The main sources of environmental noise are from roads, railways, airports and industrial activities. Terrestrial sources of noise are regulated under the Environmental Noise Directive [END] (2002/49/EC). Noise mapping is required where the aforementioned sources reach certain thresholds for transport movements and for certain population sizes for agglomerations/major cities (in Ireland, Dublin, Cork and Limerick fall within the threshold). Noise Action Plans must also be prepared by local authorities where the thresholds are reached. The number of noise complaints has been increasing in Irelands; the majority are made to local authorities and a smaller number made to the EPA. These relate to entertainment sources, noise in neighbourhoods, transport sources and industrial/commercial sources. Of the complaints made to the EPA about EPA-licensed facilities, about a third relate to noise issues. Airports are increasingly significant sources of noise as airline passenger numbers increase. Dublin Airport experiences the most passenger numbers and also has the greatest proportion of noise complaints (1,453 in 2018; DAA). Cork and Shannon Airports have also seen passenger numbers increase annually but with relatively few noise complaints for Cork Airport and none for Shannon Airport over the past three years. The National Planning Framework's National Policy Objective 65 will be a significant driver of noise policy in Ireland, which seeks the proactive management of noise. National noise planning guidelines for local authorities is flagged as a need by the EPA. ***Relevance to the NHWMP:*** *Summary overview of environmental noise. The key issue for hazardous waste management and noise are emissions from waste management activities to this receptor (also air), however this is not considered to be a major issue as the level of complaints made to the EPA related to waste activities is low. Road networks are one of the major sources of noise; as within-state movements of hazardous waste are mainly via road transport this represents is a pathway for contribution to noise emissions. See* ***Section 5.3.5*** *(Air and Climatic Factors) for further discussion.*
Land and Soil	Soil is a finite resource and are critically important to preserve through careful spatial planning and land use management. Clean and healthy soils underpin many biological processes, are ecologically critical, act as carbon sinks, and provide clean air, food and water. Teagasc have indicated that 57% of soil samples had a pH at or above 6.3, considered optimal for agriculture which reduces the need for liming and fertilisers. The six overarching pressures that cause serious deterioration in land and soil are: soil sealing, erosion, organic matter decline, compaction, salination and landslides. There is no single national-scale baseline dataset of land use or land cover for Ireland. The CORINE dataset is the nearest proxy, but currently has resolution issues (the smallest unit of mapping is 25ha), however more detailed sectoral mapping is available for agriculture and forestry.

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	The resolution is planned to be improved to 0.1 ha during 2021. According to the latest CORINE dataset (2018), artificial and built surfaces nationally account for approximately 2.46% of Ireland's land cover. The actual figure is likely to be higher given that built surfaces less than 25ha in area (including one-off housing), sections of the road/rail network, and smaller quarrying sites are not captured at this resolution. Artificial areas with sealed soil surfaces have increased by 65% since 1990. More detailed data is available on licence from the OSi via the PRIME2 spatial reference framework, as well as sectoral-specific data for agriculture (DAFM's Land Parcel Identification System) and forestry (Forest Service and Coillte data on forest assets). There is no European legislation which focuses on soil, leading to continuous degradation of the land and soils across Europe. A recent Global Assessment Report on Biodiversity and Ecosystem Services identified some alarming figures. Approximately 75% of the land surface has been significantly altered across the globe, as well as more than 85% of our wetland areas lost, due to anthropogenic pressures, which in turn has impacted and caused a rapid decline in ecosystems and biodiversity globally. The EU Seventh Environment Action Programme (EAP) committed Member States to increase efforts to reduce soil erosion, increase soil organic matter and remediate contaminated sites by 2020. The Eight EAP is in preparation and will look to 2030. Apart from the National Planning Framework (NPF) targets, Ireland has no specific legislation or policies to protect soils. There is however legislation in place for key habitats and ecosystems associated with peat soils and site-specific regulations linked to industrial and waste facilities. ***Relevance to the NHWMP:*** *Summary overview of land and soil quality in Ireland. The key issue for hazardous waste management and land/soil considerations are emissions from waste management/remediation activities to this receptor. There are hundreds of legacy waste and historical dumping sites across Ireland, a number of which are known to contain or could contain hazardous waste materials or leachate. Once excavated, contaminated soil must be treated to non-hazardous status or exported abroad for treatment. See* ***Sections 5.3.3*** *(Land and Soils) and* ***5.3.6*** *(Material Assets) for further discussion.*
Nature	The 2018 report, Sustainable Development in the European Union, warned of the worrying decline in nature globally, with species extinction rates accelerating. The UN stating that biodiversity is in crisis. In Ireland, the majority of the most ecologically important habitats are reported to be of inadequate or bad conservation status. The NPWS National Biodiversity Action Plan 2017-2021 and Ireland's Article 17 reports (NPWS, 2019) states that 85% of Ireland's EU protected habitats are at unfavourable status, with 46% showing ongoing declines. Agricultural practices account for 70% of the negative impacts on habitats. Most species are considered to be stable however a number of key species are declining. Aquatic species and bees are reported to be most at risk. Pressures from changes to land use, intensification of agriculture, pollution and climate change, as well as the impacts of a growing economy, are likely to bring additional pressures on a number of species and habitats in Ireland. Based on the poor conservation status of many important habitats and some species, considerable efforts and resources will be required to improve their status, both within and outside protected areas. It's likely that pressures due to climate change, agricultural system changes and invasive species will remain the same or increase unless immediate action is applied. A plan for developing a 10-year strategy for the agriculture and food sector may help address and improve some of the negative effects that both biodiversity and ecosystems have been impacted by agriculture. ***Relevance to the NHWMP:*** *Summary overview of nature and the general key environmental issues and trends. The key issue for hazardous waste management and nature are emissions from waste management remediation activities to this receptor. See* ***Section 5.3.2*** *(Biodiversity, Flora and Fauna) for further discussion.*
Waste	Ireland generates an estimated 13 million tonnes of waste annually. A key metric is domestic material consumption (DMC) which relates to materials consumed and thus efficiency of resource use, which is tied to environmental impacts. Ireland's DMC is comparatively very high at 24.35 tonnes per person, compared to the EU average of 13.14 tonnes. This corresponds with consumption trends and household waste

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	generation levels reported by the CSO, showing an general upwards trend since 2012. And while Ireland is currently meeting its legislative waste targets, the move to a circular economy is therefore the primary goal in terms of waste management and increasing resource efficiency. The three Regional Waste Management Plans were published in 2015 and will be reviewed in 2021, and will be replaced by a single plan, the National waste Management Plan. Ireland continues to move from a position of almost total reliance on landfill, to a high level of recovery, with a focus on prevention, reuse and recycling. The waste sector is almost wholly privatised which has led to considerable investment in technologies but which comes with its own challenges. While Ireland has met landfill reduction targets, municipal waste landfills as well as our waste-to-energy facilities are currently operating at capacity. More value is now being derived from waste as fuel rather than disposal, with the number of landfills reducing from 18 in 2012 to six, however much of Ireland's residual and hazardous waste and recyclable materials continues to be exported which has implications for infrastructural capacity and market security. Ireland currently has no dedicated commercial hazardous waste landfill or hazardous waste incinerator in Ireland, nor capacity to treat radioactive wastes. Food waste remains a significant issue; over 60% of households dispose of organic waste in the black or green bins; this is compounded with only 43% of households having a brown bin in the first place. 30% of commercial black bins consist of organic material that could have been separated. Under new legislation, separation of so-called biowaste will be mandatory from 2030. Litter and fly-tipping continue to remain significant problems, namely from passing pedestrians and motorists. This amounted to 70,000 tonnes in 2018. The National Litter Pollution Monitoring System reports on this issue; the proportion of areas that could be considered unpolluted was 20.5% in 2018. The EPA is also conducting a study to examine the issue of waste crimes and the costs/impacts of illegal dumping. Marine litter, both on the coast and out to sea, remains a serious issue. It can be comprised of macro items (such as discarded fishing gear and single-use plastics) down to microplastics. Historic landfills continue to be remediated, albeit at significant cost. There are 611 historic landfills currently registered. To date, approx. €106 million has been granted to local authorities for remediation activities on 121 landfill sites; of these 22 sites have works completed. Multiple agencies operate in the area of waste enforcement. The EPA's Office of Environmental Enforcement (OEE) enforces EPA waste sector licences and monitors environmental protection activities of local authorities. The OEE also coordinates the activities of the Network for Ireland's Environmental Compliance and Enforcement (NIECE). A National Waste Action Plan for a Circular Economy (published in 2020) replaces the previous national policy. Waste management is also included in the Climate Action Plan 2019, with 10 associated actions which will be key drivers for continued progress. Waste legislation is being amended in 2020/2021, to bring in challenging new targets and obligations on producers (e.g. in plastic packaging and WEEE); this change is driven by the EU's Circular Economy Action Plan 2015 (with a new EU Circular Economy Action Plan published in 2020 as part of the Green New Deal). The National Waste Prevention Programme is a key strategic way of addressing waste management issues and supporting the transition to a circular economy. The EPA's Green Procurement Guidance for the Public Sector are currently under review; green procurement offers a way to drive sustainable resource use and reduce waste though public sector leadership and spending. Levies, such as the Landfill Levy, also drive changes, with the amount of landfill waste disposal decreasing with the implementation of the levy fees. The EU Waste Framework Directive also provides for by-product and end-of-life classifications, which helps keep these streams within the economy as they are considered resources rather than wastes. International drivers such as the UN Sustainable Development Goals also support circular economy actions. ***Relevance to the NHWMP:*** *Summary overview of waste management and key environmental issues for this sector in Ireland. Of direct relevance to the NHWMP.* ***Section 5.3*** *covers the cross-cutting issues for hazardous waste across environmental topics, and* ***Section 5.3.6*** *(Material Assets) in particular contains specific more detailed discussion on hazardous waste facilities and management.*
Environment and Industry	The quality of Ireland's environment has been under increasing pressure over the last decade as a result of economic changes, population growth and urbanisation, and changing consumer patterns. The main challenge for Ireland is to grow the economy in a sustainable way, with a focus being an economy that is circular, resource-efficient and striving for carbon-neutrality. Industrial activities are a key consideration and

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	play an important role in economic development, but also need to continue incorporating sustainability principles, as well as the application of best available techniques (BAT) which impose strict licensing conditions. The Industrial Emissions Directive [IED] (2010/75/EU) is the principle driver for the control and mitigation of industrial impacts to the environment and human health. Across Europe, the IED covers 65 activities, and ensures industry operators obtain a license from the EPA before they can carry out any industrial action. The four largest sectors in Ireland are pharmaceuticals, food, electronic equipment and chemicals. Research is showing that regulation of industries through directives like the IED contribute to the protection of the environment and human health. Industrial emissions to water can cause impacts; the EPA identified that 30 industrial and 4 waste facilities were a significant pressure on water bodies. There are 27 EPA-licensed facilities on the provisional list of waste and industrial sites that are significant groundwater pressures. In terms of emissions to air from industrial facilities, the main sources are the energy and mineral sectors (cement). Carbon dioxide emissions was the most common GHG type, making up 99% of the reportable pollutant GHGs under the Pollutant Release and Transfer Register. Regulation of large combustion plants has led to significant reductions in emissions of heavy metals to the air; new licence conditions across Europe will also apply more stringent conditions. New limits will also apply to certain pig and poultry facilities from 2021 with regard to ammonia emissions. Industrial sources contribute to the highest proportion of hazardous waste generation in Ireland (mostly from chemicals, cement and lime industries). In recent years the chemical sector is switching to cleaner production pathways leading to a reducing in hazardous waste generated in this sector. The overall volume of hazardous waste generated from industrial facilities increased over the 2007-2017 period. BAT conclusions related to waste can sometime be qualitative rather than setting out quantitative targets; however they can lead to incorporation of circular economy principles into industrial operations. ***Relevance to the NHWMP:*** *Summary overview of industrial activities and key issues for various sector in Ireland. Of direct relevance to the NHWMP.* ***Section 5.3*** *covers the cross-cutting issues for hazardous waste across environmental topics, and* ***Section 5.3.6*** *(Material Assets) in particular contains specific more detailed discussion on hazardous waste facilities and management.*
Environment and Transport	The transport sector in Ireland is currently very dependent on fossil fuels, making up about 20% of GHG emissions. While emission levels dropped during the economic downturn, emissions currently remain about 15% below peak 2007 levels, also reflective of greater efficiencies, alternative fuel uptake and reductions in fuel tourism. The EEA has highlighted that use of alternative fuels, electrification of the fleet as well as major modal shifts are required to help meet decarbonisation targets. Modal shifts as well as increased fuel efficiency are critical to enable the transport sector to become faster, more convenient, and more sustainable. To achieve this, measures such as better, integrated spatial planning (such as through the National Planning Framework [NPF] and Regional Spatial & Economic Strategies[RSES]), capital investment as well as fiscal measures are required. Emissions from transport decreased slightly in 2019, due to an increase in the uptake of biofuels. However the sector overall represents the second-highest contributor to national GHG emissions. Emissions from the sector need to be eliminated by 2050, however Ireland's trends are not reflective of meeting this goal. Achieving energy and carbon efficiency in this sector is acknowledged but other measures, such as avoid in the first instance and shifting to more sustainable modes, are also required. Decarbonisation of the electricity-generation sector is also needed. The main policies and initiatives are included in the Climate Action Plan, the National Energy and Climate Plan, the Biofuels Obligation Scheme, the Greater Dublin Area Transport Strategy as well as the Dublin Area Cycle Network, the NPF, RSES's and the National Development Plan. ***Relevance to the NHWMP:*** *Summary overview of transport and the key environmental issues. The key issue for hazardous waste management and transport are transport emissions from movements/exports of hazardous waste, both within the state and via shipping (transboundary emissions). See* ***Sections 5.3.5*** *(Air and Climatic Factors) and* ***5.3.6*** *(Material Assets) for further discussion.*
Environment and Energy	Use of fossil fuels in Ireland remains very high, providing 89% of the country's energy requirement. The shift towards renewable sources of energy will be critical in the coming decades. To achieve this, there is a requirement for large-scale investments infrastructure and technology, as well as distribution and storage systems. Further, a significant number of private and business buildings will need to be retrofitted to bring

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	them to higher energy efficiency standards. This step this will be critical for achieving Ireland's target of a 20% reduction in energy costs from energy efficiency by 2020. More actions are needed to achieve Ireland's 2030 targets. The National Energy and Climate Plan 2021-2030 (NECP) outlines the need for an urgent transition to carbon neutrality. It outlines the policy goals to facilitate a low-carbon energy transition, and the provision of secure and competitive supplies. The main objectives of this plan for decarbonisation include: to reduce GHG emissions and by 30% by 2030; 34% share of renewable energy sources by 2030; 32.4% energy efficiency by 2030; increase energy security and the robustness of the internal energy market (development of interconnection to achieve 70% renewable electricity by 2030); and to support research, innovation and competitiveness. As energy generation is the biggest contributor internationally to GHG emissions, Ireland needs to realise its renewable energy potential. In this regard, the Climate Action Plan has a longer-term target of 70% renewable electricity by 2050. Achieving climate neutrality by 2050 brings enormous challenges, requiring urgent behavioural changes and rapid large-scale solutions to be deployed as well as tackling barriers to change (e.g. financial, technological). Engagement with the public and stakeholders is necessary to help mobilise these changes. ***Relevance to the NHWMP:*** *Summary overview of the energy sector and the key environmental issues. Of indirect relevance to hazardous waste management, as certain hazardous wastes can be used as fuels and co-fired within e.g. cement kilns, as well as being treated within incinerators. See* ***Section 5.3.6*** *(Material Assets) for further discussion.*
Environment and Agriculture	Agriculture is the largest user of land in the country, with about 67% of total land cover. Food Wise 2025 is the main agricultural strategy developed to increase productivity, export and employment. The main challenges will be to increase primary production in a way that is sustainable and does not adversely impact the environment. Currently, the agriculture sector in Ireland accounts for highest proportion of national GHG emissions, at about 35% (mainly from methane and nitrous oxide). While emissions from agriculture dropped slightly in 2019, there remain challenges to achieving 2020 and 2030 national emissions reduction targets e.g. given plans to increase national dairy herd numbers. Other transboundary emissions such as ammonia from fertiliser use, are also above Ireland's National Ceiling Directive limit. Under the Kyoto Protocol reporting, Ireland's grasslands are currently a net source of carbon emissions, when they should be acting as a sink. This issue will become more pressing in terms of understanding the source and scale of carbon sources and sinks, as the EU now requires reporting on emissions and removals from land use, land cover and forestry. Hedgerows for instance are sinks, as are undisturbed peaty soil and bogs. Protection of the environment and biodiversity areas in general becomes critical. Diffuse loss of nutrients from agriculture to water remains a major environmental pressure. Current actions to address these issues are covered by the Common Agricultural Policy, the Nitrates Action Programme, Origin Green, the River Basin Management Plans, Climate Action Plan, as well as the Industrial Emissions Directive. A strong research and evidence base, as well as sharing of information and knowledge, will be critical to keep all stakeholders informed, so that protection of the environment and agricultural productivity can be balanced. ***Relevance to the NHWMP:*** *Summary overview of agriculture in Ireland and the key environmental issues. A key issue for hazardous waste management relates to waste streams arising from agricultural activities i.e. farm hazardous wastes, veterinary medicines, and potential effects on human, livestock and wildlife health and safety. See* ***Sections 5.3.1*** *(Population and Human Health) and* ***5.3.3*** *(Land and Soils) for further discussion.*
Environment, Health and Wellbeing	Environmental sources of harm include the built environment, the natural environment and consumption patterns. It is therefore recognised that health and wellbeing are tied to a good quality environment. The overall quality of the Irish environment is generally good, but health impacts associated with air pollution in Ireland, particularly from traffic in cities and burning of smoky solid fuels, are still issues that require further measures. Exposure to noise, odours and radon in homes also impact health. The availability, safety and attractiveness of high-quality green spaces (parks, woods, countryside) and blue spaces (ponds, river banks, lakeshores and seashores) helps to foster activity on the road to better health. The EU's Drinking Water Regulations set quality standards for water at the tap, however there are still some problems which need to be tackled such as long-term boil notices and addressing key priorities such as lead, disinfection, pesticides etc. The quality of Ireland's bathing waters

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	has remained high, with the vast majority meeting required EU standards. Work still remains on addressing urban wastewater discharge quality in some areas, and eliminating discharges of raw sewage. Sewage sludge, which may be repurposed for land-spreading, needs to consider issues such as chemicals and levels of heavy metals. Damage to health associated with environmental pollution in Ireland is much less than that caused by lifestyle factors such as poor diet, lack of exercise and tobacco use. Emerging risks include impacts from climate change, microbial resistance, chemical substances of concern, as well as seafood safety and emerging issues such as micro- and nano-plastics in drinking water and marine food webs (including seafood). The ongoing protection of Ireland's high-quality environment is vital. The 'One Health' approach is increasingly becoming more mainstream, as society recognises that good health and wellbeing relies on a good quality and healthy natural environment and ecosystems. ***Relevance to the NHWMP:*** *Summary overview of the interactions between health, wellbeing and environmental quality and health. Of direct relevance to the NHWMP.* ***Section 5.3*** *covers the cross-cutting issues for hazardous waste across environmental topics;* ***Section 5.3.1*** *(Population and Human Health) in particular contains specific more detailed discussion on key health and safety aspects of hazardous waste management. Contaminants and hazardous substances in the water (****Section 5.3.4*** *Water) and soil (****Section 5.3.3*** *Land and Soils) environments in particular are also key considerations.*
Environmental Performance, Policy & Implementation	Ireland has made improvements some areas of environmental concern. However, the sheer scale and speed at which these improvements are being made are insufficient in terms of meeting EU and national objectives in the long-term e.g. water and air quality protection of nature as well as an ambitious goal to be climate neutral by 2050. International goals such as the UN Sustainable development Goals are another avenue for driving sustainable changes, but their implementation and integration at different planning levels is variable. In recognition of an increasingly interconnected world, the EEA has also outlined a series of global mega-trends which should be considered in terms of their impacts on Europe's environment and the implications for sustainable development and resource use e.g. population/ economic growth, competition for resources, environmental pollution, and climate change. Environmental policy implementation to date in Ireland has been difficult for many reasons including population growth, production/consumption demands and climate change. This is leading to a net decline in the overall state of Ireland's environment. To reverse this, strict enforcement of legislation and policies is required from local to national levels. The EC's Environmental Implementation Review 2019 for Ireland sets out priority actions that can address these challenges. ***Relevance to the NHWMP:*** *Summary overview of the key environmental policy measures and also the current issues with implementation and joined-up thinking. Of direct relevance to the NHWMP and the key plan, policy and programmes of relevance and which may have interactions with the NHWMP are discussed in detail in* ***Chapter 4*** *(Review of Relevant Plans and Programmes).*

5.3 Environmental Characteristics

The following baseline information is prefaced for each environmental discipline by clarification on the nature and extent of effects considered for that discipline in relation to the draft Plan. The baseline information is then summarised in relation to the identified scope.

5.3.1 Population and Human Health

Population and human health are broad topic areas within the assessment framework which encompass consideration of the presence of people, their activities, their use of the receiving environment and their wellbeing. Population distribution and growth forecasts are important indicators of both pressure on infrastructure and resources, and potential exposure to pollution and risk. In terms of health and wellbeing, these can be affected by a number of direct and indirect environmental pathways, typically through emissions to air and water. These emissions are generally considered in the context of reference to international and national standards of safety in doses, exposure and risk.[7]

The EPA Report, *Ireland's Environment – An Assessment* (2020) notes that waste generation is linked with economic activity and consumption of resources. Population growth rates are therefore a strong driver of waste generation. Increased economic activity, particularly in certain sectors such as chemicals, are also tied to generation of waste streams, including hazardous. Given the strategic nature of the draft Plan, the focus of the baseline for population and human health is predominantly at the national level.

5.3.1.1 Population Trends

The current population of Ireland is 4,977,400 as of April 2020 (compared to 4,757,976 in 2016).[8] The population of Ireland has generally been rising since the 1960s as a result of declines in emigration, an increase in birth rate and declining death rates.

In terms of the urban/rural divide, most of the population growth experienced between 2011 and 2016 was in urban areas (80%). The population density of Ireland increased to 70 people per km^2 in 2016 (compared to 67 people/km^2 in 2011, and 62/km^2 in 2006). Urban areas are more densely populated, averaging 2,008 people/km^2 compared to rural areas which average 27 people/km^2. Population density is highest in the Greater Dublin Area.

The CSO states in their report *Population and Labour Force Projections 2017-2051* (CSO, June 2018), that the total population is predicted to grow to between 4.74 and 5.6 million over the period 2017-2051. The CSO predicts the average annual population growth rate during this period (taking account of fertility and migration) to be between 0.69 and 0.8%, compared to the 1.6% growth rate observed during the 2006-2011 inter-census period, and 0.7% between 2011 and 2016.

Current social trends in Ireland also demonstrate an increase in the number of private households, comparing 1,029,084 households in 1991 to 1,195,467 in 2016. Over the same period the average household size decreased from 3.3 persons per household to 2.75, mainly driven by the growing number of one person households and falling family size. As of 2016, there were a total of 442,669 one-off houses; this represents 26% of all occupied dwellings. Of the homes constructed since 2011, 40% of these were one-off houses.[9]

The most common hazardous waste streams generated by households comprise materials such as cleaning chemicals, paints and varnishes, household and garden pesticides, WEEE (waste electrical and electronic equipment), waste related to healthcare, waste oils, as well as construction and demolition waste (such as asbestos). An EPA report on the *Household Waste Characterisation Campaign* found that over a ten year period, household hazardous waste increased from 0.9% in 2008 to 1.2% in 2018, an overall increase of

[7] EPA (May 2017) Revised Guidelines on the information to be contained in Environmental Impact Assessment Reports.

[8] CSO Population and Migration Estimates April 2020. Available at: https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2020/#:~:text=The%20combined%20effect%20of%20positive,4.98%20million%20in%20April%202020.

[9] CSO Census of Population 2016 - Profile 1 Housing in Ireland. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-cp1hii/cp1hii/od/

0.3%.[10] The most common streams were aerosols, paints, medicines and drugs. The WEEE waste stream also increased from 0.3% to 0.9% over the same period. During the implementation of the previous NHWMP, a number of one-day household hazardous waste collections were also carried out by the three Regional Waste Authorities. The amount of household hazardous waste collected across 11 sites during the 2018 collection campaign amounted to almost 170,000 kg. The main waste stream was paint (130,398 kg), however much of this comprised water-based paints which are non-hazardous. The next most common waste stream was oil containers (12,424 kg), followed by waste oil (8,053 kg).

Section 5.3.6 on Material Assets contains further discussion on household hazardous waste streams.

5.3.1.2 Economic Growth and Consumption Trends

Ireland generates an estimated 13 million tonnes of waste annually. The amount of waste received at landfills for instance increased between 2013 and 2016, decreased in 2017, then started increasing again in 2018 and 2019.[11] A key metric is domestic material consumption (DMC) which relates to materials consumed and thus efficiency of resource use, which is tied to environmental impacts. Ireland's DMC is very high at 24.35 tonnes per person, compared to the EU average of 13.14 tonnes. This corresponds with consumption trends and household waste generation levels reported by the CSO, showing an general upwards trend since 2012.

Of this national figure, Ireland generated 580,977 tonnes of hazardous waste in 2019, an increase of approximately 54,000 tonnes compared to the 2018 volume. In general, the amount generated is related to various factors, but primarily coupled to economic growth. Industry represents the largest generator of hazardous waste in Ireland (80%).

5.3.1.3 Human Health

General Health

The CSO publication *Ireland's Health Survey* (2019) is part of an EU-wide survey looking at general health indicators based on reporting from people aged 15 years and older. Health in Ireland is generally very good; 82% of people surveyed reported no limitations in their daily activities from a health condition, and 85% overall reported their health as being *good* or *very good*. There is also a clear socio-economic divide however, with 92% of *very affluent* people reporting *good* or *very good* health status compared to 78% of *very disadvantaged* people. Employed people are also more likely to report better physical and mental health.

Emissions from Waste Management Activities

It is noted that regulated facilities require licenses and permits, which contain emission limits to these media. These emission limits are based on the most current EU/ WHO guidelines and limits which have been developed to protect human health however it is recognised that exceedances do occur as evidenced from EPA Annual Environmental Reporting for licensed facilities.

In the case of historic unregulated waste disposal sites which may harbour hazardous waste (particularly in urban areas/brownfield sites) and of unregulated activities such as backyard burning / illegal dumping the risk to human health relates to the nature and quantities of the waste disposed and its proximity to sensitive receptors, e.g. a water supply, residential developments, etc. The EPA has developed a Code of Practice for unregulated waste sites including a method to score the risk and prioritise remediation where appropriate. Emissions associated with backyard burning include particulates ($PM_{2.5}$ and PM_{10}) and dioxins etc. But unlike a modern thermal treatment facility, these emissions cannot be captured in any way and are not monitored. Licensed facilities and legacy issues are discussed further under material assets; see **Section 5.3.6**.

Household use of chemicals (e.g. biocides) can also lead to pollution through their use and disposal, which can cause pollution via their emissions to surface and groundwaters as well as soils, contributing to general environmental degradation and indirect impacts on health. Households are also sources of hazardous waste

[10] EPA (2018) Final Report on the Household Waste Characterisation Campaign. Available at: https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/household-waste-characterisation-campaign-2017-2018---final-report.php

[11] EPA National waste Statistics. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/

such as asbestos, a material historically used for insulation, in decorative plaster and in some spray coatings before it was phased out as the carcinogenic fibres are easily inhaled. As a waste stream it may be generated during refurbishment works and during removal of known asbestos. Other key sources of asbestos waste can arise from industrial, farm, institutional and other commercial buildings. Currently two EPA facilities are licensed to accept asbestos waste.[12]

Emissions to Air (including Noise and Odours)

Clean air is important to a population's general health. Ireland has in general good air quality and as such the population receives a health benefit from having access to clean fresh air. A potential risk to human health is from waste generated emissions. The emissions to air arising from hazardous waste management can include those arising from landfill, thermal treatment, illegal burning, inappropriate disposal and also exhaust emissions from the transportation of waste associated with heavy goods vehicles. While not causing a direct impact to health, malodours associated with waste and some types of facilities (e.g. landfill) can reduce quality of life and the enjoyment of one's surroundings if odours are particularly strong or persistent. Modern technologies however have led to much better control over such emissions. The latest report from the EEA on the data submitted by Member States under the National Emissions Ceiling (NEC) Directive indicates that air pollution is the greatest environmental health risk in Europe. See **Section 5.3.5** for more information detailing the types of hazardous waste-related activities which can affect air quality, including transboundary emissions and pollutants.

Emissions to Water

Clean water is important to a population's general health. Ireland has in general good drinking water quality and consequently the health of the population benefits from having it. There are many potential contaminant sources that pose a risk to Ireland's clean water supply. The main potential risks to human health from water-based contaminants include biological sources (verotoxigenic *E. coli* [VTEC], *Cryptosporidium* etc.) and chemical sources (fertilisers, pesticides [MCPA], herbicides, trihalomethanes [THMs], heavy metals and pharmaceuticals etc.).

Emissions to water arising from hazardous waste management can include leachate and suspended solids from regulated facilities and unregulated disposal sites, cooling waters from treatment facilities, litter and exhaust emissions from the transportation of waste associated with heavy goods vehicles, etc. These types of pollution can impact on the ecological status of water bodies. This in turn can impact negatively on human health where commercial fisheries and fish stocks become contaminated by harmful chemicals or microorganisms as a result of waste runoff or poorly managed discharge. Leachate and runoff from unregulated disposal of hazardous waste in particular can also impact on drinking water sources (both surface and groundwater) possibly leading to interruption/loss of the supply and costs associated with remediating not only the site but also the water supply.

Dumping at sea and litter which finds its way to the coast/ocean are other avenues of marine pollution from waste. While there is no specific dataset which quantifies littering, waste prevention campaigns such as the National Waste Prevention Programme can help reduce educate and reduce waste levels. See **Section 5.3.4** for more detail on water quality.

Emissions to Soil

Ireland relies heavily on good quality soils for the agricultural sector. Contamination of this resource has significant economic and social impacts as it relates directly to the food chain. Plants growing near contaminated soils may leach harmful chemicals leading to contamination of the plant material and livestock which eat this material, or which drink water from contaminated water supplies in the vicinity. Key sources of hazardous waste in soil may arise from emissions from licensed facilities as well as legacy waste disposal sites, some of which can harbour hazardous materials. Redevelopment of brownfield or old industrial areas may also yield contaminated land or buried materials. Hazardous waste is also generated from the agricultural sector. See **Section 5.3.3** for more detail on the current status of soils and land use in Ireland.

Pharmaceuticals and Medicines

[12] EPA: https://www.epa.ie/publications/licensing--permitting/industrial/ied/guidance-note-on-landfilling-of-asbestos.php

With an ever increasing population and increasing reliance on pharmaceuticals, they have become a major pollutant of concern for the aquatic environment. Pharmaceuticals enter the environment through excretion from the human body, topical medicines washing away or the deliberate and inappropriate disposal by flushing or washing them away. Some of the most common pharmaceuticals found in freshwater environments include antibiotics, painkillers and synthetic hormones. As such, Ireland's Surface Water (Amendment) Regulations (S.I. No. 77/2019) incorporates the EU 'watch list of substances for Union-wide monitoring as set out in Article 8b of Directive 2008/105/EC' comprising certain antibiotics, hormonal birth control substances as well as neonicotinoids (a class of insecticide). Initiatives such as the Disposal of Unused Medicines Properly (DUMP) developed by the Health Service Executive (HSE) in 2002 can encourage the proper disposal of unused/expired pharmaceuticals. One of these initiatives operating for six weeks across 250 participating pharmacies yielded over 4,000 kg of unused and expired medicines.

Healthcare risk waste is an emerging priority area for hazardous waste management, and was the 11th largest contributor to hazardous waste generation in 2019 (12,091 tonnes). Given the Covid-19 pandemic in 2020, it is expected that the public health response will result in higher quantities of this type of waste being reported for 2020/2021. For instance, during the earlier part of the pandemic healthcare risk waste produced by the HSE increased by 24%. However, research previously carried out by the HSE found that only 66% of healthcare risk waste is actually hazardous. Increased awareness and better segregation can therefore help reduce the volumes being classed and treated as hazardous.

Veterinary medicines can also be an issue, particularly when stored for long periods on farms for instance and where packaging may become corroded, or products become expired. This poses risks for both environmental and human health and safety if not handled and disposed of correctly; refer also to **Section 5.3.3.2**.

There is also an increasing trend in antimicrobial resistance due to the over-use and over-prescription of antibiotics. In addition there is a significant environmental input from agriculture where there is extensive and prolonged use of antibiotics for treatment of infection in animals but also as a preventative measure in large herds. These can travel directly to surface or groundwater through animal excreta. Ireland's Action Plan for Antimicrobial Resistance highlights the importance of proper disposal of medicines to avoid contaminating the municipal waste stream.

Radioactivity

Exposure to radioactive sources can be hazardous to both human and environmental health. Exposure to increased levels of natural sources of radioactivity include radon, an elemental radioactive gas which forms naturally in the environment. In Ireland, radon is formed in rocks which contain concentrations of elements such as uranium, usually granites and some types of shales. Because it is a gas, as it is released from bedrock it can become trapped in buildings through cracks in the foundations, walls or gaps around pipework and cables, and can be easily inhaled. Radon therefore represents a major health hazard and is the main source of risk from radiation in Ireland. Maps showing areas of high radon are provided by EPA, which are available at: https://www.epa.ie/radiation/radonmap/.

Manmade sources of radioactive waste in Ireland generally comprise legacy sources from decades-old industrial uses which had no return or disposal route in Ireland, prior to the introduction of take-back agreements with manufacturers as part of current EPA authorisations. Since 2010, Ireland has undertaken a significant legacy source reduction programme, bringing the number of disused sources down from thousands in the early part of the decade to 25 at present. Under the IED and the transposing Irish Regulations (S.I. No. 137/2013, as amended, and No. 138/2013), waste-to-energy facilities must have portal monitoring systems to detect the presence of radioactive materials. Monitoring data to date indicates that the majority of such detections result from short-lived isotopes from medical sources which can safely decay while being stored. However some long-lived isotopes have also been detected which are under close monitoring by the EPA to detect whether volumes are increasing. Regulation 77 of the Radiological Protection Act 1991 (Ionising Radiation) Regulations 2019 (S.I. 30/2019) makes provisions for the recovery and disposal of orphan sources.

5.3.1.4 Existing Environmental Pressures/ Problems: Population and Human Health

While Ireland is currently meeting its legislative waste targets, the move to a circular economy is therefore the primary goal in terms of waste management and increasing resource efficiency. Ireland continues to have high consumption patterns which in turn leads to increased generation of waste, particularly in the

absence of circular economy principles. In general however, hazardous waste represents 2% and 1% of the volume of waste generated from household and commercial residual bins, respectively. Data from the household hazardous waste collection campaigns in 2018 indicates that, as a proportion of overall hazardous waste volumes, contributions from household sources are relatively small. While the overall volume collected in 2018 amounted to almost 170 kilotonnes, much of this was classed as non-hazardous. However, as all of this waste is managed as if it were hazardous, which is a costly management approach.

The issue of unused/expired medicines is becoming more significant, as an estimated 29,000 kg of waste medicine is arising in Ireland every year, and highlights the need for producer responsibility initiative(s) (PRI) to address this growing waste stream.

Radioactive sources also pose a challenge as Ireland does not have a national storage facility to assist in the management and storage of radioactive waste and disused sources. Regulation 77 of the Radiological Protection Act 1991 (S.I. 30 of 2019) makes provisions for the recovery and disposal of so-called orphan sources.

At a national level, the estimated volume of hazardous waste generated in Ireland in 2019 was 580,977 tonnes. The main issues for population and human health therefore relate to the disposal and treatment of hazardous waste streams and the potential emissions to key environmental receptors. The key issues associated with the draft Plan and population/ human health therefore relate to:

- Legacy spatial planning issues such as one-off housing and the urban/ rural divide continue to represent challenges for collection of household wastes, as well as access to services which can handle household hazardous wastes appropriately, e.g. civic amenity sites, mobile waste collections;
- Lack of appropriate infrastructure to collect certain waste streams that may have direct and indirect impacts on human health, e.g. unused or expired medicines, farm hazardous waste, orphan sources of radioactive isotopes;
- Continued population and economic growth leading to increased resource consumption in the absence of circular economy principles, leading to potential increases in the volume of household and commercial hazardous waste streams, and the requirements to recover, recycle and treat same;
- Inappropriate disposal or handling of household-generated hazardous waste streams, e.g. by disposal in the residual household waste bin;
- Emissions to air, water and soil, and generation of noise/odour, from licensed management facilities as well as remediation activities of historic/legacy waste disposal sites (authorised and unauthorised) which has the potential to impact on human health. This is also relevant from a transboundary context; and
- Cumulative effects on environmental receptors and human health from hazardous waste management/remediation activities, with other sources of pollutants in the environment, e.g. watch list of substances for Union-wide monitoring in water and wastewater (e.g. hormones, antibiotic), heavy metals being added to soils from land-spreading.

5.3.2 Biodiversity, Flora and Fauna

Biodiversity is the variety and variability of plants (flora) and animals (fauna) in an area and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity is important in its own right and has value in terms of quality of life and amenity. The natural environment is also critical in delivering ecosystem services such as providing clean air and water, food and raw materials and cultural benefits.

Ireland has obligations under EU law to protect and conserve biodiversity. This relates to habitats and species both within and outside designated sites. Nationally, Ireland has produced its third Biodiversity Action Plan (BAP) covering the period 2017-2021, to address issues and halt the loss of biodiversity, in line with international commitments. The overall target for Ireland's BAP is that biodiversity loss and degradation are reduced by 2016 and progress is made towards substantial recovery by 2020. This follows on from the European Commission EU Biodiversity Strategy to 2020 and more recently the 8th Environmental Action

Programme to 2030, to protect and restore biodiversity, pursuing zero pollution to air water and soil, and reducing climate pressures. Two of the key targets of relevance for the draft Plan in Ireland's BAP are:

- *Target 4.2. Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2020; and*

- *Target 5.1. Progress made towards good ecological and environmental status of marine waters over the lifetime of this Plan.*

The preparation of the draft NHWMP has had regard to the EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, as amended (commonly referred to as the Habitats Directive), and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (commonly referred to as the Birds Directive). These are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 (S.I. No. 477 of 2011, S.I. No. 499 of 2013 and S.I. No. 355 of 2015), as amended, and requires that any plan or project not directly connected with or necessary to the management of a European Site but likely to have a significant effect on such a site must undergo an appropriate assessment in view of best scientific knowledge and in view of the conservation objectives of the site.

The draft NHWMP falls under the remit of these regulations, and an Appropriate Assessment is being undertaken pursuant to these regulations, and the NIS is available under separate cover. The draft Plan must have regard for these commitments and associated legal obligations.

5.3.2.1 Designated Sites

Ireland has designated sites and species of conservation value and/ or concern in an effort to protect its biodiversity resource. **Table 5-3** outlines the various types of designation at a national level and are illustrated on **Figure 5.1**.

Table 5-3: Nature Designations in Ireland

Designation Type	Description	Number
UNESCO Biosphere Reserve	Biosphere Reserves are areas of terrestrial and coastal/marine ecosystems, designated to reconcile the conservation of biodiversity with the quest for economic and social development and the maintenance of cultural values. They are internationally recognised within the framework of UNESCO's Programme on Man and the Biosphere. In Ireland these sites comprise Dublin Bay and Killarney National Park.	2
OSPAR Marine Protected Area (MPA)	MPAs have no single definition. They are generally understood to be geographically distinct zones for which conservation objectives can be set and are often established in an attempt to strike a balance between ecological constraints and economic activity, so that the seas may continue to allow for goods and services to be delivered. They may include existing SACs and SPAs, as well as other areas established under international or regional agreements (e.g. OSPAR, Helsinki Commission [HELCOM] etc.). The MSFD (2008/56/EC) requires Member States to use spatial protection measures, such as these MPAs, in their MSFD Programme of Measures, helping to contribute to a coherent network.	19
Ramsar	Ramsar sites are wetlands of international importance designated under the Ramsar Convention on Wetlands 1971, which Ireland joined in 1984. This intergovernmental treaty provides for national action and international cooperation for the conservation and wise use of wetlands and their resources with a particular focus on birds. Ramsar designations often overlap with SPAs.	45
Important Bird Area	The Important Bird Areas (IBA) Programme is a BirdLife International initiative aimed at identifying and protecting a network of critical sites for the conservation of the world's birds. BirdWatch Ireland is the BirdLife partner, and is responsible for promoting and updating the status of Ireland's birds and their key sites.	140
Special Areas of Conservation (SAC)	Special Areas of Conservation (SAC) are designated under the EU Habitats Directive (92/43/EEC) and Special Protection Areas are designated under the Birds Directive (2009/147/EC). Together these sites form the backbone of the Natura 2000 network. Further details on these sites can be found in the NIS for the draft Plan.	433* + 6 offshore SACs
Special Protection Area (SPA)		165*

Designation Type	Description	Number
Natural Heritage Area (NHA)	Natural Heritage Areas (NHAs) are protected under the Wildlife Amendment Act 2000. NHAs are areas considered important for the habitats present or which hold species of plants and/ or animals whose habitat needs protection.	155*
Proposed Natural Heritage Area (pNHA)	Proposed Natural Heritage Areas (pNHAs) 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.	1,089*
National Nature Reserve	A National Nature Reserve is an area of importance to wildlife, which is protected under Ministerial order. Most are owned by the State but some are owned by organisations or private landowners. The NPWS provides an online spatial viewer displaying the National Parks and Nature Reserves.	75*
Marine Nature Reserve	Lough Hyne, Co. Cork is the one Marine Nature Reserve designated under the Wildlife Acts. The directives require that habitats and species listed in them are maintained, or if necessary restored, to favourable conservation status.	1
National Park	National parks are areas that exist to conserve natural plant and animal communities and scenic landscapes and which facilitate public access. They exist in accordance with international criteria established by the world conservation union (IUCN).	6*
Refuge for Fauna	Refuges for Fauna are designated by ministerial order under Section 17 of the Wildlife Act 1976 as amended by Section 28 of the Wildlife (Amendment) Act 2000.	7
Wildfowl Sanctuary	A Wildfowl Sanctuary is an area that has been excluded from the 'Open Season Order' so that game birds can rest and feed undisturbed.	68*

**Numbers retrieved from the NPWS website (www.npws.ie) January 2021.*

In Northern Ireland there are 57 SACs, 17 SPAs, 21 Ramsar and 394 Areas of Special Scientific Interest (ASSIs).[13] ASSIs are areas of land with national conservation value. Three additional European Sites and one National Site were recently adopted under the Marine Act (Northern Ireland) 2013 which are in close proximity to transboundary waters: Carlingford Marine Proposed SPA (pSPA), East Coast Marine pSPA, North Channel Proposed SAC (pSAC) and Carlingford Marine Conservation Zone (MCZ). Some designations in the Republic of Ireland, such as Carlingford Lough SPA and Carlingford Shore SAC, extend into Northern Ireland and as such present potential for transboundary effects. The presence of legacy dumping sites or illegal landfills in proximity to the border and which have the potential to hold hazardous waste, have the potential to affect groundwaters or may have led to soil contamination.

5.3.2.2 Natural Habitats and Protected Species

Habitats and species have the potential to be impacted by hazardous waste management activities as a result of emissions to water, e.g. leachate and release of material during construction and or remediation, litter, etc. as well as emissions to air from activities at licensed facilities. Illegal dumping or inappropriate disposal of hazardous waste may also be an issue.

In 2007, 2013 and again in 2019 the National Parks and Wildlife Service (NPWS) published a report detailing the conservation status in Ireland of habitats and species listed in the EU Habitats Directive (92/43/EEC), often referred to as '*the Article 17 Report*'.[14] Under the Habitats Directive, each Member State is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive.

For the 2019 submission, Ireland's Article 17 Report recorded 15% of habitats as '*favourable'*, 46% as '*inadequate*' and 39% as '*bad*'. Among the key findings are:

- Many Irish habitats are in unfavourable status. Many are still declining albeit with some positive actions underway while almost half are demonstrating ongoing declines.

[13] Northern Ireland Statistics and Research Agency (May 2019) Northern Ireland Environmental Statistics Report 2020.

[14] The Status of EU Protected Habitats and Species in Ireland, NPWS 2007 (Vol 1-3), 2013 (Vol 1 -3) and 2019 (Vol 1-3).

- The main pressures to habitats are from grazing; pollution of watercourses; drainage / cutting of peatlands and wetlands; invasive species; recreation; urbanisation; fertilizer application; and road building, among others.

- Some of the marine habitats are considered to be improving, and to have better prospects, due in part to implementation of other EU environmental directives.

- The status of raised bogs in Ireland is '*bad*'; and the trend is for an ongoing decline as restoration is necessary to cause improvement, notwithstanding the cessation of cutting on SAC bogs. However, The National Raised Bog Special Areas of Conservation Management Plan 2017- 2022 sets out a commitment for protection and restoration activities within all raised bog SACs while Bord na Móna will cease the supply and use of peat by 2020.

- Grasslands, such as orchid-rich grasslands and hay meadows, have undergone significant losses over the last decade, with 31% and 28% of the area monitored reported as being lost. Some improvements have been associated with the Burren Programme and Aran LIFE.

- Blanket bog is also assessed as '*bad*'; the report notes that, as one of the main impacts on this habitat is grazing, an improving trend might be expected due to the implementation of Commonage Framework Plans. However, this improvement appears to be offset and even exceeded by on-going deleterious effects such as peat cutting, erosion, drainage and burning.

- Although some woodlands are rated as '*bad*' because they are patchy and fragmented, improvements have been noted due to afforestation, the planting of native species, the removal of alien species and control of overgrazing. Improvements noted from 2013 are now recorded as stable in 2019.

- Many freshwater habitats are considered unfavourable due to nutrient loading within the catchment, however the Cycle 2 RBMP (2018-2021) aimed for improved targeting of mitigation measures [the Cycle 3 RBMP is in preparation and will cover the period 2021-2027].

- Losses of limestone pavement has been recorded outside the SAC network, however the BurrenLIFE and Burren Farming for Conservation Programme have significantly improved the quality of pavement and its associated habitats.

From the 2019 report, 57% of species were assessed as 'favourable', 15% as 'inadequate', 15% as 'bad' and 13% as 'unkn*own*' or considered to be vagrant species. Among the key findings are:

- Otter, pine marten and many bat species have also been assessed as '*favourable*' with evidence of an expanding range.

- The Natterjack toad is not exhibiting adequate positive results but has gone from *'bad'* in 2013 to stable in 2019.

- Salmon (*Salmo salar*) is showing signs of improvement and the Killarney shad (*Alosa killarnensis*) is still assessed as '*favourable*', but some other fish remain at '*bad*' status.

- Freshwater pearl mussel is '*bad*' and declining.

Similarly, the requirements for reporting under Article 12 of the Birds Directive (2009/147/EC) are every 6 years. Ireland's Article 12 submission to the EU Commission on the *Status and trends of bird species (2008-2012)*[15] covers 196 species which includes breeding, wintering and passage species.

The report details that some species have had significant increases in population over the long term, including raven (*Corvus corax*), collared dove (*Streptopelia decaocto*), buzzard (*Buteo buteo*) and blackcap (*Sylvia atricapilla*). However, other species have undergone significant declines in their long-term breeding population trend: corncrake (*Crex crex*) (85%), curlew (*Numenius arquata*) (98%), lapwing (*Vanellus*

[15] http://ec.europa.eu/environment/nature/knowledge/rep_birds/index_en.htm (Accessed January 2021)

vanellus) (88%) and redshank (*Tringa totanus*) (88%). The hen harrier (*Circus cyaneus*) shows a long-term population trend decrease of 27%. The results confirm that there is a need for measures to halt the declines noted above, most of which are due largely to changes in farming practices and intensity, and also the increase of activity in extensively farmed uplands through forests and wind farm construction.

Marine Habitats and Species

Ireland's BAP has as one of its seven objectives to '*Conserve and restore biodiversity and ecosystem services in the marine environment*'. Much of this is foreseen to be achieved through the implementation of existing directives and legislation. The BAP notes that pressures from human activities on Ireland's coastal and marine biodiversity and ecosystem services arise from a growing range of sources including nutrient and chemical discharge from human activities (for example from industry, agriculture, municipal wastewater) and through direct physical disturbance, e.g. shipping, recreation and aquaculture; and habitat degradation from pollution, litter, artificial noise and light. The export of hazardous waste via shipping from Ireland for treatment in other countries is a key consideration.

Freshwater Pearl Mussel

The freshwater pearl mussel (FPM) is a filter feeder (filtering up to 50 litres of water per day) and is associated with salmonid waters but requiring a higher water quality than salmonids. The species *Margaritifera margaritifera* is more common than *Margaritifera durrovensis*, with the latter recorded only in the Nore catchment.[16] There are 27 populations that have been designated within 19 SACs.[17] The FPM is protected under Annex II and V of the Habitats Directive and is legally protected in Ireland under Schedule 1 of the Wildlife Act. There has been a considerable decline in species distribution and numbers of FPM in Ireland and across the EU.

As noted above, the conservation status for FPM remains at '*bad*' status and continues to decline, with few locations with recruiting populations showing near-adequate replenishment. FPM are particularly sensitive to changes in water quality, such as increased nutrient inputs and changes in suspended solids/ sediment loads. This can cause severe damage as the FPM closes its shells in response to the sediment pressure, impacting feeding behaviour or causing suffocation. In 2009, legislation was enacted to support the achievement of favourable conservation status for FPMs (S.I. 291 of 2009) and the NPWS developed 27 FPM Sub-Basin Management Plans as designated under the regulations to address measures to halt the decline in the species.

Salmonid Rivers and Shellfish Areas

Inland Fisheries Ireland (IFI) is the primary body responsible for management of the fish habitat, which is a national resource that needs to be protected. In Ireland, there are seven fish species listed under Annex II and/or Annex V of the Habitats Directive, including: three species of lamprey (*Petromyzon* sp. and *Lampetra* spp.), two species of shad (*Alosa* spp.), Atlantic salmon (*Salmo salar*) and Pollan (*Coregonus autumnalis*). Annex V species are protected such that the exploitation of the fish resource and their taking in the wild is compatible with maintaining the species at favourable conservation status. Their conservation status, noted above, is due to a variety of pressures which include physical barriers such as weirs which limit migration to breeding sites, nutrient enrichment and general habitat quality.

Salmonid waters must be able to sustain Atlantic salmon, trout (*Salmo trutta*), char (*Salvelinus*) and Pollan. They have been designated under the EU Freshwater Fish Directive (78/659/EEC) which was transposed into Irish law in 1988 through the European Communities Regulation on Quality of Salmonid Waters (S.I. No. 293/1988). In order to sustain these species, rivers must have good water quality, allow upstream movement and provide suitable habitat for spawning. There are 210 designated Salmonid River Water Bodies in Ireland. It is noted that European and national legislation does not cover all watercourses and as such there is a significant portion of watercourses that are not under formal European designation but may hold species

[16] *Freshwater Pearl Mussel Sub-basin Management Plans, SEA Scoping Document.* 2009. Department of the Environment, Heritage and Local Government.

[17] Note the European Union Environmental Objectives (Freshwater Pearl Mussel) (Amendment) Regulations, S.I. No. 355 of 2018, have, in line with scientific advice, removed the FPM as a qualifying interest from the main channel of the Blackwater (including the Owentaraglin tributary); both the Licky and Allow populations will remain designated. The conservation objectives for the SAC have yet to be amended and consideration is therefore given to all populations currently listed (NPWS, 2012).

that are designated under the European Habitats Directive, for example salmon and lamprey (sea, river and brook) which are listed as Annex II Species.

Shellfish growing areas are found around the coasts of Ireland. These were designated by the then Minister for the Environment, Community and Local Government, having responsibility for making the most recent shellfish water sites in 2009 (S.I. No. 55 of 2009). There are 64 such areas in Ireland.

Flora and Fauna under the Wildlife Act

The Wildlife Act 1976 to 2010 (as amended) is the principle national legislation underpinning the protection of fauna and flora and nature conservation in the Republic of Ireland. All bird species, a number of animal species and species of flora are afforded protection under the Act. The Act also provides statutory protection for NHAs.

Plant Species under Flora Protection Orders

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora Protection Order (S.I. No. 356 of 2015). It is illegal to cut, uproot or damage the listed species in any way. In addition, it is illegal to alter, damage, or interfere in any way with their habitats. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation. The list includes vascular plants, mosses, lichens and stoneworts.

Ecological Corridors

Stepping stones and ecological corridors can include nature conservation sites (other than European sites), habitat areas and species' locations covered by the wider obligations of the Habitats Directive. It is also recognised that non-designated receptors, such as landscape features, can function as ecological stepping stones or corridors, which are of importance to wildlife. There is a diversity of habitats (e.g. woodlands, hedgerows, field boundaries, sand dunes, saltmarshes, rivers, streams and associated riparian zones, canals, marine habitats and wetlands) that are not subject to legislative protection although they are of high biodiversity and conservation value and contribute to the concept of 'green infrastructure'. Soil itself is a finite natural resource that underpins much of terrestrial biodiversity and contributes to aquatic biodiversity also (e.g. as riparian zones and buffer strips around watercourses).

Invasive or Alien Species

A further consideration as part of hazardous waste management planning relates to the potential for spread of invasive species. Invasive or alien species (IAS) are species that are transported outside of their natural range across and ecological barriers as a result of human action. They can establish and spread in their new location and cause negative impacts on biodiversity, society and the economy. A 2010 report by the Institute for European Environmental Policy reported that IAS are estimated to have cost the EU at least €12 billion per year over the past 20 years, and the damage costs continue to increase.

Impacts associated with IAS in Ireland include competition with native species, alteration to habitats, introduction of pathogens and parasites and economic loss. If an invasive species, e.g. Giant Hogweed and Japanese Knotweed, becomes established it can be difficult, or in some cases nearly impossible, to eradicate. Plant species by themselves are not hazardous waste. In the context of hazardous waste management, such material might be classed as a 'difficult waste' on treatment with chemicals for instance.

The majority of the known accidental introductions of IAS to Irish waters have occurred via shipping (commercial and recreational) or as passengers with aquaculture stock. There is currently limited information on the presence and impacts of IAS in Irish marine waters and so an accurate assessment of the level of the pressure cannot be made at this time. Identifying non-native species and determining the route of introduction of such species is often very difficult, because its presence is only likely to be noticed once it has become established.

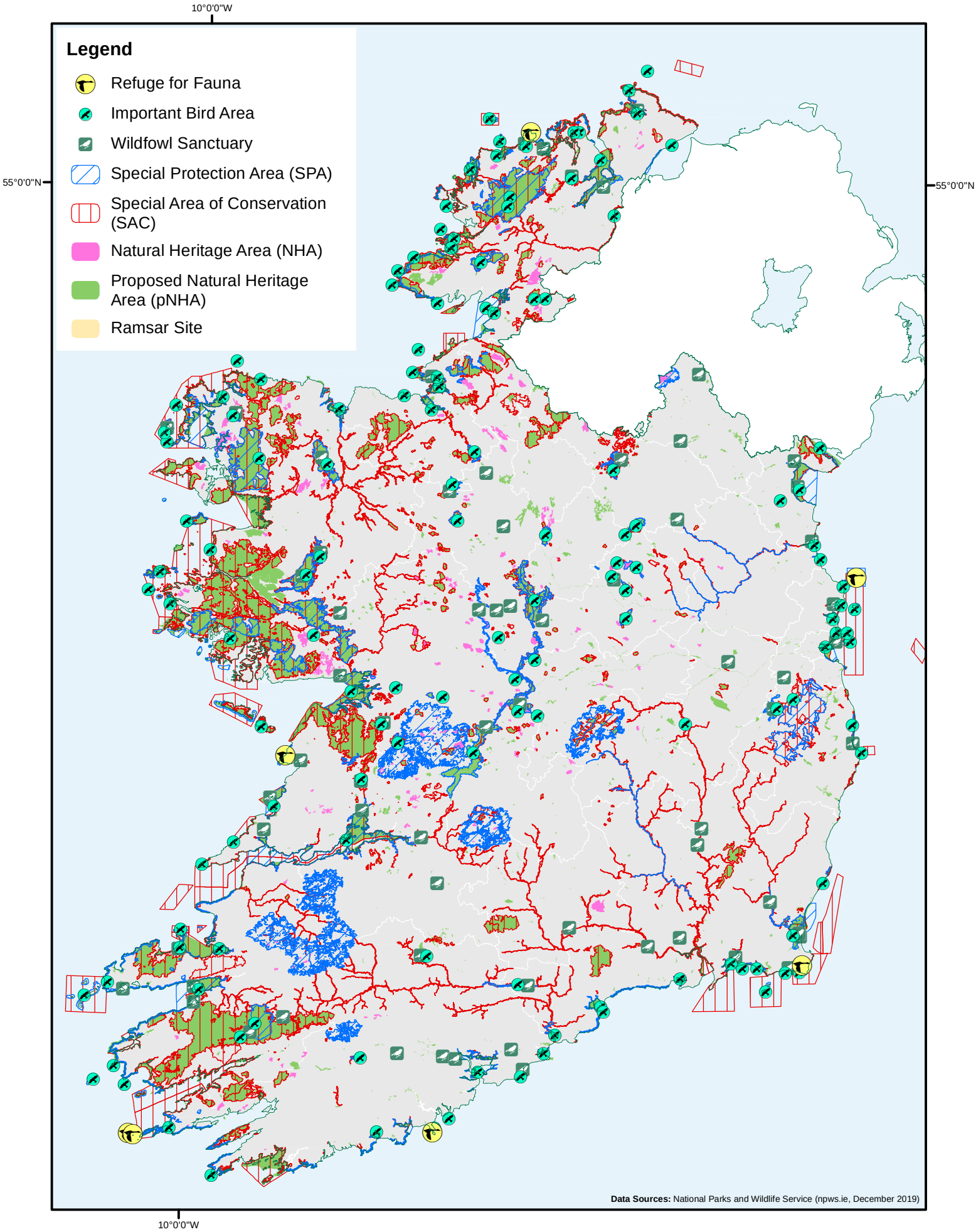

Figure 5.1:

Designated Sites

West Pier Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

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Issue Details			
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5.3.2.3 Existing Environmental Pressures/ Problems: Biodiversity, Flora and Fauna

Worldwide, over 60% of ecosystem services are being degraded or used unsustainably and this affects natural capital, resource use and climate change resiliency. Habitat degradation, climate change, pollution and invasive or alien species threaten an average of 25% of animals and plants worldwide and up to one million species face extinction as a result according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

The main drivers and pressures on nature noted by the EPA in their most recent assessment of Ireland's Environment (2020) include the rapid loss of biodiversity and changes to habitats in general at international level, with many habitats and species having less than favourable conservation status at EU level. In Ireland, 46% of habitats are assessed as '*inadequate*' and 39% are *'bad*'; of the species assessed, 15% are assessed as '*bad*' and 13% as '*unknown*'. Agricultural activities remain the key pressure. The outlook is very poor, with climate change adding to challenges and cumulative impacts.

In this context, the key issues associated with the implementation of the draft Plan and biodiversity relate to:

- Emissions from hazardous waste management activities (licensed and unlicensed) to water e.g. leachate, suspended solids, release of material during construction and or remediation, etc. have the potential to impact on water quality and freshwater/marine species.
- Changes to air quality as a result of aerial emissions from hazardous waste activities.
- Habitat loss, habitat fragmentation and disturbance of protected habitats and species as a result of construction of waste facilities historically, and of un-authorised disposal sites.
- Sites of illegal dumping/ historic landfills, or brownfield/industrial areas for instance can often harbour IAS species. Remediation of such sites or excavation of soil (contaminated and uncontaminated) all have the potential to introduce or spread invasive species.
- Remediation of legacy sites may also cause mobilisation of contaminants in the soil.
- Illegal dumping of waste within or in the vicinity of sensitive sites, particularly designated sites.
- In terms of transboundary issues, the key issues to consider are potential for emissions to air and water, namely from licensed facilities on both sides of the border, which may impact on shared natural features such as lakes, rivers and groundwater.
- The main impact to the marine area from hazardous waste management activities relates to the export of waste from Ireland to other countries via the mode of shipping, which can cause direct physical disturbance on marine species, as well as acting as a potential vector for the spread of IAS, and from accidents such as accidental spillages.

5.3.3 Land and Soils

Soils are a valuable resource that performs many ecosystem services: production of food; production of biomass; storage, filtration and transformation of nutrients and water; carbon storage and cycling; and contribution to the landscape and cultural environment. Such functions are worthy of protection because of their socio-economic as well as environmental importance. Soils in any area are the result of the interaction of various factors, such as parent material, climate, vegetation and human action, land cover and land use, etc.

The Intergovernmental Panel on Climate Change (IPCC) deals with mitigation of climate change through Working Group III,[18] which has concluded that land use, including agriculture and forestry, as well as soil management play a central role for food security and sustainable development.

[18] IPCC (2018) Agriculture, Forestry and Other Landuse (AFOLU) Working Group 3, Assessment Report 5, Chapter 11. Available at: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter11.pdf

Given the strategic nature of the draft Plan, the focus of the baseline for land and soils is at a national level. It is focused on existing overall soil quality, baseline geology and hydrogeology, presence of historic landfills and contaminated land, and known issues which have the potential to impact on soil and land quality.

5.3.3.1 Soils

The EC's 8th Environmental Action Program (EAP) to 2030 has acknowledged that degradation of soil is a serious problem. The 7th EAP proposed that by 2020 all land in the EU should be managed sustainably and soils afforded protection, with remediation of contaminated sites laid out as a priority. During development soils may be disturbed, moved, sealed-in, compacted (e.g. from heavy machinery operations), eroded or lost to water as a result of the siting of hazardous waste facilities and related infrastructure, such as road access.

However, despite the importance of soil, there has been little in the way of direct EU legislation obliging Member States to maintain soil quality, however issues such as contaminated land has been dealt with indirectly through, for instance, waste legislation. In 2006, the EC published a proposal Communication (COM(2006) 231) for a Thematic Strategy for Soil Protection and a Soil Framework Directive, leading the way for full EU legislation. In 2012 the EC published a policy report on the implementation of the Strategy and ongoing activities (COM(2012) 46). In May 2014, the European Commission decided to withdraw the proposal for this directive. However the EU Biodiversity Strategy for 2030 announced that the 2006 Thematic Strategy would be updated, and in December 2020, the EC published the Roadmap for a New Soil Strategy - *Healthy Soil for a Healthy Life*, in order to address soil and land degradation and to achieve land degradation neutrality by 2030. In Ireland, some soil protection legislation has been enacted including the 2011 EIA Regulations for On Farm Development which includes a requirement for EIA of soil operations such as soil drainage.

The quality of soils in Ireland is considered generally good and Teagasc have indicated that 57% of soil samples had a pH at or above 6.3, considered optimal for agricultural use while reducing the need for fertilisers. There are pressures impacting on the long-term protection and maintenance of soil and soil quality, particularly from soil sealing, compaction, erosion, decline of organic matter content, salination and landslides (EPA, 2020).[6] Land use change is the major pressure impacting soils across Europe; urban land-take and intensification continues, with about a third of Europe's landscape already considered to be highly fragmented.[19] The current target is for there to be no net land-take in Europe by 2050.

The predominant soil types[20] have been mapped nationally at a scale of 1:50,000 by Teagasc in collaboration with the EPA, Forest Service and GSI, completed in 2006; these soil types are shown on **Figure 5.2**.

Further, in 2014 the EPA, in conjunction with Teagasc and Cranfield University, launched the Third Edition Soil Map, part of the Irish Soil Information System. This project combined traditional soil survey techniques with digital mapping in a GIS-based soil information system. Phase 1 of the project began in 2008 and was completed in 2014, with Phase 2 progressing from 2015. The overall objective of the project is to produce soil map of Ireland at a scale of 1:250,000 with an associated web-based soil information system in the public domain.[21] This project provides valuable information on existing soils in the region. In this map, soils are mapped by soil association, or groups of soils that commonly occur together in the landscape.

[19] EEA (2015) The European Environment State and Outlook Synthesis Report.

[20] National Soils Map (2006), produced by Teagasc in collaboration with the EPA, Forest Service and GSI.

[21] http://gis.teagasc.ie/soils/map.php

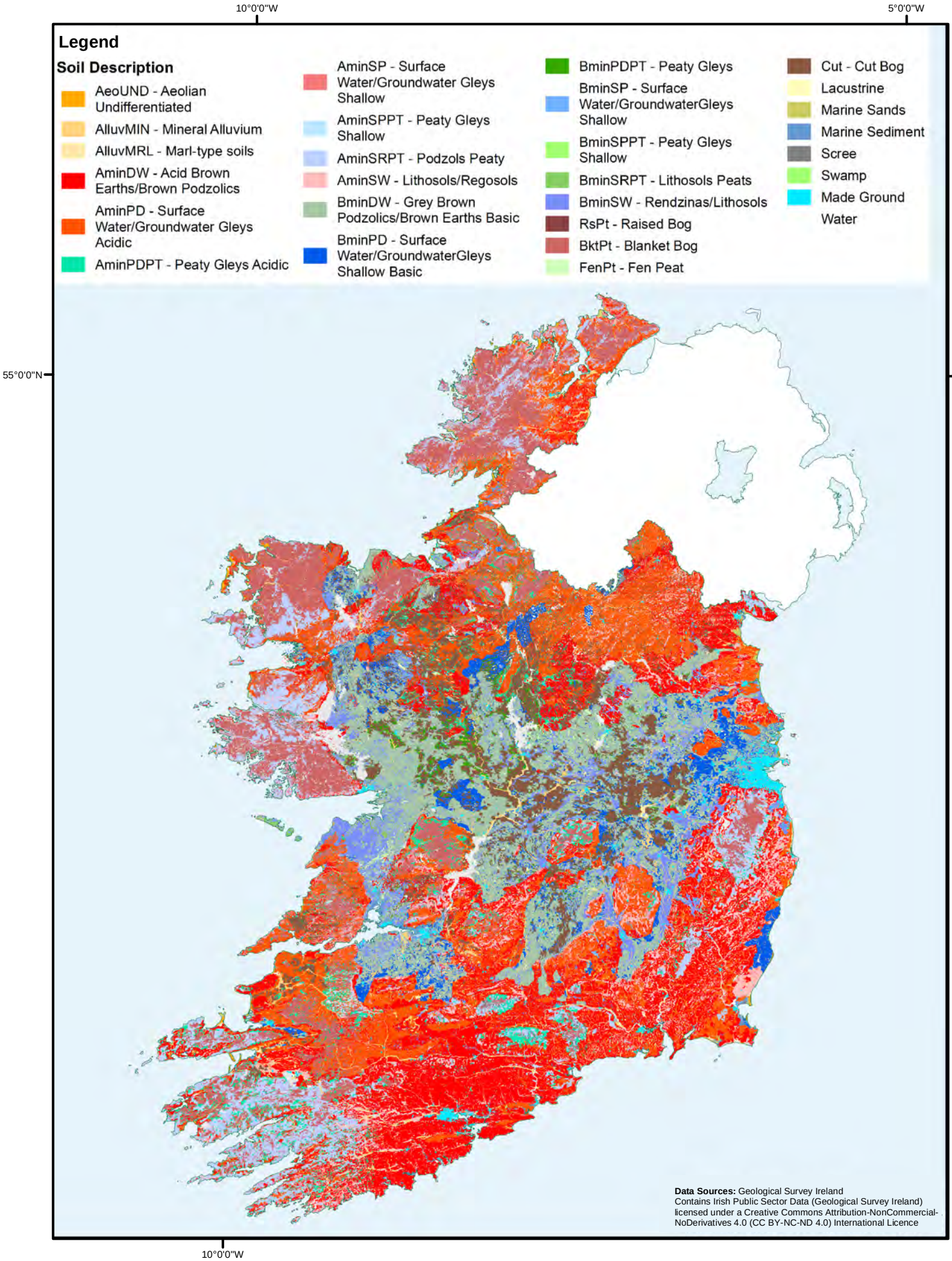

Figure 5.2:

Soils in Ireland

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Land and Soil Contamination

Generation of contaminated soils generally arises from the redevelopment/ remediation of industrial sites, which often have hazardous chemicals present in the soil or groundwater e.g. railway and gas works, dock yards, brownfield sites in urban areas etc. Operational activities in some sectors can also lead to contamination of land, such as from quarries/ mines, tanneries, petrol stations and firefighting training grounds (e.g. use of brominated flame retardants), etc. where substances like heavy metals and chemicals can leach into soil and groundwater.

Depending on the risk to human health and/or the environment, contaminated soils must be removed before a site can be developed or managed. Contaminated land requires appropriate remediation of the site prior to any development, ensuring there is no migration of contaminated material during remediation, such as movement of leachate, however there is no specific legislation addressing contaminated land in Ireland. In April 2007, the EPA published a Code of Practice[22] that provides a framework for the identification of contaminated sites, the assessment of the potential risks associated with them and the identification of the appropriate remedial measures or corrective actions required to minimise risk to the environment and human health. Following the publication of the Code, the EPA trained local authority staff on its use and application. Local authorities are now implementing the Code and the EPA is overseeing its implementation. The EPA also published Guidance on Contaminated Land and Groundwater at EPA Licensed Sites (2013), which aims to ensure the protection of water quality and human health.[23]

There are a number of unregulated closed/ historic landfills across Ireland, which are defined as landfill sites which operated without a waste disposal licence between 1977 and 1997, before the Waste Management (Licensing) Regulations 1997 (S.I. No. 133/1997) came into force. In accordance with the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524/2008), local authorities must submit applications for Certificates of Authorisation (CoA) to the EPA in relation to historic disposal sites, in order to certify compliance with the requirements of the regulations. As of January 2020, 16 CoAs have been issued for closed landfills, two of which contain hazardous waste. There are a further 32 valid applications of which three contain hazardous waste. It is noted that the level of hazardous waste present at each location can vary.

The Section 22 Historic Landfills Register was developed in 2009 by the EPA and facilitates local authorities in registering sites of historic waste disposal and recovery (under Sections 22 and 26 of the Waste Management Act 1996, as amended). The register has an built-in risk assessment which indicates to the local authority whether the site is of high, medium or low risk. Further assessments are then carried out by the local authority and their Qualified Person as per the Code of Practice. Of the 494 sites on the register, 29 were indicated by local authorities as containing hazardous waste. Of these 29 sites, five applications have been made for CoA under the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations. The three waste management regions have agreed a process for the investigation, authorisation and remediation of the remaining high-priority sites over the lifetime of the regional plans, and the EPA continues to monitor contaminated sites.

Within Ireland, there is no landfill dedicated to hazardous waste and there is limited capacity in other available infrastructure. Just one landfill has the ability to process mildly contaminated inert materials.

In terms of offshore sediments which can harbour hazardous substances, OSPAR data indicates that, overall, trends in contaminant levels have shown decreases across Europe however each member state has localised areas where contaminant levels exceed OSPAR background assessment concentrations in sediments. These areas are generally ports, harbours, estuaries and dredge dump sites. These are areas of high human activity and riverine inputs to the marine environment; for the latter, particularly in the form of urban wastewater discharges and sludges, and industry emissions, which are the primary sources. Concentrations of contaminants are expected to drop off in the open seas away from highly developed areas, where the main significant inputs are from atmospheric deposition and shipping. Within Ireland, uncontaminated dredging material may be dumped at sea under permit from the EPA, but any potentially hazardous material must be tested, removed and treated as hazardous waste. Typically the extent of this

[22] EPA (April 2007) Waste Sites Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites. Available at: https://www.epa.ie/publications/compliance--enforcement/waste/EPA_CoP_waste_disposal_sites.pdf

[23] EPA, Management of Contaminated Land and Groundwater: https://www.epa.ie/our-services/compliance--enforcement/waste/contaminated-land/

hazardous material is restricted to the larger port areas where historic practices have led to sediment contamination over a prolonged period.

See also **Section 5.3.6.4** and **5.3.6.5** under Material Assets for further discussion on unregulated disposal of waste, soil/ sediment contamination and exports of contaminated soil.

5.3.3.2 Land

Land Cover Classification

The main source of national-scale information on land cover in Ireland is the EEA/ EPA CORINE land cover data series, which is an EU-wide inventory of land cover in 44 classes categorised from satellite photography. It should be noted that the smallest amount of land analysed under the study is 25 hectares, therefore features smaller than this are not currently discernible at the resolution of CORINE. The EPA does however undertake some adjustments to better reflect Ireland's land cover and there are plans to increase the resolution to 0.1 ha from 2021. The first CORINE dataset was produced in 1990, thereafter updated by the EEA every 6 years. **Figure 5.3** shows the land cover for Ireland based on the latest dataset (2018).

The main land cover type in Ireland is agricultural land, which accounts for approximately two-thirds (67%) of the national landmass. Most of this is permanent grassland pastures. Peatlands and wetlands are the second most widespread land cover type, covering almost one-fifth (about 17%) of the country, while forested areas cover about 10% of the country. The classes for artificial surfaces and built ground encompass features such as urban fabric, ports, road/rail networks and extraction sites etc. Overall, this class covers just 2.4% of the country (CORINE, 2018).

The EPA is currently developing a national land use map which will be used to inform Ireland's reporting obligations under the Land Use, Land Use Change & Forestry [LULUCF] Regulation (EU) 841/2018, as well as the National Inventory Report that covers the reporting on climate emissions.

Hazardous Waste from Agricultural Activity

As agriculture represents one the major land uses in Ireland, hazardous waste generated on farms can be a significant issue. A national Pilot Farm Hazardous Waste Collection programmes was carried out as part of the implementation of the previous NHWMP between 2013 and 2017. This comprised running 46 one-day collection centres for farmers to dispose of known or suspected hazardous wastes. Around 7,378 tonnes of hazardous wastes were estimated to have been stockpiled on farms (excluding WEEE and batteries).

Some highly toxic pollutants were presented for disposal at the centres, including chemicals such as DDT (Dichlorodiphenyltrichloroethane) and lindane (organochlorine insecticides), mercury, cyanide and strychnine. Veterinary medicines are also a particular concern. The volumes of waste packaging related to pesticides, veterinary medicines and engine oil was also significant. It is estimated that each farmer per year could dispose of six tonnes of hazardous farm waste, seven tonnes of WEEE/ batteries, and 10 tonnes of waste oils.

The scheme also highlighted that some farms may be illegally storing significant quantities of pesticides. Under European legislation, biocides are substances, chemical or biological substances, which are designed to destroy or render harmless a harmful organism(s). They can take the form of pesticides or antimicrobials. These products have a high degree of regulation owing to the potential effects on human health and the environment.

The plan states that effective enforcement of the Biocidal Product Regulations would help ensure these are managed correctly and reduce environmental risks. In particular, Article 17 prohibits the use, including illegal storage, of unauthorised biocides. This would help ensure such pesticides are managed appropriately, thus reducing the risks they pose to human health and the environment, including the illegal poisoning of wildlife e.g. poisoning of wild birds by carbofuran, a highly toxic pesticide. However, it is unclear what level of enforcement of these regulations has been undertaken to date.

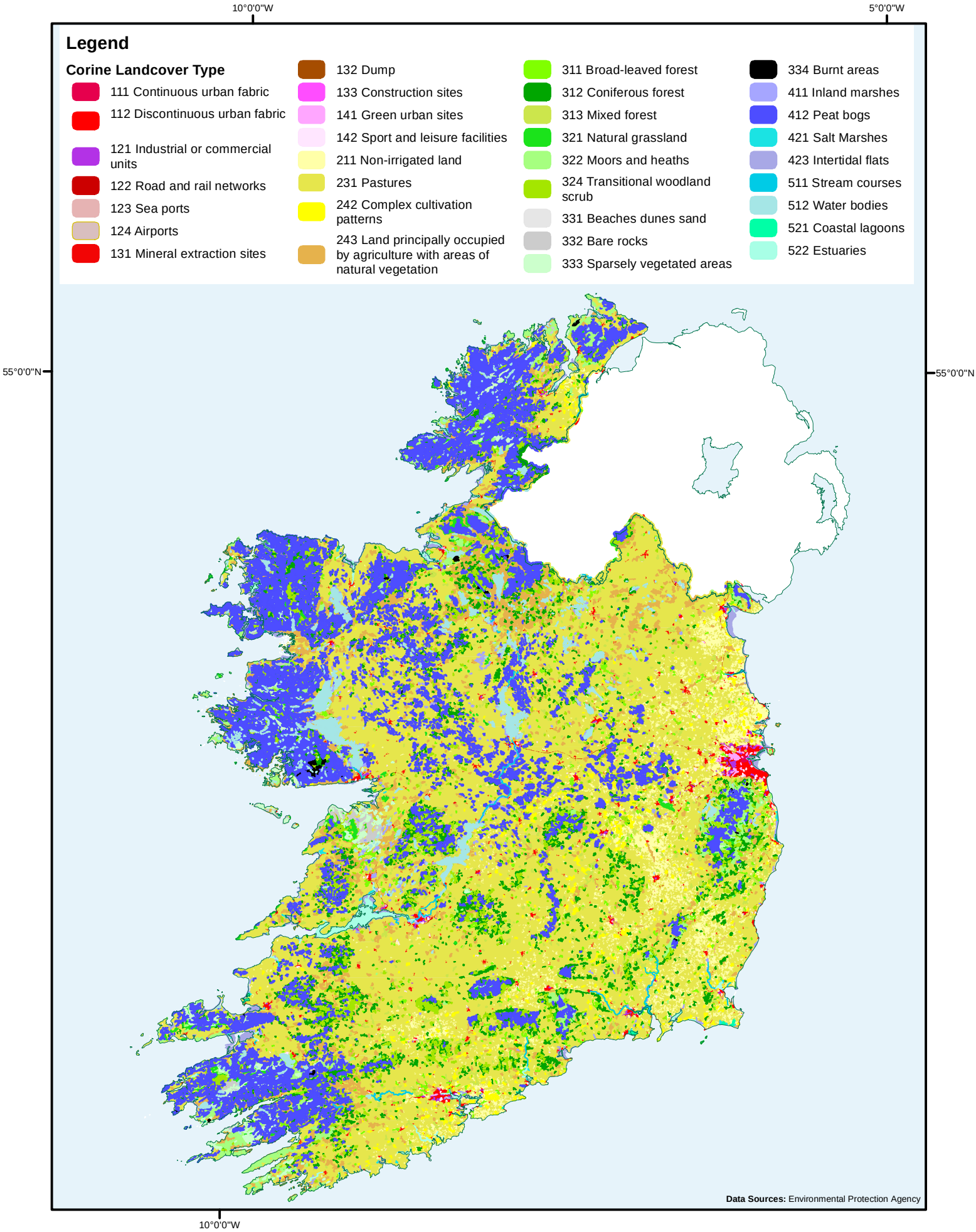

Figure 5.3:

CORINE Land Cover Classification (2018)

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5.3.3.3 Geology and Hydrogeology

Bedrock Geology

According to the GSI's 1:100,000 scale Bedrock Map Series, the bedrock across a large portion of central Ireland is comprised of Carboniferous limestones, which were deposited in tropical seas 350 million years ago. Sandstone and shale of varying ages from 500 – 300 million years ago are the next most prevalent lithology across the country, some of which are interspersed with basalt and rhyolite, followed by Ordovician to Devonian granite intrusions. The bedrock in the south of Ireland is comprised of Devonian Old Red Sandstones, where thick layers of sediment were laid down in semi-arid and mountain river systems. The northwest is comprised of much older Precambrian quartzites, gneisses, schists and granites, and other igneous intrusive rocks.

Mineral Potential

There is a mining legacy across some parts of the country and the EPA maintains a register of historic mines. Minerals and metals that were mined include zinc, lead, gypsum, coal, silver, copper and gold. In addition to metals, crushed rock, sand and gravel are also currently quarried at over 400 sites in Ireland (Exploration and Mining Division, DECC, 2021). According to the Extractive Industries Register maintained by the EPA under the Waste Management (Management of Waste from the Extractive Industries) Regulations 2009 (S.I. No. 56 of 2009), there are extractive industries nationally (including quarrying, commercial peat extraction and timber production). As of the start of 2021, the GSI's active quarries database notes that 233 quarries reported as active.

Sand and Gravel Potential

Unlike most other forms of development, minerals can only be worked where they are found. This means that the spatial distribution of mineral resources and thus the potential for workings is dictated by geological considerations and not by the demands of human geography. The GSI Minerals Section began a programme of mapping of 'Aggregate Potential' with data now available nationwide, covering covers crushed rock aggregate potential as well as granular potential. Spatial data is hosted by the GSI and viewable on a dedicated project viewer.[24]

Slope Stability and Landslide Potential

Ireland is fortunate not to be a high-risk area for landslides, though landslides do occur, however infrequently, with the most occurrences in coastal, upland and peat bog areas. Though the potential for major destructive landslides is slight, there have been instances of severe events in Ireland in the past. As of early 2021, the GSI has recorded 1,907 landslide events in nationally, of which 726 have been verified.

The GSI Irish Landslides Working Group has also compiled a landslide susceptibility database in order to assess the scale of the landslide problem historically and also to assess the susceptibility of areas to landslide hazard in the future. This has direct relevance to the sustainable development of the landscape in terms of infrastructure, siting of licensed facilities, etc. and is therefore an important issue for the planning process. This national landslide susceptibility mapping was completed in 2016. The data indicates that risk increases to 'Moderately High' and 'High' in more upland and mountainous areas.

Geological Heritage

The Irish Geological Heritage Programme is a partnership between the GSI and the NPWS. In Ireland, geological heritage is assessed under a framework of 16 themes which cover different time periods and aspects of geology. Some of these sites have been selected or recommended for eventual designation as Geological NHAs. The remainder are being considered as County Geological Sites (CGS) which have no statutory protection but can be included within County Development Plans. Across Ireland there are currently 1,247 geological heritage sites (includes both audited and unaudited site boundaries). These sites can be viewed online via the GSI's dedicated heritage map viewer.

[24] GSI spatial data viewer: http://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

Hydrogeology

An aquifer is an underground body of water-bearing rock or unconsolidated materials (gravel or sand) from which groundwater can be extracted in useful amounts. The GSI classifies aquifers and the classes are divided into three main groups based on their resource potential, and further subdivided based on the type of openings through which groundwater flows. There are nine aquifer categories in total. Regionally important (karstified - conduit) aquifers are generally located to the west of the country, in the Burren/East Galway area. Gravel aquifers are much smaller in number and extent, covering only about 1,221 km^2 nationally.

Approximately 50% of Ireland is underlain by limestone. Limestone pavement is a priority habitat for conservation under the EU Habitats Directive due to habitats relying on hydrological, hydrogeological and geological conditions. The most extensive limestone pavement occurs in the Burren/East Galway area. The nature of the limestone strongly influences its susceptibility to karstification, and most of the largest springs in Ireland emerge from karst. The GSI borehole database indicates that there are over 33,200 groundwater wells and springs at a national level (those with the highest positional accuracy). Of these, over 850 are at the appropriate abstraction yield to provide for potable water supply. Karst springs, both large and small, are ready sources of drinking water in areas where there are often no other alternatives due to the absence of adequate surface watercourses.

Due to the particular characteristics of karst, including an irregular bedrock surface, the presence of large voids and rapid underground drainage, it can present problems for infrastructure development as groundwater is most at risk where the subsoils are thin or absent and contaminants can enter the groundwater with little or no filtration or attenuation. Common karst features can include swallow holes, caves, turloughs and enclosed depressions. The GSI maintains a database of such mapped features across the country. The distribution of these features indicates that the majority occur in the midlands of the country and along the west coast of Ireland. As of 2021, there were just over 10,800 karst features recorded nationally by the GSI. The database is not comprehensive however, and new features are added as more information becomes available.

The Geological Survey of Ireland (GSI) also classifies the groundwater resource according to vulnerability, i.e. the hydrogeological characteristics intrinsic to a groundwater body which determines how easily that water body may be contaminated through human activities. The topsoil and subsoil, depending on their type, permeability and thickness, play a critical role in preventing groundwater contamination and mitigating the impact of many potential pollutants. Groundwater is most at risk where soil and subsoils are absent or thin and, in areas of karstic limestone, where surface streams sink underground at swallow holes.

As such, groundwater vulnerability in Ireland exhibits a range of vulnerability ratings and is classified by Low risk up to Moderate, High, Extreme and ‘X’, where the rock is exposed near the surface or comprised of karst. The groundwater vulnerability classification for Ireland is illustrated in **Figure 5.4**.

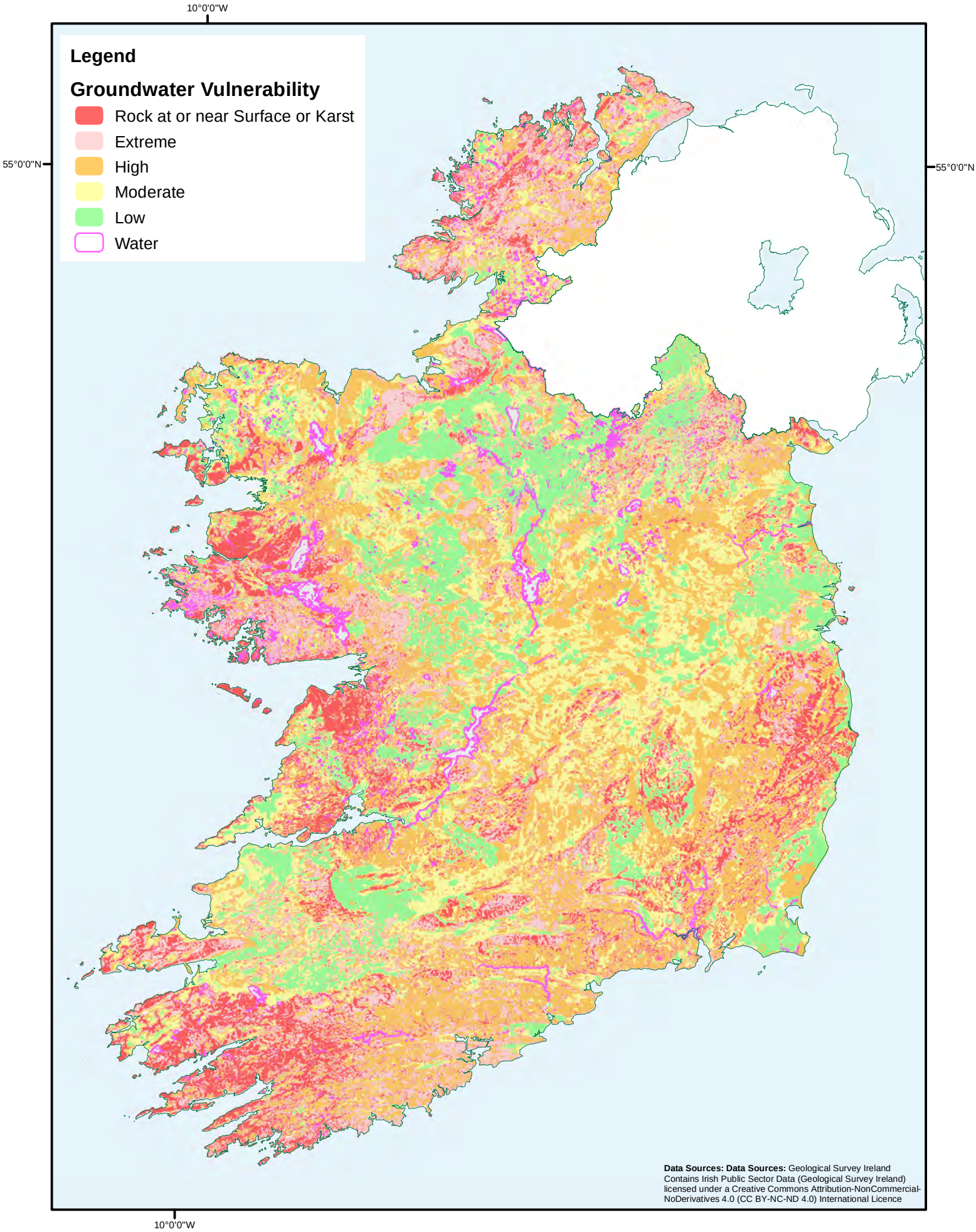

Figure 5.4:

Groundwater Vulnerability

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5.3.3.4 Existing Environmental Pressures/ Problems: Land and Soils

Ireland generally has excellent soil quality and the estimated proportion of contaminated land is relatively small; the EPA State of the Environment Report 2020 states that nationally soil quality is not significantly impacted by contamination issues. The principle issues relevant to hazardous waste management include historic unregulated waste disposal sites, illegal landfills and closed landfills. The key issues associated with hazardous waste management and land and soils relate to:

- Soil quality;
- Historic unregulated waste disposal sites, illegal landfills, closed landfills;
- Surface water and groundwater contamination leachate from poorly managed waste facilities; historic unregulated waste disposal sites, illegal landfills, closed landfills and illegal dump sites;
- Redevelopment of old industrial or brownfield sites;
- Contamination of soil arising from ongoing operational activities e.g. heavy metal or chemical contamination of soil/ groundwater from sectors such as e.g. quarrying/ mining, firefighting training areas, etc.
- Spread of invasive species (discussed previously under biodiversity) e.g. from remediation activities or development of infill/old industrial areas which may become revegetated by IAS.

Legacy waste disposal issues can significantly impact on soil quality. The state's historic over-reliance on landfills, including unregulated disposal sites, means that remediation of such sites is an ongoing process, which also comes at significant cost to the state. To date, 16 CoAs have been issued for closed landfills, two of which contain hazardous waste. There are a further 32 valid applications of which three contain hazardous waste. It is noted that the level of hazardous waste present at each location can vary. It should also be noted that in-situ leachate from landfills is not classed as a hazardous waste until it is remediated and contaminated/hazardous material is dug out or tankered off-site.

Contaminated soils may also come from old industrial sites, some of which may be contaminated with hazardous chemicals. Soil contamination can also occur as a result of unauthorised waste-related activities, leakages and accidental spillages of chemicals. Following closure, sites licensed by the EPA must remove any contamination present in accordance with the closure, restoration and aftercare requirements set out in a site's licensing conditions.

A key interaction with the implementation of the draft Plan will therefore be with the NPF, which requires 40% of new housing development to be on brownfield/ infill sites. There is potential for significant volumes of hazardous waste to increase as brownfield/ industrial sites are redeveloped. Contaminated land or hazardous wastes may be encountered in the soil and groundwater, particularly in urban areas where there have been historic industrial uses.

Within Ireland, there is no dedicated hazardous waste landfill and there is limited capacity in other infrastructure. Only one landfill has the ability to process mildly contaminated inert materials (Murphy Environmental Hollywood Ltd.). This has implications for the management and treatment of contaminated soils. Some contaminated soil is treated at licensed facilities in Ireland to non-hazardous status. However the trend is showing increased volumes of contaminated soil being exported, which is reflective of economic development (see also discussion under Material Assets, **Section 5.3.6.3**). Soil that gets treated abroad also represents a net loss of the Irish soil resource.

5.3.4 Water

Hazardous waste management can have significant potential to impact on the ecological status of a water body. Pollution by leachate, suspended solids and other pollutants are a potential significant problem where hazardous waste activities (authorised and unauthorised) close to or over watercourses, can have severe negative impacts on invertebrate and plant life and on all life stages of fish life cycles. The key impact on water quality is primarily nutrients.

The key issues associated with waste management and water relates to:

- Contamination from poorly managed hazardous waste facilities; historic unregulated waste disposal sites, illegal landfills, closed landfills and illegal dump sites;
- Impacts to groundwater from waste/industrial sector facilities;
- Acidification from airborne pollution (see **Section 5.3.5**); and
- Inappropriate siting of new facilities within or adjacent to Water Framework Directive (WFD) protected sites, as well as flood risk from inappropriate siting.

5.3.4.1 Water Quality and Ecological Status

Overall, trends in water quality in Ireland are mixed, and Ireland faces some considerable challenges to meet the requirements of the WFD and other water directives. Water protection efforts to date have succeeded in reducing the extent of serious pollution in rivers, however almost half of Ireland's surface water bodies (which includes river, lake, transitional and coastal waters) are failing to meet their objectives under the WFD.

The key mechanism for addressing water quality and meeting WFD objectives is the National River Basin Management Plan (RBMP) and its associated Programme of Measures. These plans have provided a coordinated approach to water management throughout Ireland and across Europe. The plan addresses many of the pressures on water however it will take time to fully resolve all the issues and significant pressures remain. A number of RBMPs for Ireland were published in 2009. The plans were subsequently consolidated into one national plan for the second WFD cycle, covering the period 2018-2021. The third cycle plan is currently in preparation and will cover the period 2021-2027.

The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters (surface, estuarine and coastal and groundwaters) and protect, enhance and restore all waters with the aim of achieving at least good status by 2015. An 'ecological status' assessment approach was implemented in Ireland as part of WFD implementation. The approach incorporates chemical and biological monitoring into a status grade for each water body, and for surface waters is classified according to a scale of High, Good, Moderate, Poor and Bad. Status on groundwaters is classified as either Good or Poor. In addition to ecological status, a number of water bodies are also monitored for their chemical status. This comprises monitoring for priority hazardous substances e.g. dioxins, polycyclic aromatic hydrocarbons, cadmium, certain pesticides/ insecticides, etc.

Some of these substances (e.g. hydrocarbons) are ubiquitous in the environment and continue to be present at low levels in some water bodies. Use of herbicides remains widespread and can be present in groundwaters. Three-quarters of surface water bodies assessed for chemical status over the 2013-2018 period had Good chemical status. The majority of groundwaters have Good chemical status, and almost all (99%) also have Good quantitative status, i.e. rainfall replenishment is generally able to sustainably support the volumes being abstracted for drinking. Ireland's Surface water Regulations (S.I. 272 of 2009) as amended, also contains a list of Substances of Union Concern which currently have no environmental quality standards set, but which are being kept under consideration due to their increasing presence in the aquatic environment; these include antibiotics, hormones and neonicotinoids.

Table 5-4 outlines the current status of surface water and groundwater bodies in Ireland for the monitoring period 2013-2018. See **Figure 5.5** for surface waters and **Figure 5.6** for groundwater.

Table 5-4: WFD Ecological Status 2013-2018 of Surface Water Bodies

Status of Irish Waters	High	Good	Moderate	Poor	Bad
River	8%	45%	28%	19%	0%
Lake	8%	43%	32%	13%	5%
Transitional	9%	29%	38%	18%	8%
Coastal	22%	57%	20%	0%	2%
Groundwater	–	92%	–	8%	–

Source: *EPA, Catchments.ie: https://www.catchments.ie/data/#/dashboard/waterquality?_k=zer04b*

5.3.4.2 Water Framework Directive Protected Areas

Article 6 of the Water Framework Directive requires each Member State to establish a register of protected areas for water bodies or parts of water bodies that must have extra controls on their quality by virtue of how their waters are used by people and wildlife. This register was split into five categories:

- **Drinking Waters:** Waters used for the abstraction of drinking water - this category of protected area replaced the system of drinking water protection previously provided by the Surface Water Abstraction Directives (75/440/EEC) and also incorporates groundwaters.
- **Economically Significant Aquatic Species:** Areas designated to protect economically significant aquatic species - These are protected areas established under earlier EC directives aimed at protecting shellfish (79/923/EEC) and freshwater fish (78/659/EEC).
- **Recreational and Bathing Waters:** Bathing waters designated under the Bathing Water Directive (76/160/EEC).
- **Nutrient Sensitive Areas:** These comprise nitrate vulnerable zones designated under the Nitrates Directive (91/676/EEC) and areas designated as sensitive under the Urban Waste Water Treatment Directive (91/271/EEC). Note, due to widespread agricultural activities nationally, Ireland opted to class all of ROI as a nitrate vulnerable zone.
- **Protection of Habitats and Species:** Areas designated for the protection of habitats or species, where the maintenance or improvement of the status of water is an important factor in their protection. These are designated under the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC). [See also **Section 5.3.2** and **Figure 5.1**]

The breakdown of WFD protected areas nationally is outlined in **Table 5-5** and their distribution is shown on **Figure 5.7**.

Table 5-5: Breakdown of Water Framework Directive Protected Areas

WFD Protected Areas	Count
Drinking Waters (rivers and lakes)	341
Economically Significant Aquatic Species (shellfish)	64
Salmonid Rivers	34
Recreational and Bathing Waters	145
Nutrient Sensitive Areas (rivers and lakes)	59

Source: *EPA Register of Protected Areas database, January 2021. Note: Salmonid Rivers (designated under S.I. 293 of 1988) are included in the EPA's Register of Protected Areas as the Habitat Regulations cover only Atlantic salmon whereas the Salmonid Regulations cover all salmonid species.*

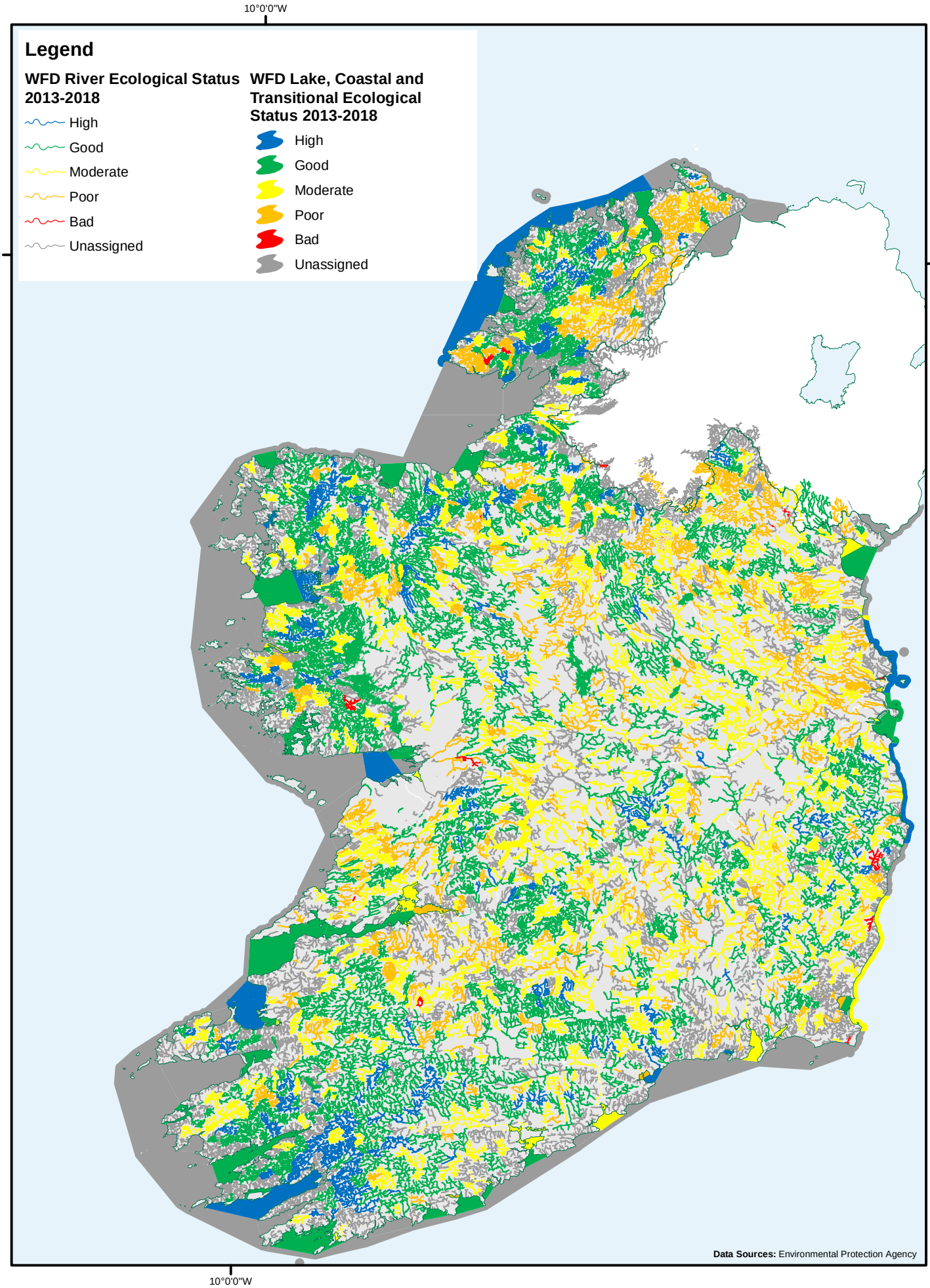

Figure 5.5:
WFD Ecological Status (2013-2018) for Surface Water Bodies

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Scale:	1:2,000,000 @ A4	Projection:	ITM (IRENET95)
Date:	18/03/2021		

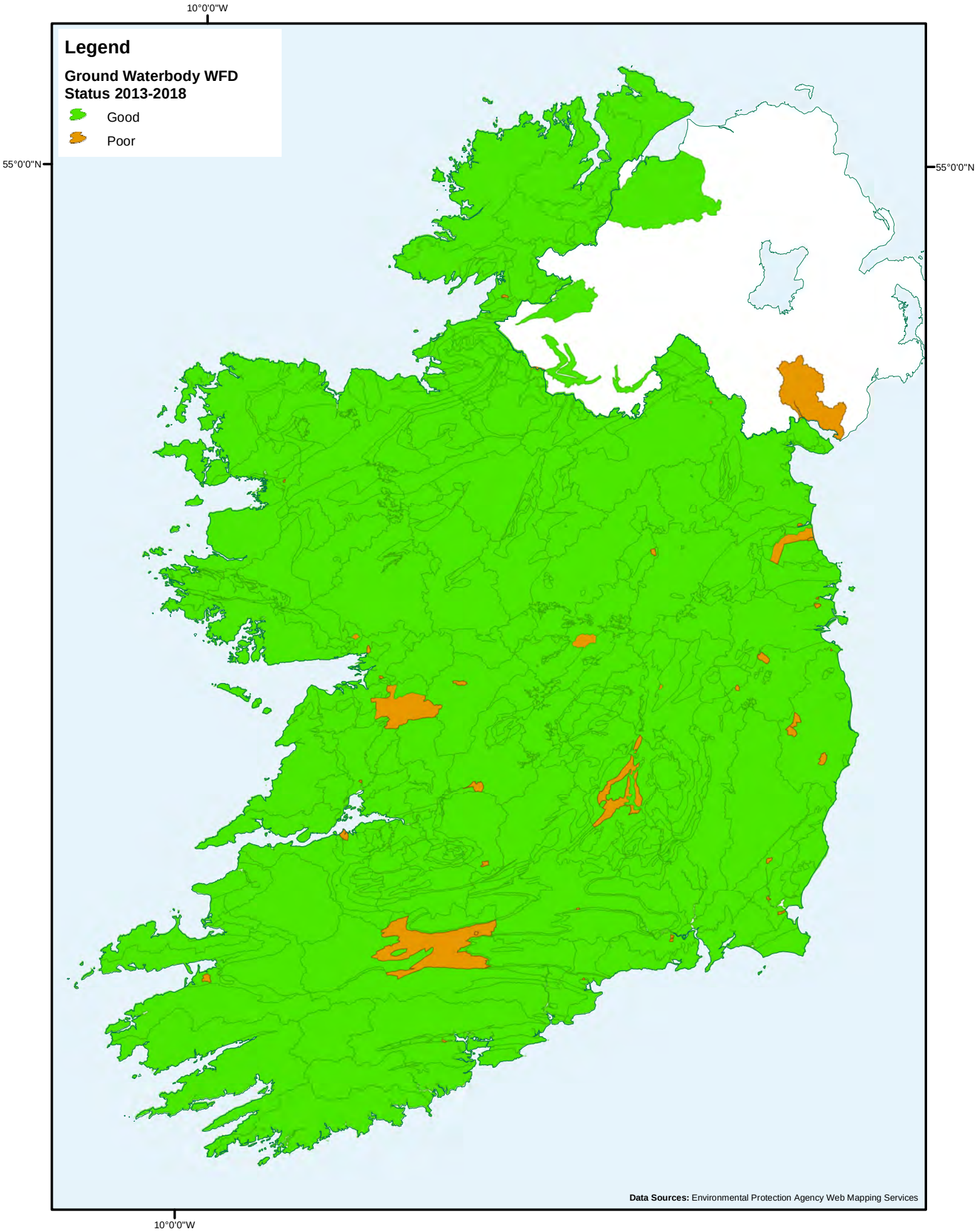

Figure 5.6:
WFD Ecological Status (2013-2018) for Groundwater Bodies

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Issue Details			
Drawn By:	NA	Project No.	MDR1648
Checked By:	NO'N	File Ref:	MDR1648Arc0007F01
Approved By:	NO'N		
Scale:	1:1,900,000 @ A4	Projection:	ITM (IRENET95)
Date:	18/03/2021		

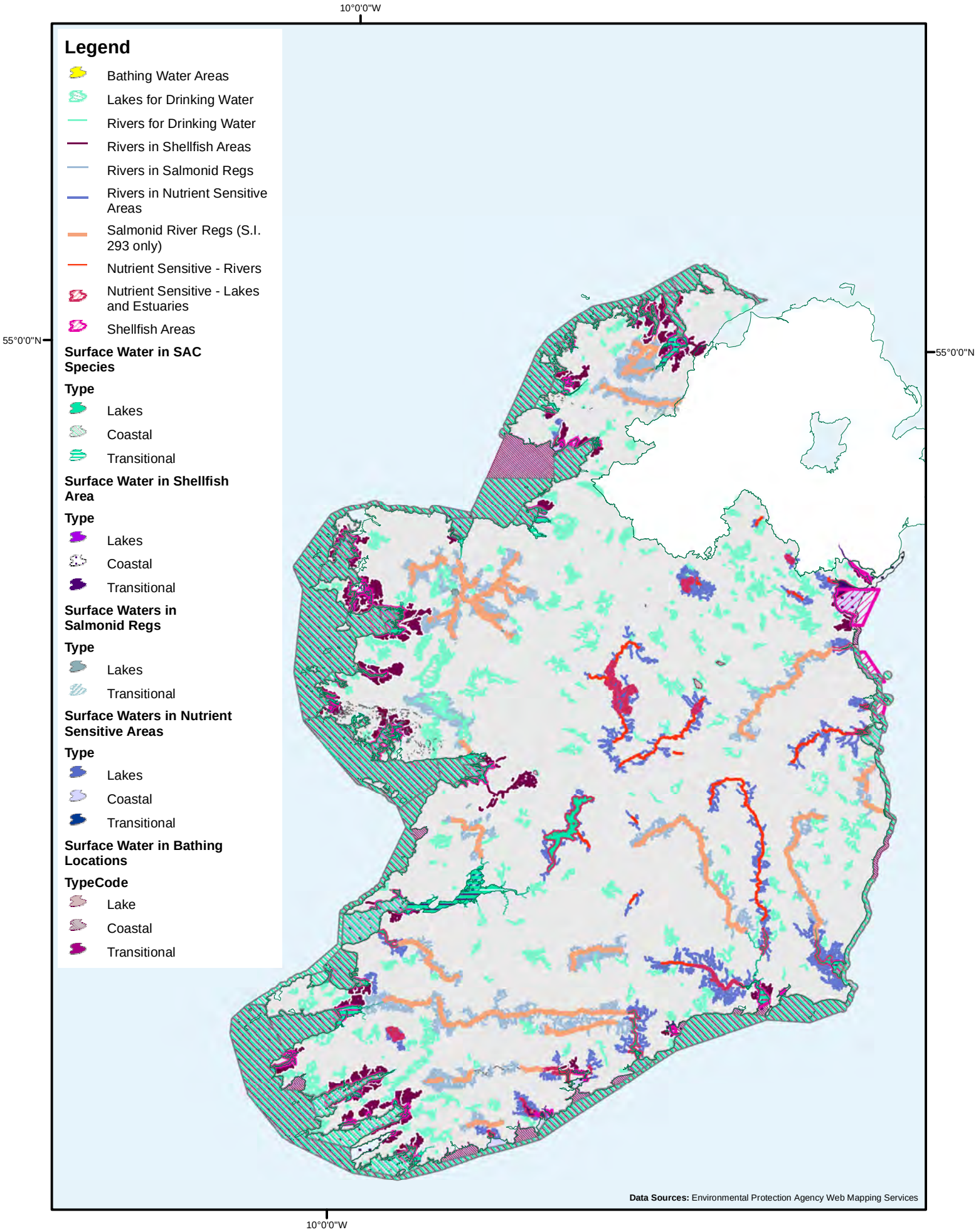

Figure 5.7:

WFD Register of Protected Areas in Ireland

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Issue Details			
Drawn By:	NA	Project No.	MDR1648
Checked By:	NO'N	File Ref:	MDR1648Arc0008F01
Approved By:	NO'N		
Scale:	1:2,300,000 @ A4	Projection:	ITM (IRENET95)
Date:	18/03/2021		

5.3.4.3 Flood Risk

Flood risk presents two issues in relation to hazardous waste management. Firstly, it can negatively impact on the operation of hazardous waste management activities due to flooding of sites/facilities or access routes which are used to move and manage wastes. Secondly flood waters may contain contaminants in the form of litter, leachate and other chemicals mobilised where flooding has inundated a waste facility.

Floods are a natural and inevitable part of life that pose a risk to human life and well-being, property and the environment, but climate change is contributing to increased events such as rising sea levels, coastal erosion, storm surges, etc. Catchment Flood Risk Assessment and Management (CFRAM) Studies have been undertaken and Flood Risk Management Plans (FRMPs) have been prepared in line with the European Directive 2007/60/EC (Floods Directive). It requires member states to carry out preliminary flood assessments in order to identify areas of potentially significant flood risk, or Areas for Further Assessment (AFA). Each CFRAM Study has produced flood maps, flood risk management objectives and the FRMPs. The CFRAM programme is central to the medium to long-term strategy for the reduction and management of flood risk in Ireland. FRMPs have been developed and were published in early 2018; flood extent mapping for fluvial, pluvial and coastal flooding is available on the OPW's dedicated flood map viewer.[25]

Groundwater flooding can also be a serious issue and occurs when the water table rises above the level of the land, which results from the natural subsurface drainage system being unable to drain away rainfall quickly enough. Following the most significant groundwater flooding event to have occurred in Ireland over the winter of 2015/2016, the GSI in collaboration with Trinity College Dublin and Carlow Institute of Technology undertook the GWFlood Project. It aims to help fill the data gaps around understanding the issue of groundwater flooding with the outputs being a project report plus a national data viewer showing historic and predictive groundwater flood maps, as well as live groundwater hydrometric data.[26]

In 2009 the '*The Planning System and Flood Risk Management Guidelines for Planning Authorities'* were published which ensures that flood risk assessment and management is incorporated within the planning system, and is of relevance for development occurring at or near the coast. In relation to flooding, it is important to ensure the resilience of any infrastructure or development (which may include hazardous waste facilities) to the effects of climate change, including flood protection of assets, and ensure that sectoral activities do not increase flood risk of other development located downstream within a catchment.

5.3.4.4 Industrial Emissions to Water

Emissions to water from EPA-licensed facilities represents a small proportion of overall emissions to water that are routinely monitored. The EPA State of the Environment Report (2020) notes however that current policies do not address the full scope of the industrial pollution load to the environment, and that greater focus should be put on the fate of emerging and trace pollutants of concern which are being discharged from industry.

The majority of direct reported releases from licensed industrial sources to water/urban wastewater releases comprises heavy metals. Indirect sources generally comprise chlorinated discharges. Levels of heavy metal releases have been steadily decreasing over the last decade, from a high of 20,000 kg/year in 2007, with a further significant drop from 2015, down to around 4,600 kg/year in 2017. This was achieved through licence reviews conducted by the EPA which ensured greater compliance with the Surface Water Regulations (S.I. No. 272/2009), as amended, and reflects improvements mainly from the mining sector.

5.3.4.5 Existing Environmental Pressures/ Problems: Water

The key pressures on water bodies continues to be agriculture (nutrient run-off and sediment, point pressures such as farmyards), followed by hydromorphological issues (e.g. land drainage, channelisation), urban wastewater discharges and forestry, as well as 'other' pressures. There also continues to be a decline in the number of water bodies that are reaching or maintaining High ecological status, with only 20 sites reaching Q5 status compared to 500 water bodies 30 years ago, and an increase in the number of polluted water bodies. The number of fish kills are also reflective of levels of pollution and sensitivity to the effects of

[25] OPW Flood Maps Viewer: https://www.floodinfo.ie/map/floodmaps/

[26] GWFlood Data Viewer: https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc

climate change; the 40 fish kills recorded in 2018 were attributed to higher summer temperatures, low flow conditions and reduced ambient oxygen.

As part of the characterisation of pressures and impacts carried out by the EPA under the WFD, the EPA identified 34 EPA-licensed facilities (30 industrial and 4 waste) which are a significant pressure on water bodies. In addition, there are 27 EPA-licensed facilities on the provisional list of waste and industrial sites that cause/exert significant groundwater pressures. Nine of these sites are from the waste sector, eight are from the chemical sector and four are surface-coating facilities. The EPA assessment of Ireland's environment indicates that industrial emissions to water represent a very small proportion (3%) of overall monitored emissions to water.

Historic, existing and indeed future hazardous waste infrastructure may be a significant source of water pollution, potentially affecting rivers, lakes, estuaries and coastal areas. The key issues for the implementation of the draft Plan and water are outlined as follows:

Historic: Unlicensed/ unregulated landfill sites and historical dumping are potential sources of water pollution. These sites due to their historic and unregulated nature are not engineered landfills with liner and leachate collections systems in place. Dangerous substances associated with leachate from such sites can be toxic to aquatic plants and animals. As such, they can persist in waters and sediments, and slowly build up in the bodies of aquatic organisms.

Existing: Illegal dumping, legacy of closed waste sites currently requiring Tier 1, 2 or 3 assessments, pollution from closed sites through incidents (e.g. landfill fires), and pollution from existing sites through poor management practices. These sites and activities result in surface water and groundwater pollution through the mobilisation and migration of leachate from the sites and inappropriate fire water retention systems. An additional pressure is in the form of illegal activities such as diesel laundering, a by-product of which results in hazardous toxic sludge, sulphuric acid wash and contaminated absorbent material which may result in water pollution if inappropriately managed with potential risks to human health through contamination of drinking water supplies.

Future: Inappropriate siting of new waste treatment facilities within or adjacent to WFD protected sites or flood zones. It is important that development does not occur on sites which are prone to flooding. The siting of hazardous waste management facilities or sites which handle hazardous waste streams within areas vulnerable to flooding may result in the mobilisation of contaminants which can impact on the ecological status of a water body. For example, flooding from extreme storms may undermine a site/ facility's foundations, releasing leachate into groundwater, sweeping/transporting waste into waterways, and resulting in the possibility of waste causing obstructions to other infrastructure (culverts, stormwater drainage). Historically, many waste facilities were developed along coastal areas which expose them to higher risk of flooding and mobilisation of waste, e.g. the Haulbowline Island East Tip hazardous landfill, which is located adjacent to Cork Harbour SPA.

The improper handling of unused/expired medicine and pharmaceuticals is also an emerging area of concern for water quality; chemicals being routinely found in freshwaters include antibiotics, painkillers and synthetic hormones. Such medical waste, usually household-generated, may be improperly disposed of either in the residual waste bin or by flushing/rinsing away where the chemicals ultimately end up in a wastewater treatment plant that may not have the treatment processes in place to handle these chemicals. Misconnections or septic tanks are also a pathway for medical chemicals to end up in surface waters and may permeate the soil and groundwaters. In the aquatic environment, many studies report adverse effects of pharmaceuticals encountered in typical concentrations in the environment, such as the effect of endocrine-disrupting chemicals on fish.[27] Other chemicals of concern may also end up in watercourses and wastewater effluent, such as poly-and perfluoroalkylated substances (PFASs), which are highly persistent, mobile and toxic/bio-accumulative.

[27] Murray KE, Thomas SM, Bodour AA (2010) Prioritizing research for trace pollutants and emerging contaminants in the freshwater environment. Environ Pollut 58(12):3462–3471.

5.3.5 Air Quality and Climatic Factors

The emissions to atmosphere arising from hazardous waste management activities are mainly from three main sources as follows:

- Direct emissions from the degradation of uncontrolled storage, transport or handling of hazardous waste streams such as asbestos fibre, contaminated soils or metal dust generation and dispersion;
- Direct combustion emissions from the thermal treatment of hazardous waste streams or from co-incineration as a fuel (e.g. in cement kilns), or fugitive combustion emissions from illegal burning (e.g. backyard burning); and
- Indirect emissions from the transportation of waste by road and shipping of hazardous waste for export caused by the burning of fossil fuels in combustion engines.

The relative contribution and extent of the direct and indirect emissions is largely dependent on the nature of the disposal/recovery process and the distance and mode of transport involved.

Air quality impacts can be on a local scale or a regional/national scale. Local air quality impacts such as dusts and odours can have significant health and nuisance impacts in the vicinity of facilities which manages hazardous waste. These local impacts are typically addressed through the consent processes with restrictions imposed by planning and/or EPA regulation. Unregulated local sources include the likes of backyard burning of hazardous waste, which can lead to the generation of toxic pollutants, e.g. dioxins and furans.

On a national/regional scale, both direct and indirect emissions from waste operations can generate transboundary gases, i.e. oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and greenhouse gases (carbon dioxide [CO_2]) and dioxins (arising from waste incineration). Given the national nature of the Plan, this baseline assessment addresses the national scale emissions, as local impacts are addressed through the planning, EIA and EPA licensing processes.

5.3.5.1 Air Quality

At a national scale, Ireland has good air quality which is consistently rated among the best in Europe; **Figure 5.8** shows the Air Quality Index for Health. This is due largely to the prevailing clean westerly air-flow from the Atlantic and the relative absence of large cities and heavy industries.

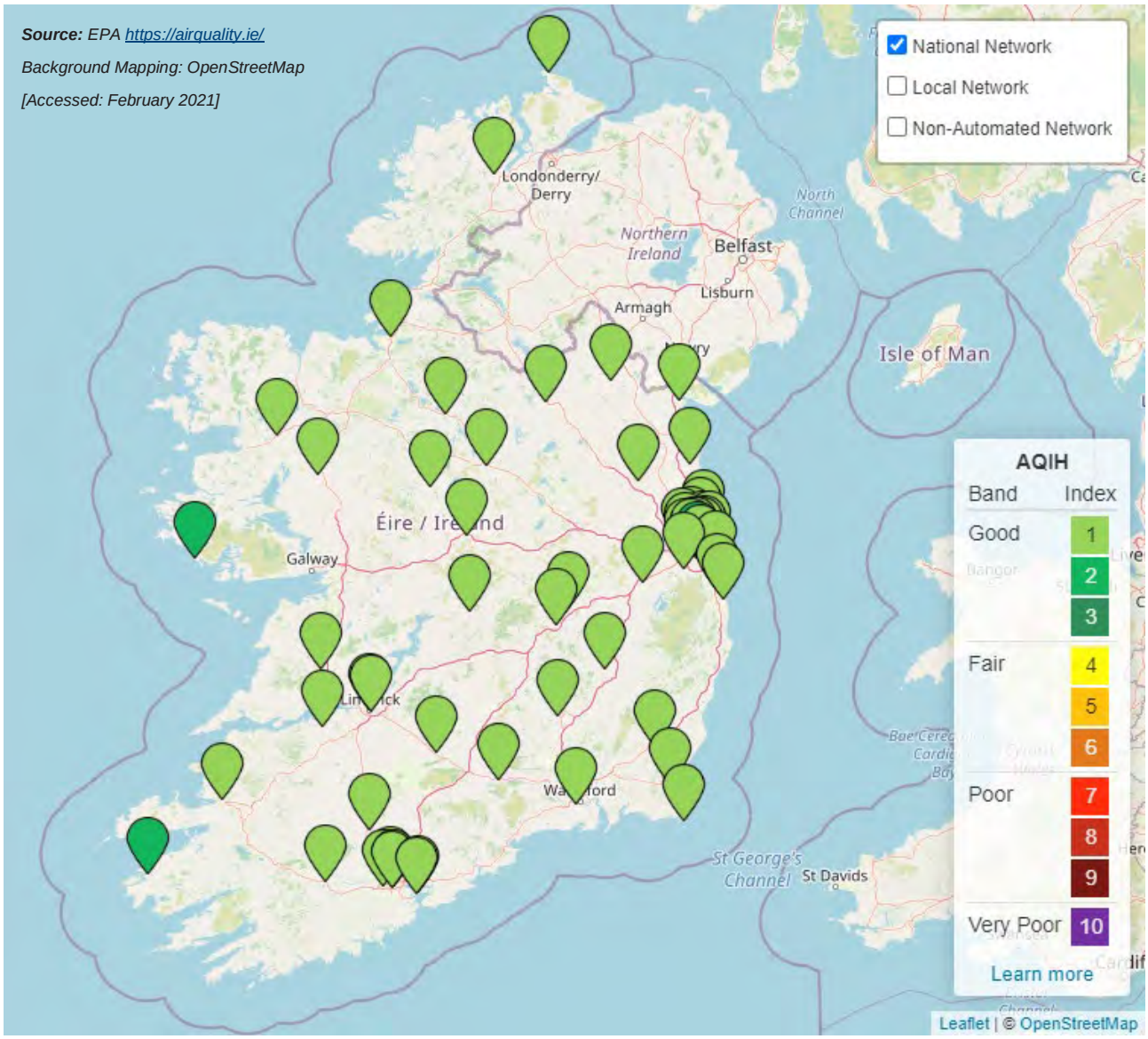


Figure 5.8: EPA Air Quality Index for Health

Ambient Air Quality

The EPA's National Ambient Air Quality Monitoring Programme (AAMP) was established in 2017 and expands on the national monitoring network. For ambient air quality, the EPA report *Air Quality in Ireland 2019* (2020) states that in 2019, measured particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide (SO_2), ozone, dioxins, polycyclic aromatic hydrocarbons (PAH), and all other monitored pollutant concentrations were all below their individual limit and target values as set out in the EU CAFE Directive (2008/50/EC) and Fourth Daughter Directive (2004/107/EC). However nitrogen dioxide (NO_2) exceeded the EU and stricter World Health Organisation (WHO) limit values at one station in Dublin (as a result of heavy traffic levels). This was reported to the EC and now requires an Air Quality Action Plan to be developed by the Dublin Local Authorities with the EPA.

Ireland was also above the stricter WHO guidelines values for: SO_2 at 1 station; PM_{10} at 14 stations (24hr WHO guideline daily value); $PM_{2.5}$ at 25 stations (24hr WHO guideline daily value) and at 5 stations (for the WHO guideline annual average value); and ozone at 2 stations. Levels of PAHs also exceeded the European Environment Agency (EEA) reference value at 4 out of 5 stations.

Air Quality Impacts and Hazardous Waste Operations

The extent of impact of each type of waste operation is site-specific and will depend on the type of hazardous waste disposal/ recovery process.

Emissions to Air from Industrial Facilities

Emissions to air from licensed facilities come mainly from a couple of key sectors such as energy generation (including waste-to-energy) as well as the mineral sector (namely cement, where kilns can co-incinerate waste streams for energy). A significant proportion of Ireland's hazardous waste is exported for thermal treatment at largescale treatment facilities in countries such as the Netherlands, Belgium, Germany and France (refer to **Section 5.3.6.3**). The more commonly utilised thermal treatment technology processes include pyrolysis, thermal desorption and incineration.

The key pathway for emission to air pre- and post-treatment is from fugitive emissions (off-gassing and odours) from wastes while in storage awaiting treatment, and during the direct combustion emissions of the pollutants listed in Chapter IV of the Industrial Emissions Directive [IED] (2010/75/EU). The principal emissions are PM_{10} and $PM_{2.5}$, dioxins and furans, hydrogen fluoride (HF), SO_2, NO_x, heavy metals, VOCs and PAHs. Such emissions are managed under the licensing and regulatory processes for such treatment facilities.

Waste transfer stations and materials recovery facilities (both hazardous and non-hazardous) do not generate any significant direct process or combustion emissions as operations are typically limited to segregation, baling etc. Like the other waste operations these transfer stations do generate indirect transport emissions.

Local Emissions

At the local level, the national estimate of unmanaged household waste in 2018 was 214,200 tonnes (a significant decrease on the estimate 214,200 tonnes in 2012). The waste is potentially disposed of illegally by burning or dumping. Illegal burning of wastes can produce a similar set of emissions to those listed above for thermal treatment. The quantity of pollutants released depends on the composition of the waste being burned, the temperate of the combustion and the supply of oxygen. One of the main sources of dioxin emissions in the Irish environment originates from the uncontrolled burning of domestic waste at low temperatures.

5.3.5.2 Climatic Factors

Ireland's Greenhouse Gas Emissions Overview

Greenhouse gases (GHGs) in the atmosphere are rising as a result of human activity, in particular the burning of fossil fuels for heating, energy and transport, in addition to other activities such as agriculture, the residential and commercial sectors, as well as waste. As of 2020, the EEA reports that Ireland has the fourth-highest per capita GHG emissions in the EU (behind Luxembourg, Iceland and Estonia) at 13.2 tonnes CO_2eq.[28]

At a national level, according to the latest EPA *Final GHG Inventory Report*[29], for the period 1990-2019, emissions of GHGs in Ireland are estimated to be 59.778 million tonnes (Mt) carbon dioxide equivalents (CO_2eq). This is 4.4% lower than emissions in 2018, following a 0.7% increase reported for that year. The estimates also indicate that Ireland will exceed its 2019 annual limit set under the EU's Effort Sharing Decision (ESD) by 6.85 Mt CO_2eq, for the fourth year in a row.

In 2019, emissions from the EU Emissions Trading System [ETS] (which covers power stations, large industrial plants and airlines) decreased by 8.7%, while emissions from the non-ETS sector, covered by the ESD, decreased by 3%. The longer-term trend however indicates that since 2013, emissions under the ESD increased by 6.8% (2.90 Mt CO_2eq).

[28] EEA Country Profiles – greenhouse gases and energy 2020. Available at: https://www.eea.europa.eu/themes/climate/trends-and-projections-in-europe/climate-and-energy-country-profiles/country-profiles-greenhouse-gases-and-1

[29] EPA (2021) Ireland's Final Greenhouse Gas emissions 1990-2019. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/greenhouse-gas-emissions-final-2019.php

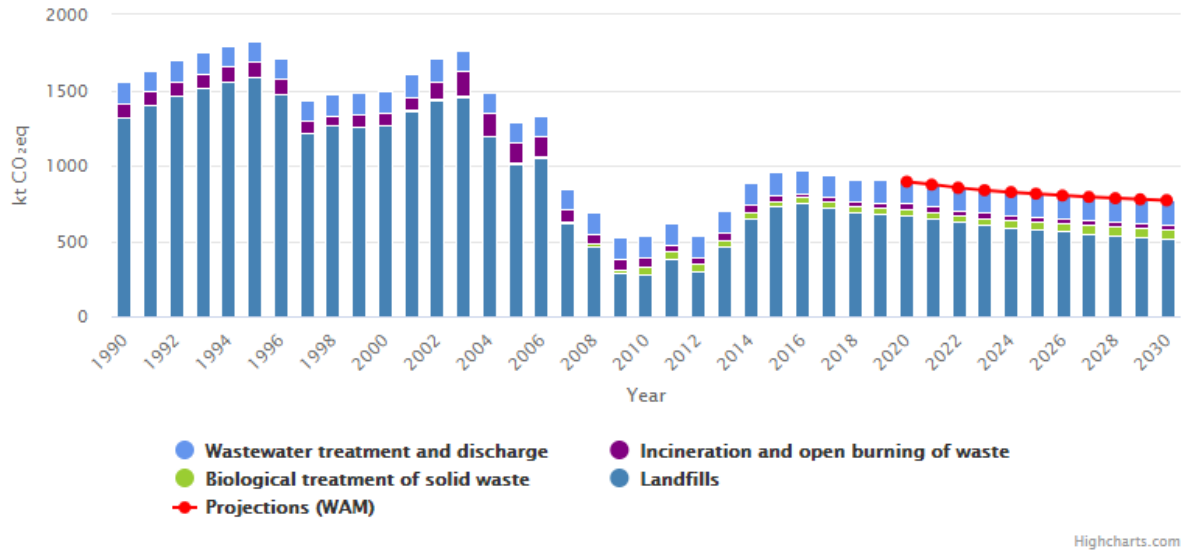
The evidence points to emissions increasing as a result of economic activity and employment. *Agriculture* remains the single largest contributor to the overall emissions at 35.4% of the total. *Transport* and *Energy Industries* (which includes waste-to-energy incineration) are the second and third largest contributors at 20.4% and 15.8% respectively. Emissions from the *Residential* sector accounts for 10.9% of emissions. Emissions from the *Manufacturing Combustion* and *Industrial Processes* sectors together account for 11.5%. The remainder is made up of *F-Gases, Commercial Services, Public Services* and *Waste*, which together account for 6% of emissions.

The EPA has also published its Greenhouse Gas Emission Projections for 2020 – 2040.[30] Under the *With Existing Measures* (WEM) scenario, total emissions are projected to decrease from current levels by 3% by 2030. Under the WEM scenario, Ireland is predicted to exceed its carbon budget for the period 2021-2030 by 51.3 Mt CO_2eq (assuming the Land Use, Land Use Change and Forestry [LULUCF] flexibilities are fully utilised). If ETS flexibilities are also utilised, the exceedance would reduce to 32.2 Mt CO_2eq. Under the *With Additional Measures* (WAM) scenario, which takes account of the Climate Action Plan 2019, the projections indicate Ireland would have a surplus of approximately 8.1 Mt CO_2eq over that period (assuming both LULUCF and ETS flexibilities are utilised).

Greenhouse Gases Emissions from the Waste Sector

The *Waste* sector accounted for 1.5% of Ireland's total emissions in 2019. For GHG reporting purposes, the *Waste* sector includes landfill, waste-to-energy/incineration, open burning of waste, wastewater treatment, and mechanical/biological treatment. The primary GHG emitted from the sector in Ireland relates to methane from landfills. Emissions decreased by 0.4% in 2019, with decreases in the sub-category *Landfills* of 2.3%. This represents an overall decrease of 0.004 Mt CO_2eq compared to emissions in 2018. The long term decreasing trends trend has resulted from decreasing quantities of municipal solid wastes being disposed to landfill, decreases in organic/garden wastes being disposed of in the residual stream, as well as paper products being diverted from landfills. Recovery of landfill gas for use in electricity generation is also driving emissions reductions in this sector.

Emissions from *Waste* are projected to decrease by 13.8% between 2020-2030 to 0.8 Mt CO_2eq (**Figure 5.9**). Methane emissions from landfill are projected to decrease reduces significantly over that period as less waste is disposed of to landfill.



Note: ***The Projections for 2020 -2030 in this graph pre-date the methodological changes made to the 1990-2019 Inventory. Care should therefore be taken in comparing historic and future emissions levels.***

Source: *EPA Greenhouse Gas Emissions from Waste. https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/waste/#*

Figure 5.9: Greenhous Gas Emissions and Projections (WEM) from the Waste Sector (1990 – 2030)

[30] EPA (2021) Ireland's Greenhouse Gas Emissions Projections 2020-2040. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2020-2040.php

Figure 5.10 illustrates the projected trend in emissions from the Waste sector under the WEM scenario. The lines showing a sensitivity assessment is based on a modelled scenario where an additional annual 350,000 tonnes of waste is assumed to require landfill management, with a subsequent emissions increase of approximately 1.2 Mt CO_2eq to 2030.

Figure 5.10: Greenhouse Gas Emissions Projections from the Waste Sector under the WEM scenario, including a sensitivity assessment

Co-incineration and the Emissions Trading Scheme

It is noted that some of the licensed cement kilns in Ireland have secured or are seeking consent to co-incinerate waste (including hazardous waste in some cases) as an alternative fuel. This alternative waste fuel reduces the volume of more conventional fossil fuels (oil/gas) that need to be combusted within the cement kilns. This waste fuel substitution offsets the fossil fuel combustion emissions and allows the facilities to meet the requirements of the facility GHG Permit under the Emissions Trading Scheme (ETS).

In short, this move towards co-incineration of waste is economically incentivised by the ETS and while the output suggests lower GHG emissions (as reported through the GHG Permit), in reality the actual emissions of CO_2 are largely similar from combustion of waste compared to combustion of fuel oil.

Other Transboundary Emissions

The Gothenburg Protocol to abate acidification, eutrophication and ground-level ozone was adopted on 30 November 1999. It sets out national ceiling limits up to 2020 for four key transboundary pollutants. The EU adopted its provisions as part of the National Emissions Ceiling (NEC) Directive (2001/81/EC).

The revised NEC Directive (2016/2284/EU) requires Ireland to limit the annual national emissions of the following transboundary pollutants: SO_2, nitrogen oxides (NO_x) volatile organic compounds (VOC), ammonia (NH_3) and fine particulate matter ($PM_{2.5}$). Ireland's emissions ceilings under the first NEC Directive applied until December 2019 with reference to 2005 as the base year. Article 4(1) and Annex II of the revised directive sets out new reduction commitments for the aforementioned which apply from 2020 to 2029, and from 2030 onwards; see **Table 5-6**. The EPA report *Ireland's Air Pollutant Emissions 1990-2030* (2020) outlines the current levels.

Table 5-6: Ireland's National Emissions Ceiling Directive 2020 and 2030 Targets

Pollutant	Current 2010-20 Targets (kilotonnes)	Emissions Trends (kilotonnes)					New Reduction Commitments (kilotonnes)	
		2014	2015	2016	2017	2018	2020	2030
SO_2	42	17.015	15.145	13.782	13.540	12.258	25.574	10.960
NO_x	65	106.305	106.187	107.828	107.963	107.755	66.836	40.626
NMVOC	55	103.456	103.577	105.269	109.942	109.784	56.335	51.077
NH_3	116	108.266	110.695	116.160	118.441	119.339	112.066	107.539
$PM_{2.5}$	*N/A*	13.419	13.928	12.663	11.979	12.043	15.606	11.229

SO_2 emissions from Ireland have seen a consistent downward trend year on year since 1990. The main sources are combustion-related, mainly from the power stations and in the residential/commercial sectors (23.2% and 51.7% respectively) followed by the industrial sector (21.8%).[31] Emissions are projected to reduce even further to 2030.

Emissions of NO_x contribute to acidification of soils and surface waters, tropospheric ozone formation and nitrogen saturation in terrestrial ecosystems. Road transport is the primary source (40.6%). This is followed by agriculture, with the main sources being the application of synthetic fertilisers and emissions from dung/urine deposited by grazing animals (32.4% of the total for 2018). The *industrial*, *power generation* and *residential/commercial* sectors are the other main sources of NO_x emissions, with contributions of 8.7%, 6.3% and 7.4% respectively in 2018. The remainder of NO_x emissions emanate from combustion in the agriculture sector and others (refining and storage, solid fuel manufacture, fugitive emissions and waste); together these sectors produced around 4.8% of the total in 2018. NO_x emissions have been consistently above the NEC, reflective of Ireland's ongoing challenge in complying with the ceiling. Progress in reducing emissions has been difficult, even with the large reductions in emissions from power stations in recent years. Under the WAM scenario, NO_x is projected to be just 1 kilotonne under the 2030 ceiling limit.

NH_3 emissions are associated with acid deposition and can contribute to the formation of particulate matter. Emissions have remained relatively steady with small fluctuations year on year. Ireland has exceeded the emission ceiling in 2016, 2017 and 2018. These increases are attributed to increasing numbers of dairy cattle and use of synthetic fertilisers. Road transport accounts for a small proportion (< 1%) of emissions (petrol passenger cars with three-way catalysts). Reducing NH_3 emissions will be challenging for Ireland, given its main emissions source from agriculture and the ambitious targets set out in Food Wise 2025 and Ireland is projected to still exceed the ceiling limits in 2020 and 2030, even under the WAM scenario.

NMVOCs are emitted as gases by a wide array of products including paints, paint strippers, glues, cleaning agents and adhesives. NMVOCs also arise as a product of incomplete combustion of fuels and, as such, are a component of vehicle exhaust emissions. They also arise from the storage of animal manures and fertilisers in agriculture, and from the food and drink industry. NMVOCs contribute to the formation of ground level (tropospheric) ozone, with some species such as benzene and 1,3 butadiene being directly hazardous to human health.[32] In 2018 the main sources of these emissions in Ireland are from manure management in agriculture (39.4%), the food/beverages industry (24.4%) and solvent use (20.8%). Coal burning in the residential sector is an important but declining source as coal consumption decreases. Emissions from stationary combustion of fossil fuels across all sectors (power stations, residential, commercial, and agriculture) account for 10.9% of national total NMVOC emissions. Transport emissions account for 4.9% of NMVOCs, mainly from exhaust and fugitive releases from gasoline vehicles. The addition of emissions from fertilisers over the past three reporting years, plus sources from the food and beverages sector to Ireland's reporting has added an average of 56.3 kilotonnes to the national total, effectively doubling previously

[31] EPA (June 2020) Ireland's Air Pollutant Emissions 1990-2030. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-air-pollutant-emissions-2018-1990-2030.php

[32] EEA (2015) Indicator Assessment: Non-methane volatile organic compounds (NMVOC) emissions *[Note: The EEA has discontinued this indicator]*. Available at: https://www.eea.europa.eu/data-and-maps/indicators/eea-32-non-methane-volatile-1/assessment-4

reported emissions. This represents a significant challenge for Ireland to achieve reductions, with the WAM scenario projections indicating Ireland will be just over the 2030 ceiling by 0.08 kilotonnes.

PM is ubiquitous and there are many sources of dust including vehicle exhausts, surfaces such as soils and roads, industry emissions, construction activities as well as formation from reactions between different pollutant gases. PM_{10} (dust particles with a diameter less than 10 µg) is small enough to be inhaled into the lungs however fine particulate matter ($PM_{2.5}$, diameter less than 2.5 µg) is considered a better measure of anthropogenic sources of particulate matter. The main source in Ireland is fossil fuel combustion in the commercial and residential sectors (54.9%), with transport contributing 13.8%. Emissions from the *Other* sector account for 7.5% of 2018 emissions and comprise emissions from manufacture of solid fuels and oil refining/storage, construction and demolition, minerals, paving sectors etc. Emissions from agriculture accounted for 7.4% of PM emissions. Ireland is currently meeting its $PM_{2.5}$ ceiling target, and projections under the WAM scenario indicate Ireland will be under the 2030 ceiling limit.

Indirect Emissions

Transport of hazardous and non-hazardous waste is mainly by large heavy goods vehicles (HGVs) that collect the waste, i.e. kerbside collection and the subsequent transport to a recovery or disposal facility. Similarly, for trans-frontier waste shipments from Ireland, there are additional transport emissions from shipping or additional road haulage. The extent of the emissions depends on the distance travelled, the fuel used for transport and the size of the shipment. These road and shipping movements generate emissions of air pollutants (namely SO_x, NO_x and VOCs) and CO_2 which impact on climate.

In addition to emissions from land transport sources, shipping is the key activity responsible for GHG emissions in the maritime environment. Under the Kyoto Protocol, shipping represents a complex global activity, emissions from which are not easily attributable to any one country, however the International Maritime Organisation (IMO) is pursuing emissions reduction from the shipping sector. Currently, shipping emits approximately 1,076 Mt CO_2 annually (compared to 940 Mt reported in the Third IMO GHG Report, 2015). And while carbon efficiencies have been achieved, these gains were outpaced by growth in activity.[33] At a global scale, this accounts for around 2.5% of total GHG emissions. However emissions are predicted to grow by between 50% and 250% by 2050, which is not in accordance with international agreements to limit GHG emissions under the Paris Agreement (2015).

5.3.5.3 Noise

Regulation of noise comes under the remit of the Environmental Noise Directive [END] (2002/49/EC), with the requirement for Member States to produce noise maps and compile noise action plans based on those maps. END was transposed into Irish law through the Environmental Noise Regulations 2018 (S.I. No. 549/2018).

Exposure to noise is recognised as being both an environmental pressure to wildlife as well as human beings, and can affect human health and general well-being by causing stress, anxiety and disruption of activities (e.g. sleep). Exposure to excessive noise has also been linked to an increased risk of heart attack, stroke and premature death.[19] People generally are exposed to the most noise from transport-related sources, particularly road traffic. Airports, railways and industrial activities are the other major sources of noise. Urban areas can exacerbate the impacts of noise to human health, in particular because air pollution levels are often higher, creating in-combination effects. Under END, Ireland currently has no large industrial facilities that fall under the remit of END.

5.3.5.4 Environmental Pressures/ Problems: Air Quality and Climatic Factors

In general, Ireland has good air quality and generally meets its EU emissions limit values. However pollutant monitoring indicates that exceedances are occurring of the stricter WHO guideline values, e.g. fine particulates and ground-level ozone, indicating that air quality problems may be more widespread in Ireland than previously thought.

GHG emissions in Ireland are also showing a worrying trend, and Ireland continues to have one of the highest per capita emissions in Europe. Emissions have increased overall by 10.1% on 1990 levels, but have

[33] IMO (2015). Fourth IMO GHG Study 2014.

been lower since the 2008 recession, with emissions declining 4.5% on 2018 levels. However Ireland will still likely exceed its 2020 target under the EU's Effort Sharing Decision (ESD), where the longer-term trend indicates that since 2013, emissions under the ESD increased by 6.8%. The evidence points to emissions increasing as a result of economic activity and employment. The Waste sector was responsible for 1.5% of Ireland's GHG emissions in 2019, with emissions decreasing by 0.8% compared to 2018. Overall decreases have been reported for the last 3 years and are currently 43% below 1990 levels. These long-term decreases are a result of decreased quantities of municipal solid wastes being disposed of in landfills and a decrease in the proportion of organic materials in this waste stream as well as diversion of paper products from landfills. Longer-term, the outlook for the waste sector is good, with emissions projected to decrease under WEM scenario. Should volumes of waste disposed to landfill increase however, the associated emissions will also increase to 2030.

In terms of transboundary emissions, Ireland is failing to meet EU targets on ammonia emissions under the National Emissions Ceiling (NEC) Directive, of which agriculture is the main source. Progress is mixed progress in terms of reducing emissions from other sectors such as transport and energy. Measures at a national level are required to tackle this and improve the outlook, however even with projections looking at scenarios with additional measures applied, some transboundary pollutants are projected to remain above the 2030 ceiling limits (NMVOCs and NH_3), while NO_x is projected to just meet its 2030 limit. Ammonia emissions from agriculture is also a national as well as a transboundary issue (particularly for sensitive habitats where atmospheric deposition can cause impacts).

Air quality is also a transboundary issue; air pollution events continue to impact Ireland annually from sources such as ozone and particulate matter from continental Europe. In terms of the marine environment, the main source of air pollution is from shipping, namely of sulphur oxides, nitrogen oxides and particulate matter, as well as volatile organic carbons (VOCs). Given the transboundary nature of shipping and the difficultly of attributing emissions to individual countries, emissions from shipping is regulated under the international MARPOL Convention, with new sulphur limits for shipping fuels applying from 2020.

The key issues for air quality and climatic factors and the draft Plan therefore relate to:

- Emissions to atmosphere from unregulated combustion of hazardous wastes;
- Emissions to atmosphere from unregulated handling and storage of hazardous wastes (e.g. asbestos);
- Emissions from authorised hazardous waste facilities such as incineration and co-incineration;
- Effect of odour generated by waste management facilities and infrastructure;
- Effect of air emissions from collection and transport of waste;
- Effect of air emissions from waste treatment and recovery facilities;
- Effect of air emissions from accidental fires at waste management facilities and infrastructure; and
- Emissions of odours and generation of noise from the operation of licensed facilities.

The types of emissions with key potential for impact on air quality and climatic factors includes: carbon dioxide, particulate matter, nitrogen oxides, ammonia, carbon monoxide, heavy metals, VOCs, PAHs, dioxins, furans, odours and noise.

Local air quality impacts such as dusts and odours can have significant health and nuisance impacts in the vicinity of the waste facilities. The extent of impact of each type of waste operation depends on each type of waste disposal/recovery operation. Depending on the type of waste management facility there can be localised air quality issues. These local impacts are typically addressed through the consent processes with restrictions imposed by planning and/or EPA regulation.

Transport of waste is mainly by large heavy goods vehicles (HGVs) that collect waste and move it to and from facilities. Similarly, for trans-frontier waste shipments from Ireland, there are transport emissions from shipping or additional road haulage. The extent of emissions depends on distance travelled, fuel used for

transport and size of shipments. Road and shipping movements generate emissions of air pollutants, which also impact on climate.

Emissions to air from hazardous waste management activities are managed primarily through the licensing of facilities granted under the Waste or Integrated Pollution Control (IPC) and the Industrial Emissions Directive (IED) authorisations. Depending on the type of waste management facility there can be localised air quality issues. The EPA report *Industrial and Waste License Enforcement 2018* (2019) indicates that the majority of public complaints made in 2018 on EPA licenced waste facilities related to landfill odour (84%), noise (27%), and air quality (7%). Complaints on waste comprised just 1% of complaints. Of the operational facilities, 85% had no complaints made against them while 34% of complaints related to a small number of sites (3). In general, there was a 22% reduction in public complaints made compared to 2017.

The improper handling of household hazardous waste is also an area of concern for air quality. Improper storage or handling of asbestos from DIY projects can cause adverse air quality impact. Similarly, WEEE may be disposed of in either the residual bin or green bin, contaminating those waste streams and having knock-on impacts for how that waste is then treated and the subsequent emissions from a treatment facility which may not have the treatment processes in place to handle these chemicals.

5.3.6 Material Assets

There is no clear definition of material assets under the SEA Directive, or indeed the EIA Directive. Material assets primarily relate to the infrastructural assets that enable an area or a state to function as a place to live and work and can be taken to be infrastructure including settlements (towns and villages etc.), transport and utilities (including waste facilities). It typically overlaps with other areas such as population, climate, land and soils etc. Natural resources such as land use and soils also have material asset value and are covered in **Section 5.3.3**.

In the context of the draft Plan, this section in relation to material assets addresses issues relating to:

- Overview of the principal hazardous waste streams and management;
- Unregulated disposal of hazardous waste; and
- Transport infrastructure, namely the road network and ports/shipping, as the primary modes of moving hazardous waste.

5.3.6.1 Overview of Hazardous Waste Generation and Management

The amount of hazardous waste generated in Ireland in 2019 is approximately 580,977 tonnes. There was an increase of over 54,000 tonnes in 2019 when compared with the figure from 2018. **Figure 5.11** shows that volumes of hazardous waste had been relatively consistent from 2009 to 2014, at approximately 300,000 tonnes, however showing an increasing trends in volume generated from 2015 onwards. The key drivers of this is the increase in incinerator ash and contaminated soils.

The latest hazardous waste statistics reports that industrial sectors generated the majority (80%) of hazardous waste in 2019. The EPA State of the Environment Report (2020) states that the chemicals industry accounted for the majority of this (25%). Typical hazardous waste streams include industrial solvents, sludges, waste oils and chemicals. Businesses, the construction and healthcare sectors, farms and households also produce hazardous wastes such as lead-acid batteries, WEEE, healthcare risk waste, solvent-based paints and varnishes, and waste oils. Many pharmaceutical facilities are now switching production materials to less-hazardous biosynthesis production methods, which is having a positive impact by reducing the level of hazardous waste being generated per facility.

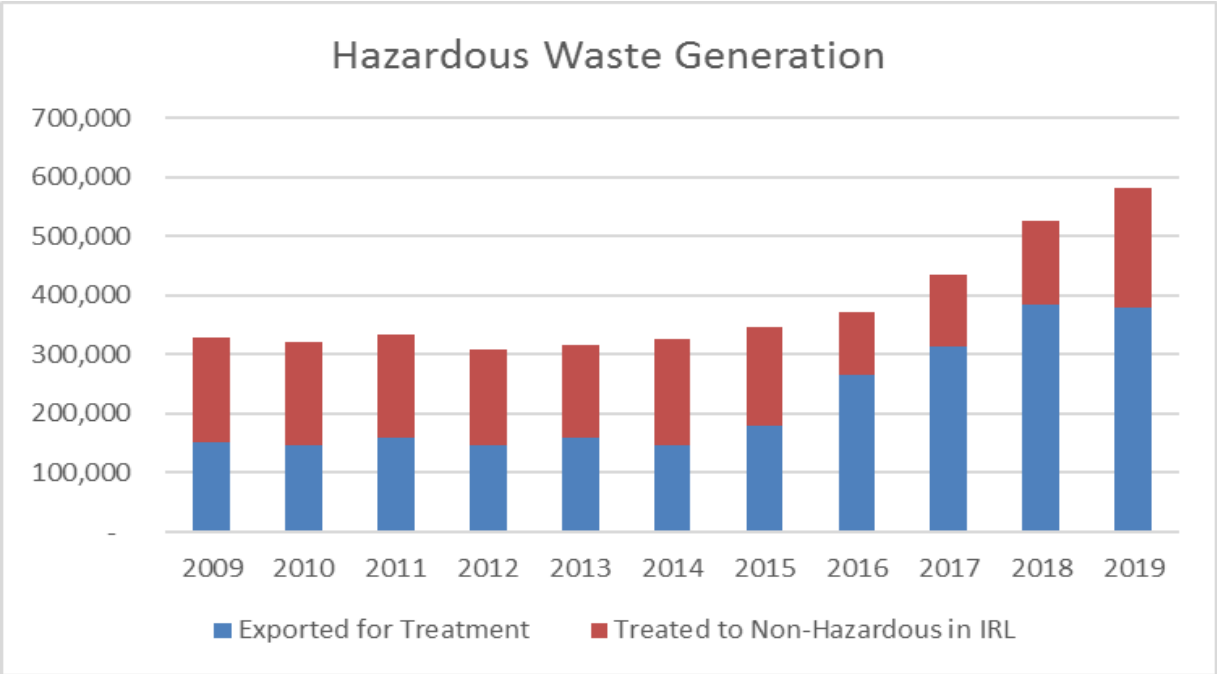


Figure 5.11: Trends in Hazardous Waste Generated (2009-2019)

Table 5-7 outlines the top four categories of hazardous waste that made up 61% of the total generated in 2019.

Table 5-7: Primary Hazardous Waste Streams

Primary Hazardous Waste Stream	Volume in tonnes (t)
Wastes from waste treatment such as: – Incinerator bottom ash – Fly ash – Boiler ash – Residues from flue gas and air pollution control at waste-to-energy facilities*	152,635
Contaminated soils from the development/ remediation of old industrial facilities and brownfield sites	90,595
Chemical reaction residues	65,509
Solvents that contribute to hazardous waste	46,813

** Note: It should be noted that at the end of 2019, incinerator bottom ash from the Dublin Waste to Energy facility was reclassified as non-hazardous waste. A reduction in the order of 100,000 t in hazardous waste is therefore expected in 2020.*

Other key trends from 2019 include:

- An increase of 25,155 tonnes in hazardous waste treated on-site by licensed facilities.
- An increase of 23,611 tonnes in the treatment of various hazardous waste types from various sources to non-hazardous at Irish treatment facilities.
- An increase of 24,204 tonnes in hazardous waste exported for treatment.
- Treatment of hazardous soil at Irish treatment facilities increased by 10,330 tonnes in 2019. There was a decrease of over 28,000 tonnes of hazardous soil export to 46,000 tonnes in 2019. This is from a high of over 100,000 tonnes in 2017.

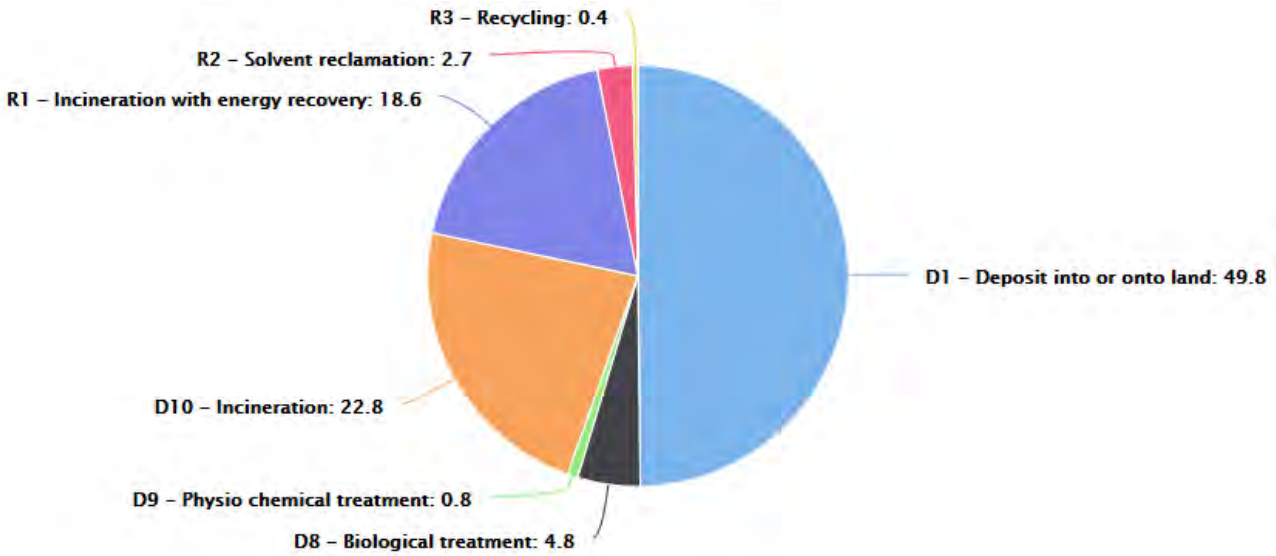
A total of 201,591 tonnes of hazardous waste is treated to non-hazardous status in Ireland. Of this, 62% is disposed of, and 38% is recovered:

Treatment at Hazardous Waste Facilities in Ireland

Irish hazardous waste treatment facilities treated 146,309 tonnes of hazardous waste to non-hazardous status in 2019, representing a 30% increase on 2018. Waste types treated included contaminated soils, used motor oil, healthcare wastes, sludges, filter cakes, absorbents, laboratory and chemical waste and household hazardous waste from civic amenity sites. Hazardous waste is treated until it is non-hazardous; the non-hazardous waste residuals are still classed as a waste and must treated further, either within Ireland or exported for treatment abroad.

On-Site Treatment at the Site of Generation in Ireland

Approximately 55,282 tonnes of hazardous waste were fully treated on-site across 15 EPA licensed industrial facilities in 2019. The breakdown of the types of disposal (approx. 40,000 tonnes) and recovery (approx. 15,000 tonnes) activities is shown in **Figure 5.12**. The main driver of the approximate 25,000 tonne increase in 2019 in hazardous waste generated compared to 2018 related to 15,000 tonnes of contaminated soil from Limerick Gas Works treated and deposited back to land, as well as 10,000 tonnes of dredging spoil at Dublin Port that was subsequently remediated and recovered.



Source: *EPA, Figure 2 available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/*

Figure 5.12: On-site Treatment of Hazardous Waste at EPA Licensed Facilities

A map showing the locations of EPA industrial facilities licensed for handling hazardous waste is shown in **Figure 5.13** and discussed further in **Section 5.3.6.2** below. Proximity to the major road network and the key ports is also shown.

Figure 5.13:
Location of Facilities Licensed to handle Hazardous Waste and Major Transport Network

West Pier Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

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Issue Details			
Drawn By:	NA	Project No.	MDR1648
Checked By:	NO'N	File Ref:	MDR1648Arc0009F01
Approved By:	NO'N		
Scale:	1:1,900,000 @ A4	Projection:	ITM (IRENET95)
Date:	18/03/2021		

5.3.6.2 Existing Licensed/Permitted Facilities

Irish hazardous waste treatment facilities treated 146,309 tonnes of hazardous waste to non-hazardous status in 2019. There are three types of existing EPA licensed facility within Ireland responsible for the management of hazardous wastes and these are listed within the EPA licensing database:

- **Industrial/waste facilities that generate hazardous wastes and send these wastes off site for treatment:** In 2019, approximately 80% of the 580,977 tonnes of hazardous waste generated was from industry;

- **Industrial/waste facilities that generate hazardous wastes with some on site treatment and also send the remaining wastes off site for treatment:** 15 various types of EPA licensed industrial facilities (pharmaceuticals, chemicals, aluminium, surface coatings and explosives) fully treated 55,282 tonnes of hazardous waste in 2019 under EPA licence conditions. However, a larger number has the capacity and infrastructure to treat waste on site and these are listed in **Table 5-8**; and

- **Waste facilities that accept hazardous waste from other sites:** There are 18 facilities listed as Hazardous Waste Facilities under the EPA licensing regime (refer to **Table 5-9**) but a significant number of other facilities may also accept hazardous waste. Waste types treated included contaminated soils, used motor oil, healthcare wastes, sludges, filter cakes, absorbents, laboratory and chemical waste and household hazardous waste from civic amenity sites; this waste is treated until it is non-hazardous. The non-hazardous wastes that result are then further treated either in Ireland or abroad.

In addition to the above infrastructure, there are also a number of existing assets that, while hazardous waste management is not the primary licensed activity, the operator can or is currently seeking the necessary consent to accept and manage hazardous waste. The main facilities and the current status of each as of March 2021 are summarised as follows:

- **Breedon Cement Ireland Limited** (Kinnegad, Co. Meath, Licence Reg. P0487-07) is currently permitted to accept and co-incinerate up to a maximum 105,000 t per annum of hazardous wastes (including liquid recovered fuel); and

- **Irish Cement Limited** (Platin, Co, Meath, Licence Reg. P0030-05) has received planning consent (ABP Case Reference PL17.PA0050) to co-incinerate 50,000 t per annum of hazardous waste as secondary liquid fuels. A licence review is currently pending with the EPA as a secondary consent.

It is noted that all EPA licenced activities are currently subject to EIA and AA requirements at application stage ensuring a high degree of environmental protection is built into the design and operation of these facilities. As an example, the Drehid Landfill was refused permission in 2020 (ABP case reference PL09 .300506) for an integrated waste management facility (including a landfill to accept 85,000 tonnes per annum of hazardous wastes) with three of the four reasons for refusal cited as biodiversity, water quality and hydrogeology.

In addition to the EPA licenced facilities, Waste Permitted facilities can also manage hazardous waste below a set of thresholds specified in the 3rd and 4th Schedule to the Waste Management Act 1996, as amended. Activities typically covered under this regime include the following hazardous waste activities:

- The reception and temporary storage, pending collection, of household hazardous waste at a civic amenity facility, recycling centre or central collection point;

- The reception, storage (including temporary storage) and recovery of waste vehicles;

- The reception, treatment and recovery of WEEE; and

- The reception, temporary storage and recovery of used batteries and accumulators.

The Regional Waste Management Offices undertook a National Review of Civic Amenity Sites in 2020 which recommended that going forward these sites should focus on the primary streams of concern including hazardous waste.

The recently updated Regulation 36 of the European Union (Waste Directive) Regulations 2011-2020 on hazardous waste produced by households required that by the 1st January 2025, a separate collection for hazardous waste fractions produced by households is required.

Table 5-8: Licensed Industrial Facilities with Capacity to treat Hazardous Waste On-site

Facility Name	Register No.	Waste Types Treated
Arran Chemical Co Ltd	P0110-02	Solvents
Astellas Ireland Co. Ltd	P0007-03	Solvents and Aqueous washing liquids and mother liquors (07__01*)
Aughinish Alumina Ltd	P0035-06	Salts and salt cake
BASF Ireland Limited	P0052-02	Other industrial hazardous waste, i.e. still bottoms and reaction residues (07 07 08*)
Eli Lilly	P0009-04	Solvents
Mallinckrodt Medical Imaging / Guerbet	P0050-02	Solvents
MSD International GmbH	P0011-05	Solvents
Merck Millipore Ltd	P0571-04	Solvents
Novartis Ringaskiddy Ltd	P0006-03	Absorbents, wiping cloths, packaging (contaminated or containing residues), solid wastes from manufacturing of pharmaceuticals, laboratory and general chemical waste, oily waste, solvents, aqueous washing liquids and mother liquors
Pfizer Ireland Pharmaceuticals - Ringaskiddy	P0013-04	Solvents
Pfizer Ireland Pharmaceuticals - Little Island	P0136-04	Solvents
Roche Ireland Ltd	P0012-05	Solvents
MSD Ireland (Rathdrum)	P0015-05	Solvents
Smithkline Beecham (Cork) Ltd	P0004-04	Solvents
Swords Laboratories	P0014-04	Solvents and Sodium and Potassium Hydroxide
Swords Laboratories	P0552-03	Solvents
Temmler Ireland Ltd	P0813-02	Solvents and solid wastes from the manufacture of pharmaceuticals
Zenith Energy Bantry Bay Terminal Limited	P0419-01	Oil from oil/water separators

Table 5-9: Licensed Hazardous Waste Facilities in Ireland

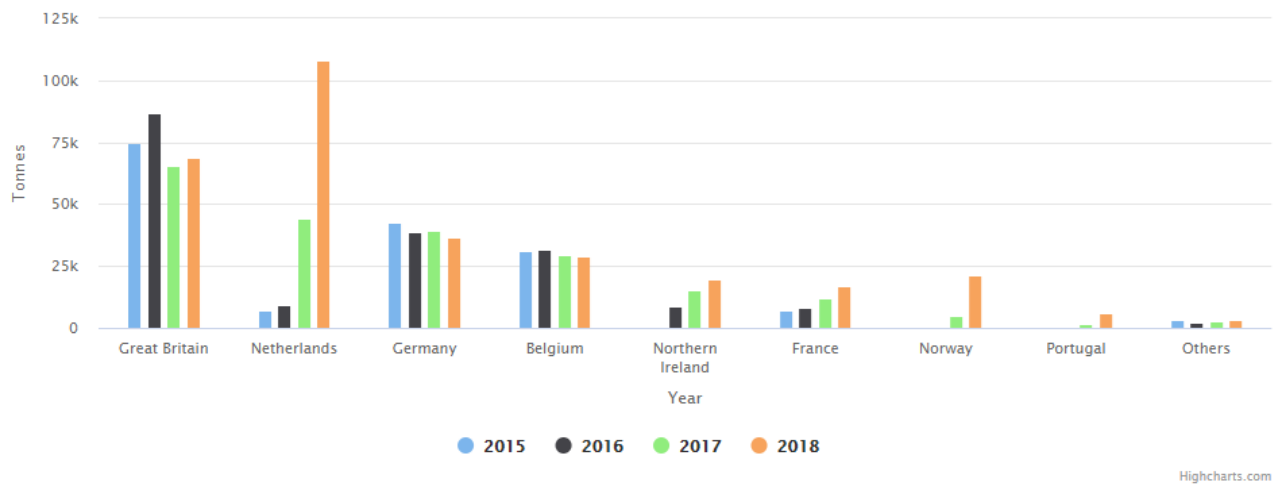
Facility Name	Licence/Permit No.	Description of activities
Indaver Ireland Ltd (Dublin Port)	W0036-02 (IED)	Solvent reclamation/regeneration (blending)
Enva Ireland Ltd (Shannon)	W0041-01 (IED)	Physico-chemical treatment (neutralisation of various hazardous wastes and precipitation of reactions which produce a non-hazardous sludge)
Veolia Environmental Services (Fermoy)	W0050-02 (IED)	Solvent reclamation/regeneration (fuel blending)
		Treatment of contaminated metal packaging prior to recovery
SRCL Ltd	W0054-02 (IED)	Physico-chemical treatment (sterilisation of clinical/veterinary waste)
SRCL Ltd	W0055-02 (IED)	Recycling/reclamation of organic substances which are not used as solvents (healthcare risk waste is shredded and disinfected using steam)

Facility Name	Licence/Permit No.	Description of activities
Safety Kleen Ireland Limited	W0099-01 (IED)	Specialised waste from the automotive, industrial and medical sectors
KMK Metals Recycling Ltd	W0113-04 (IED)	Dismantling waste electrical and electronic equipment (WEEE) into constituents and storage of WEEE prior to transfer for recovery
Soltec (Ireland) Ltd	W0115-01 (IED)	Solvent reclamation/regeneration (used in the production of thinners)
Enva Ireland Ltd	W0145-02 (IED)	Physico-chemical treatment (various oil, healthcare and other hazardous waste streams)
Enva Ireland Ltd	W0184-02 (IED)	Bioremediation of wastes containing heavy metals & bioremediation and trommelling of soils and stones
		Used oil refining
Rilta Environmental Ltd	W0185-01 (IED)	Treatment of transformers
Enva Ireland Ltd	W0196-01 (IED)	Physico-chemical treatment (various oil and aqueous hazardous waste streams)
		Physico-chemical treatment (neutralisation of various hazardous wastes and precipitation of reactions which produce a non-hazardous sludge)
Hi-Volt Ireland Limited	W0267-01	Batteries (including non-hazardous batteries)
		Waste hydraulic, lubrication and engine oil, bilge oils and oil/water separator contents Waste insulating and heat transmission oil
		Waste packaging, wiping rags
		Oil filters
		Brake pads containing asbestos Degreasing Waste Tank bottom sludges
		Brake and antifreeze Fluids
		Contaminated soil, dredging spoil and track ballast and wastes from soil and groundwater remediation
Harp Refrigerants Limited	W0297-01	Reclamation of refrigerant gases, oils and cooling liquids

5.3.6.3 Exports of Hazardous Waste for Treatment Abroad

Currently, the majority (65%) of Ireland's hazardous waste was exported for treatment in other European countries in 2019, compared with 73% in 2018. The countries which accepted significant volumes of Ireland's hazardous waste over the past five years are outlined in **Figure 5.14**. Together, Great Britain, the Netherlands, Germany, Belgium, Northern Ireland, France, Norway and Portugal accepted 98% of hazardous waste exports in 2019. Approximately 100,000 tonnes of ash from municipal waste incinerators accounts for the large spike in waste sent to the Netherlands in 2018 and 2019.

In April 2020, the bottom ash from Dublin Waste to Energy facility was classified as non-hazardous following testing. A decrease in exports to the order of 80,000 tonnes is therefore expected in the 2020 hazardous export figures.

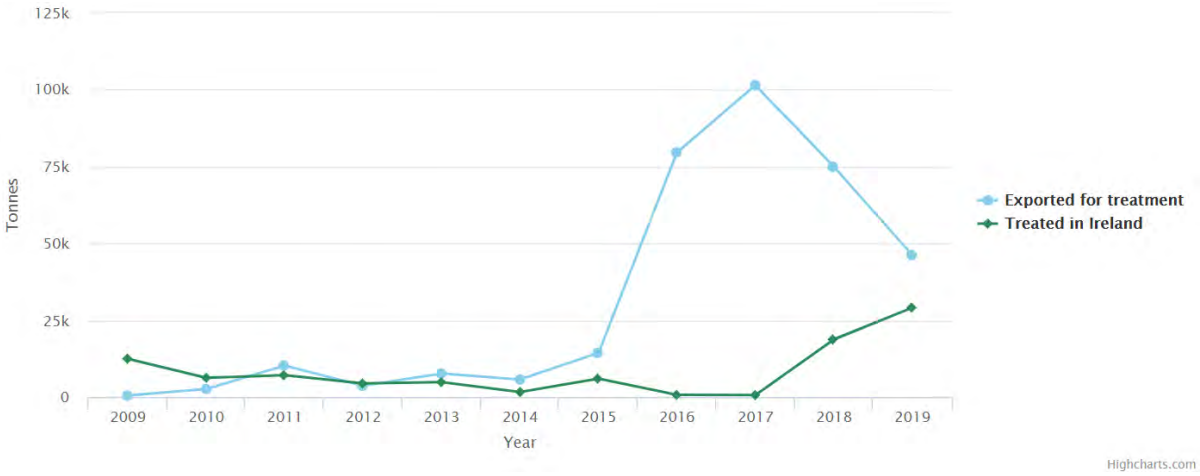


Source: *EPA, Figure 3 available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/*

Figure 5.14: Exports of Hazardous Waste (excl. soils) and Key Destination Countries (2015 – 2019)

Generation of contaminated soils generally arises from the redevelopment or remediation of historic industrial sites which often have hazardous chemicals present in the soil or groundwater, e.g. railway and gas works, quarries/mines, tanneries, dock yards, petrol stations etc. Contaminated soils must be removed before the site can be used again.

In 2019, the total amount of contaminated soil generated in Ireland amounted to just over 90,000 tonnes. This represents a decrease of approximately 3,000 tonnes compared to 2018 (see **Figure 5.15**). In 2019, contaminated soil exports also continued a downwards trend from the historical high seen in 2017 to approximately 46,000 tonnes, the majority of which (38,560 tonnes) was exported to Norway. The amount of soil being treated in Ireland in 2019 at Irish hazardous waste treatment facilities also increased by almost the same amount as was exported. This amounted to about 29,000 tonnes of contaminated soil being treated at various facilities, as well as 15,000 tonnes treated on-site at Limerick Gas Works.



Source: *EPA, Figure 4 available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/*

Figure 5.15: Trends in Volume of Soil Treated in Ireland versus Exported

5.3.6.4 Unregulated Disposal of Hazardous Waste

The EPA is currently preparing study examining the nature/extent of waste crime; it will look at the impact of such waste crime activities, including an assessment on the extent to which illegal dumping has occurred over the past 10 years. The last report which looked at unauthorised waste disposal was prepared in 2005. The EPA previously reported that the national estimate of unmanaged household waste was 214,200 tonnes in 2012. In 2018, the estimated figure was 47,307 tonnes. This indicates an improving trend, but that a minority of citizens continue to illegally dump or burn their waste.

Of note is that during the 2020 lockdown response to COVID-19, the EPA recorded a four-fold increase in illegal backyard burning enquires, as well as evidence that levels of illegal dumping had increased.[34] Illegal burning of wastes can produce a similar set of emissions to those listed above for thermal treatment. The quantity of potentially hazardous pollutants released depends on the composition of the waste being burned, the temperature of the combustion and the supply of oxygen. The EPA has reported that one of the main sources of dioxin emissions in the Irish environment originates from the uncontrolled burning of domestic waste.

On disposal of hazardous waste from households, an EPA report on the *Household Waste Characterisation Campaign* found that over a ten year period, household hazardous waste increased from 0.9% in 2008 to 1.2% in 2018, an overall increase of 0.3%.[35] The most common streams were aerosols, paints, medicines and drugs. The WEEE waste stream also increased from 0.3% to 0.9% over the same period.

5.3.6.5 Existing Transport Network

The key modes for the transport and transfer of hazardous waste streams relate generally to heavy goods vehicles (HGVs) and to a lesser extent, private vehicles (members of the public bringing household waste to civic amenity sites). Ports and shipping are also relevant, whereby hazardous waste is exported for treatment/ recovery in other European countries.

Road Network

The total length of the national road network in Ireland is over 5,300 km. National primary roads comprise 2,649 km in length and national secondary roads comprise 2,657 km. Motorways comprise 916km; of this, approximately 320 km is operated by Public Private Partnerships. The local authorities manage the urban and remote sections of dual carriageway, national secondary, regional and local roads.

As part of wider European infrastructure policy to connect all areas of Europe, Ireland is part of the Trans-European Transport Network (or TEN-T). Under TEN-T, Ireland has one core network corridor crossing through the country, the North Sea-Mediterranean Corridor. Within Ireland, the core part of this corridor stretches from Belfast and the Irish Ports of Cork and Dublin, as shown in **Figure 5.13**. A number of Ireland's motorways make up part of this TEN-T corridor including the M1, M50, M7 and M8 along with the ports of Dublin, Cork and Shannon-Foynes; Dublin International and Cork airports are also identified as core airports within the wider network. This corridor is part of a wider network that stretches across the United Kingdom and Europe and covers rail, road, airports, ports, road/rail terminal, the Dutch-Belgian inland waterway system, as well as the Rhône River.

Ports and Shipping

As an island nation, ports play a crucial role in facilitating Irish economic growth and prosperity. As a significant portion of Ireland's hazardous waste is exported abroad for treatment, this is also a key modal consideration. The Competition and Consumer Protection Commission has estimated that the ports handle 84% of Ireland's merchandise trade in volume and 62% in value terms. The National Ports Policy (DTTAS, 2013) provides the framework for the provision of port services, and categorises the state's commercial ports sector into:

- Ports of National Significance Tier 1 (Dublin, Cork and Shannon Foynes);
- Ports of National Significance Tier 2 (Rosslare and Waterford); and
- Ports of Regional Significance (Dún Laoghaire, Galway, New Ross, Drogheda under the control of Louth County Council, and Wicklow now part of Wicklow County Council).

The Tier 1 and 2 Ports are key international maritime gateways, handling approximately 90% of all tonnage, and are economically significant in terms of their importance to Ireland's national competitiveness. The locations of these ports are shown on **Figure 5.13**. As discussed above, exports of hazardous waste for

[34] EPA (2020) Ireland in the Pandemic: Environmental Observations.

[35] EPA (2018) Final Report on the Household Waste Characterisation Campaign. Available at: https://www.epa.ie/pubs/reports/waste/wastecharacterisation/ctcfinalreportnhwc.html

treatment abroad have been increasing year on year since 2015. The movement of waste between member states and between the EU and other countries is regulated under the transfrontier shipment (TFS) process, and is subject to Regulation (EC) No. 1013/2006, transposed into Irish law through the Waste Management (Shipments of Waste) Regulations, S.I. 419 of 2007. The National Transfrontier Shipment Office (NTFSO) is the competent authority for the administration and enforcement of waste imports/ exports and movements.

Ports and harbours sometimes require dredging of the seabed/seafloor sediments to maintain their operations and accessibility for marine traffic. The disposal of dredged material/ spoil is a licensed activity under the Dumping at Sea Act 1996, as amended, requiring a permit granted by the EPA, and their environmental impacts are assessed by DHLGH/EPA during licensing procedures. Locations of disposal sites may change over time for a variety of reasons (exhaustion of site capacity, monitoring requirements, need for new sites in additional locations).

In Ireland, it is difficult to assess trends of contaminants and hazardous wastes in dredged materials. Contaminants in these materials generally represent historic contaminants associated with ports and harbours which are maintained regularly with the expectation that repeated dredging leads to successively lower loads of contaminants. Across 2003-2007, data from 3 monitoring stations as part of OSPAR assessments (Dublin Bay and Northern Irish Sea) indicated exceedances in the upper threshold values for cadmium, copper, lead and zinc in sediment. Levels of polychlorinated biphenyls (PCBs, once used widely in electrical equipment and cables), as well as pesticides, were detected at low levels at these sites over the same period but are not considered to cause negative effects. The radionuclide caesium-137 is monitored in Irish seafloor sediments and are noted to remain at fairly stable levels after a downwards trend observed since 1995.[36]

5.3.6.6 Existing Environmental Pressures/ Problems: Material Assets

Ireland currently does not have the facilities required to treat the full range of hazardous wastes it produces. A significant amount of hazardous waste continues to be exported to other European countries.

At the local scale, the EPA reports that small household sources of hazardous waste can be an issue, with a slight rising trend, e.g. in WEEE not being separated from the household waste stream. This study indicated that the level of disposal of small sources from households is relatively small. However by 2025, a separate collection for household hazardous waste streams will need to be put in place. At this point it is unclear if this will be through the civic amenity site network or other means, but the existing collection and treatment infrastructure will have to suitably evolve to accommodate this required change.

The volumes of hazardous material exported from Ireland for treatment abroad has shown an increasing trend year on year since 2015. The export of hazardous waste to other European member states is regulated under the TFS processes and the regulations set at EU level and in Irish law.

Ship freight volumes are expected to continue to increase over the coming decades, while vessel sizes are also predicted to grow and vessel types set to further diversify. In the context of hazardous waste management, the key interaction is that export remains the primary mode of transporting hazardous waste. Indirectly, shipping activities can lead to the introduction of non-native species into an area and disturbance to marine animals, as well as contributing to transboundary emissions, with implications for air quality and climate.

Dredging is essential to maintain channels and deepen berths. The volume of port and navigation-related dredging and disposal has been increasing, from 680,521 dry tonnes in 2014 increasing to 1,361,656 dry tonnes in 2017.[37] Monitoring required under OSPAR indicate that some exceedances of heavy metal levels have been recorded in Irish sediments, but that levels of chemicals such as PCBs and pesticides are not currently considered an issue, and monitored radionuclide levels are remaining steady. Overall, contaminant levels in Irish sediments are within OSPAR assessment criteria levels.

[36] Department of Community, Environment and Local Government (2013) Ireland's Marine Strategy Framework Directive Article 19 Report. Initial Assessment, GES and Targets and Indicators.

[37] DHLGH (Dec. 2019) Public Consultation on Marine Strategy Framework Directive (2008/56/EC) - Article 17 update of the Assessment (Article 8), Determination of Good Environmental Status (Article 9) and Environmental Targets (Article 10). (Article 8), Determination of Good Environmental Status (Article 9) and Environmental Targets (Article 10).

The key issues for material assets and the draft Plan therefore relate to:

- Current impacts on transport and energy are noted, as is the infrastructure deficit in hazardous waste treatment in Ireland;
- Insufficient collection infrastructure leads to stockpiling of waste and increases the potential for illegal dumping of waste.
- Moving towards self-sufficiency in waste management nationally;
- Use of resources (building material and energy) in construction of waste management facilities and infrastructure;
- Reuse of waste materials, quality of waste for recycling;
- Use of transport networks in collecting and transporting waste;
- Use of water and energy in operation of waste management facilities and infrastructure;
- Siting of waste management facilities and infrastructure affecting land take and land use; and
- Encouraging efficient use of resources and to move further up the waste hierarchy.

5.3.7 Cultural Heritage

The main issue for cultural heritage associated with the implementation of the draft Plan is the resulting potential for both direct and indirect impacts on archaeological and architectural features and their settings as a result of siting of hazardous waste management infrastructure and also as a result of illegal/unregulated disposal of hazardous waste materials in proximity to these sites.

5.3.7.1 Overview of Cultural Heritage Protection in Ireland

The main records of heritage sites and features include those listed as follows:

Record of Monuments and Places (RMP)

The RMP is the statutory list of all known archaeological monuments in Ireland as compiled by the Archaeological Survey of Ireland, part of the Department of Housing, Local Government and Heritage.

National Inventory of Architectural Heritage (NIAH)

The NIAH identifies, records and evaluates the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for the Environment, Heritage and Local Government to the planning authorities for the inclusion of particular structures in their Record of Protected Structures.

Record of Protected Structures (RPS)

The NIAH surveys provide the basis for the recommendations of the Minister for Housing, Local Government and Heritage [previously the Minister for Environment, Heritage and Local Government] to the planning authorities for the inclusion of particular structures in their RPS. Under the Planning and Development Act (PDA), local authorities are required to compile and maintain an RPS in their development plans. Sites included in the RPS are awarded automatic protection and may not be demolished or materially altered without grant of permission under the Planning Acts.

Architectural Conservation Areas (ACA)

ACAs comprise, as stated in the PDA, '*the character of a place, area, group of structures or townscape, taking account of building lines and heights, that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of protected*

structures.' Provisions for the protection of ACAs are made by planning authorities as part of development plans, which includes the boundaries of ACAs.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites (WHS)

WHS's includes cultural and natural heritage sites around the world considered to be of outstanding value to humanity. There are two UNESCO sites within Ireland, Brú na Bóinne in County Meath and Skellig Michael in County Kerry. The following sites have been submitted by Ireland for consideration the tentative WHS list:

- Early Medieval Monastic Sites of Clonmacnoise, Durrow, Glendalough, Inis Cealtra, Kells and Monasterboice;
- The Burren;
- Céide Fields and North West Mayo Boglands;
- The Historic City of Dublin;
- The Monastic City of Clonmacnoise and its Cultural Landscape;
- The Royal Sites of Ireland: Cashel, Dún Ailinne, Hill of Uisneach, Rathcroghan Complex and Tara Complex; and
- The Western Stone Forts

5.3.7.2 Existing Environmental Pressures/ Problems: Cultural Heritage

There is also the potential for direct and indirect impacts on currently unknown archaeological features during construction of new facilities and / or remediation of legacy sites which may harbour hazardous waste.

With that in mind, it is recognised that impacts to specific heritage features and unknown subsurface features/remains are more appropriately assessed at lower planning levels e.g. a proposal for a licensed facility handling hazardous waste. At the national strategic level of the draft Plan, the focus is on prevention and management of hazardous waste streams, with appropriate siting guidance set out under lower tier planning, namely the three Regional Waste Management Plans (to be consolidated into one National waste Management Programme in 2021) and *Siting Guidelines for Waste Facilities*, that can alleviate conflict at later stages in the planning hierarchy and contribute to avoidance of risk as far as possible.

In this context, the key issues associated with the implementation of the draft Plan and cultural heritage relate to:

- Nationally designated sites in close proximity to waste management facilities or infrastructure.
- Effects on cultural, architectural and archaeological heritage features in the vicinity of proposed and existing waste management facilities and infrastructure.
- Potential for disturbance of previously undiscovered archaeological remains near or within development of waste management facilities or infrastructure development sites.

5.3.8 Landscape

Broadly speaking, landscapes are areas that are perceived by people which are made up of a number of layers:

- Landform, which results from geological and geomorphological history;
- Land cover, which includes vegetation, water and human settlements; and
- Human values, which are a result of historical, cultural, religious and other understandings and interactions with landform and land cover.

5.3.8.1 Landscape Assessment in Ireland

Ireland is a signatory to the European Landscape Convention, which aims to promote landscape protection, management and planning and to organise European co-operation on landscape issue. Ireland ratified the Convention in 2002 and it came into effect in 2004. Ireland, as a party to the Treaty, is required to undertake general measures to recognise landscapes in law, establish landscape policies with public participation and to integrate landscape into its existing policies.

The National Landscape Strategy for Ireland (2015-2025) was produced in line with Ireland's obligations under the convention. It outlines six key objectives and actions, one of which is to develop a National Landscape Character Assessment. It proposed that Landscape Character Assessments would be prepared at local and intra-local authority level however, there has been limited to no progress on developing these. It is intended that these regional and local landscape character assessments would inform and guide landscape policy, action plans and local authority development plans.

In the absence of national or regional guidance and assessments, local authorities currently conserve and protect scenic value as areas of high amenity, high sensitivity, areas of outstanding natural beauty, protected views and similar designations, but the approach is uncoordinated and can lead to different prioritisations in neighbouring counties. Each local authority is responsible for the designation of these within their individual jurisdictions, with each development plan providing objectives to protect such scenic values. It is noted the National Landscape Strategy does not specifically mention 'seascape', but is included as part of the Landscape Convention: '*The Convention covers natural, urban, peri-urban and rural areas, encompassing land, inland water, coastal and marine areas*.' Further, seascapes are increasingly being recognised as being a key element of the coastal and marine environment. Seascape characterisation should form an integral part of any overall landscape character assessment (LCA) where there is any coastal element. For instance, some local authorities have already undertaken LCAs which also consider seascape e.g. Donegal and Clare. Northern Ireland as an example has undertaken regional landscape and seascape character assessments, and the digital data is available from DAERA.[38]

The Offshore Renewable Energy Development Plan (OREDP) undertook an intermediate step towards national LCA by outlining a high-level methodology for seascape character assessment as part of a desktop study by describing the key characteristics of strategic seascapes Ireland, and outlined which areas are likely to be least sensitive to offshore renewable energy development. The approach was adapted from DTI Guidance on Seascape and Visual Impact Assessment of Offshore Wind Farms and the good practice outlined in the Guidelines for Landscape and Visual Impact Assessment (GLVIA), published by the Landscape Institute and the Institute of Environmental Management and Assessment in 2002. More recently, in 2020 the Marine Institute published a Draft Regional Seascape Character Assessment for Ireland for consultation.[39]

5.3.8.2 Existing Environmental Pressures/ Problems: Landscape

The National Landscape Strategy is the means by which the State provides a framework for the protection of the many cultural, social, economic and environmental values embedded in the landscape with a key action to develop a National Landscape Character Assessment. To date, this has not been published. While a high-level of protection is often afforded in development plans, the lack of national or regional level landscape and seascape character assessments and guidelines has led to an inconsistent and fragmented approach to assessments across local authorities. The represents a major knowledge and data gap.

Hazardous waste quantities and management activities resulting from economic growth and increasing population may place pressure on sites or features of scenic value. Existing pressures on landscape and visual resources are primarily related to impacts to sensitive views and landscapes resulting from the secondary impacts from the siting of development. The absence of a cohesive national landscape strategy which seeks to preserve and /or protect such historical and cultural landscapes, landscapes of amenity and social value and features of scenic value places much of the emphasis on local authorities, however the approaches taken are often not consistent.

[38] DAERA Landscape digital data available at: https://www.daera-ni.gov.uk/articles/download-digital-datasets

[39] Marine Institute – Definition and Classification of Ireland's Seascapes: https://emff.marine.ie/blue-growth/definition-and-classification-ireland%E2%80%99s-seascapes

As the draft Plan contains no location-specific detail, development proposals for new infrastructure will be subject to the outcomes of the planning process and any required environmental assessments e.g. landscape/seascape/townscape visual impact assessments, as appropriate. Proposals will have to have regard to the criteria set out in the relevant existing siting guidelines e.g. the Dublin local authority *Siting Guidelines for Waste Facilities*, other relevant guidelines such as those published by the EPA etc.

In this context, the key issues associated with the implementation of the draft Plan and landscape relate to:

- Effects on areas of designated landscape quality and scenic views e.g. from illegal dumping;
- Effects on general landscape character and sensitive receptors as a result of waste management infrastructure and activities such as illegal dumping.

5.3.9 Environmental Sensitivity Mapping

AIRO has developed an online environmental sensitivity mapping (ESM) Webtool, funded by the EPA under the STRIVE Programme for use in SEA and environmental assessments.[40] ESM is a useful method for identifying, at a strategic level, environmentally sensitive areas helping to inform the assessment of cumulative and in-combination effects on the environment. Such sensitivity mapping is based on the principles of SEA and presents a visual overview of the relative sensitivity of areas, particularly where they overlap, in order to provide a more strategic and informed approach to planning. Sensitive environmental receptors have less capacity to absorb changes to their conditions.

Various layers under different SEA-relevant themes are processed in the online geographic information system (GIS) to allow spatial overlay and calculation of overall sensitivity. The sensitivity index/ colour scheme for the map output gives an indication of the relative sensitivity of the environment, with darker red indicating high sensitivity and greens to greys representing areas better able to absorb development. The maps can be tailored to the assessment context by including or excluding datasets (i.e. environmental criteria), and weighting can be assigned to environmental themes included in the sensitivity analysis. AIRO stresses that that weights are only to be used to emphasize the relative significance of an environmental aspect, as applying weights to more than two themes would magnify, and possibly overstate, the overall sensitivity. As there is no geographic specificity for the draft Plan actions, and the Plan is national and strategic in nature, all themes are assigned the default equal weight.

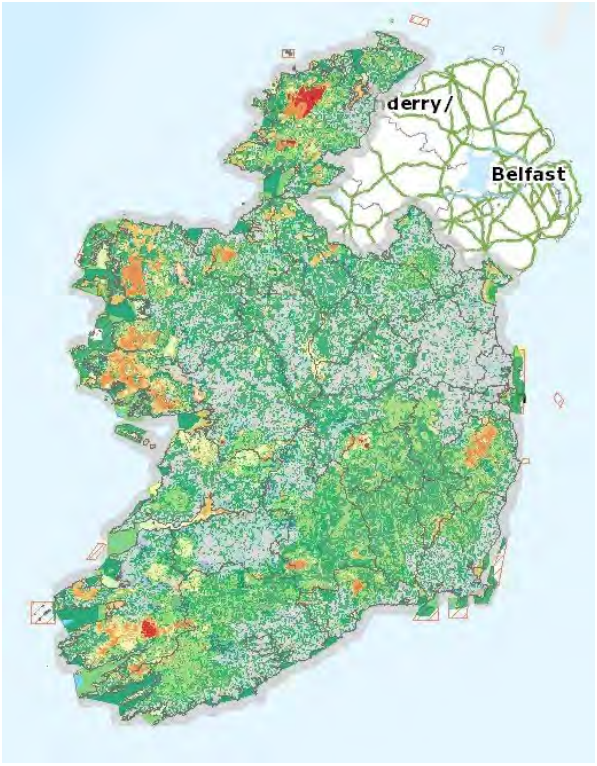
While it is acknowledged that there are limitations and an element of subjectivity to ESM, it can contribute to anticipating land use conflicts whereby increased development at lower planning tiers in sensitive areas could cause deterioration of the environment. The output maps of the ESM Webtool have a resolution of 100m x 100m and are to be used to inform strategic planning (i.e. they may not capture issues at the local level).

5.3.9.1 Sensitivity Maps

A series of ESM outputs for key environmental topics has been produced for the whole of Ireland, as shown in **Figure 5.16**. A cumulative sensitivity ESM has also been generated which layers up multiple topics into one sensitivity map; see **Figure 5.17**. The variables used to generate the ESM maps are also included. Also outlined is the AIRO guidance text in relation to the use of the ESM Webtool. The ESM Sensitivity Index indicates the relative sensitivity of the following map. Red colours indicate higher sensitivity, yellow represents moderate sensitivity, and green indicates areas better able to absorb development. Grey would indicate that no significant sensitive environmental receptors occur at that location.

[40] Link to the ESM Tool and guidance: https://www.enviromap.ie/

Biodiversity

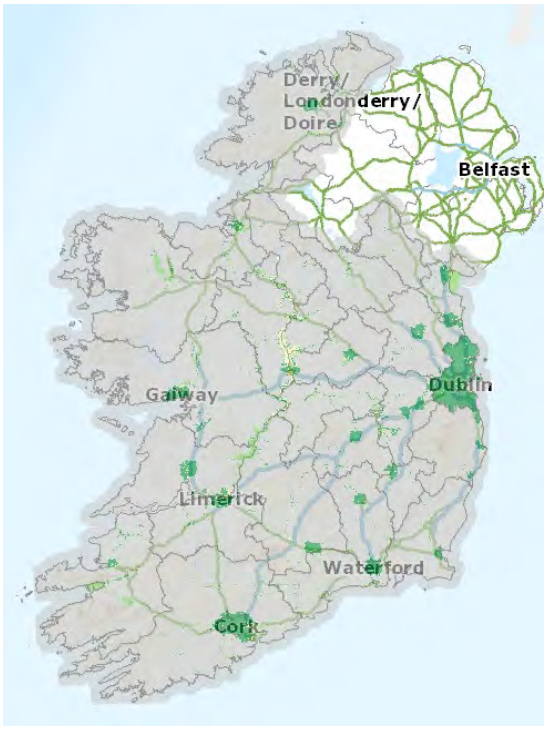


Variables: *Ancient Woodlands, Annex I Habitats, Coastal Habitats-Saltmarshes, Contribution to Potential Ecological Networks, Margaritifera Sensitive Areas, Natural Heritage Areas, Proposed Natural Heritage Areas, Salmonid Waters (S.I 293 Only), Special Areas of Conservation, Special Protection Areas, Woodland Habitats*

Water

Variables: *Aquifer Vulnerability, Groundwater Source Protection Areas, Wetlands, WFD RPA Nutrient Sensitive Areas (Lakes, Coastal and Transitional Water Bodies), WFD RPA Nutrient Sensitive Areas (Rivers), WFD RPA Recreational Waters (Coastal and Transitional Water Bodies), WFD RPA Recreational Waters (Lakes), WFD RPA Shellfish Areas, WFD RPA Water Dependant Habitats (SACs)*

Air and Climate



Variables: *Coal Restricted Areas, Flood Extents Current Scenarios (Coastal and fluvial) (High), Flood Extents Current Scenarios (Coastal and fluvial) (Medium), Flood Extents Current Scenarios (Coastal and fluvial) (Low), Historical Flood Extents*

Soil and Geology

Variables: *County Geological Sites, Geoparks and Geosites, Landslide Susceptibility, Outcrops, Peat Bogs, Soil Permeability*

Figure 5.16: ESM Outputs for Environmental Topics

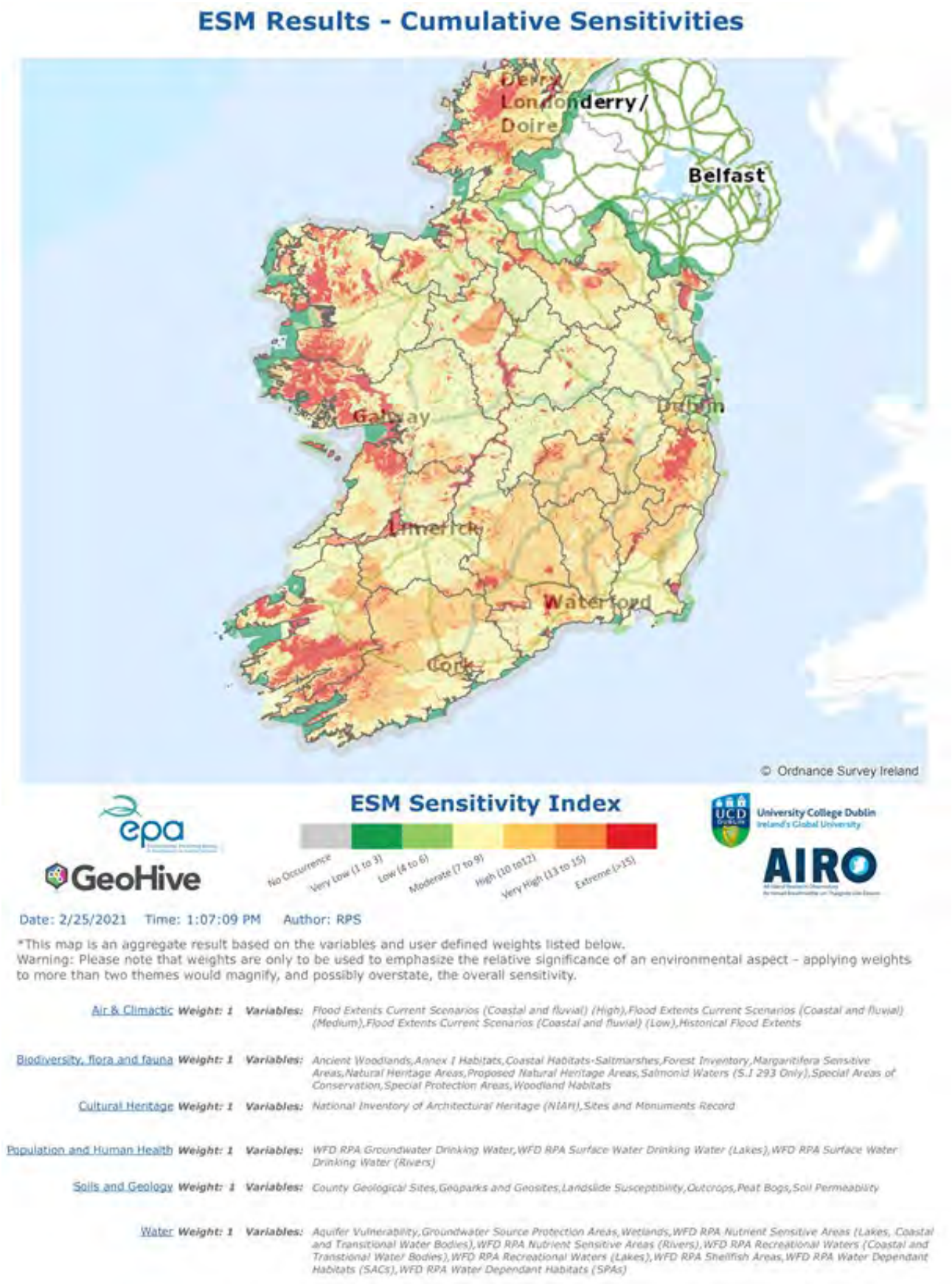


Figure 5.17: ESM Output – Cumulative Sensitivities

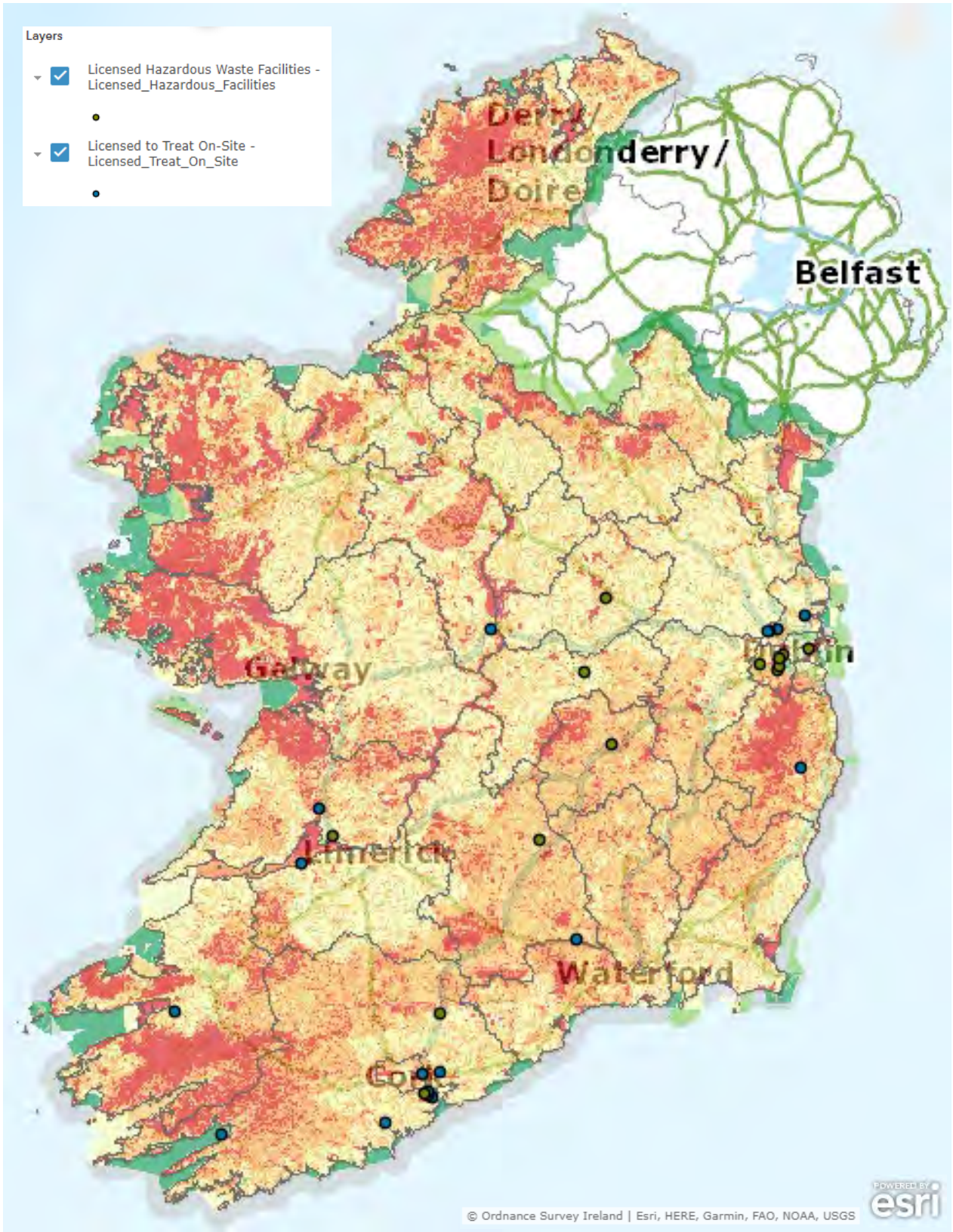


Figure 5.18: ESM Output – Cumulative Sensitivities with Licensed Hazardous Waste Facilities and those Licensed to Treat On-site

5.3.9.2 ESM Discussion

It can be seen from that the ESM can produce different outputs depending on how the environmental variables are combined. Each environmental topic can be examined individually (**Figure 5.16**), and also combined to give a strategic overview of the cumulative distribution of likely sensitive areas from the national perspective (**Figure 5.17**). The cumulative sensitivities output has then been layered with the datasets for facilities licensed to handle hazardous waste, as well as facilities licensed to treat hazardous waste on site (**Figure 5.18**) to illustrate that some existing facilities are adjacent to or are already within specific environmentally sensitive areas. River corridors, coastal areas and upland areas in general are more sensitive due to the habitats and species usually associated with them (e.g. salmonids, peat bogs). The inclusion of groundwater bodies which are protected for drinking water abstraction, also lends a moderate sensitivity across the country.

The ESM also considers statutory protection measures associated with features such as the groundwater vulnerability rating, water quality/ WFD status and the presence of SACs and SPAs, which also influence the sensitivity of the relevant areas. For instance, where multiple protected features or resources overlap in an area, the relative sensitivity of the area will increase. The ESM Webtool represents a useful spatial support tool for lower planning tiers, helping to assess the potential for land-use conflicts by identifying areas sensitive to change.

It is envisaged that the Webtool could benefit at lower-level planning hierarchies such as at the regional Waste Management level, and County Development Plans (CDPs), where more defined decisions may be made about the suitability and siting of, for example, specific waste infrastructure needs. The ESM also allows individual data layers to be layered onto a map, so that in addition to generating sensitivity maps, the tool is also a useful source of environmental data in a wider planning context.

5.3.10 Inter-relationships

In accordance with the SEA Directive, the interrelationship between the SEA environmental topics must be taken into account. **Table 5-10** highlights the key interrelationships identified in this SEA. These potential interrelationships have been taken into account in the assessment of the different alternatives. A key interrelationship is between population and human health, air quality and climate. Another key interaction is between air quality, water, biodiversity, land and soils with material assets. In these cases, emissions to environmental receptors (air, surface and groundwaters, and soils) from hazardous waste management activities have implications for the quality of human health as well as the natural environment.

Table 5-10: Inter-relationships between SEA Topics

	Biodiversity Flora & Fauna	Population & Human Health	Land & Soils	Water	Air Quality	Climatic Factors	Material Assets	Cultural Heritage	Landscape
Biodiversity, Flora & Fauna									
Population & Human Health	✓								
Land & Soils	✓	✓							
Water	✓	✓	✓						
Air Quality	✓	✓	X	✓					
Climatic Factors	✓	✓	✓	✓	✓				
Material Assets	✓	✓	✓	✓	✓	✓			
Cultural Heritage	X	✓	✓	✓	X	✓	✓		
Landscape	✓	✓	✓	✓	X	✓	✓	✓	

5.3.11 Evolution of the Baseline in the Absence of the draft NHWMP

The SEA legislation requires that consideration is given to the likely evolution of the current baseline where implementation of the draft NHWMP does not take place. In the EPA *Good Practice Note on Strategic Environmental Assessment for the Waste Sector* (2019), this is further clarified as generally meaning the 'business as usual' scenario where the existing plan, i.e. the third NHWMP 2014-2020, continues into the future. In the case of waste management, this would mean a situation where the actions and recommendations of the Third NHWMP 2014-2020 would continue to be implemented. **Table 5-11** summarises the key points.

Table 5-11: Likely Evolution of the Baseline without Implementation of the Fourth NHWMP

Environmental Area	Discussion on the Evolution of the Baseline in the Absence of the draft Plan
Population and Human Health	In the absence of the NHWMP, hazardous waste management activities could not be coordinated as well with other plans, and would potentially lack targeting to the key hazardous waste issues. The general recommendations from the third NHWMP would continue to apply, however this would not reflect the developments in waste policy and that have occurred in the intervening years since 2014, such as the requirements under the amended Waste Framework Directive, the EU Green Deal and Circular economy package, as well as Ireland's new Circular Economy Action Plan. This would affect the strategic direction of the plan and could lead to increases in unmanaged hazardous waste material at local and sectoral levels, and could lead to less effective coordination between relevant government bodies and other agencies. This in turn could give rise to deterioration of air quality, water and soils quality and in turn to impacts on human health which could be avoided through a more coordinated approach on the latest developments in waste management and related technologies generally. In the absence of the plan, other plans and initiatives would continue, such as awareness raising, etc. under for instance the National Waste Prevention Programme, as well as other related plans such as Ireland's Action Plan on Antimicrobial Resistance, and the National Waste Management Plan (in prep. 20021).
Biodiversity, Flora and Fauna	Without the implementation of the Plan, biodiversity, flora and fauna, including protected sites, habitats and species, would continue to exist in much the same pattern, abundance and density as today however there would be continued pressure on biodiversity as a result of ongoing legacy issues from historic landfills, e.g. emissions from leachate effecting soil, groundwater and surface water-dependant ecosystems; illegal dumping; and backyard burning. While the continued implementation of the third NHWMP would offer some protection to biodiversity in targeting waste reduction and prevention, as for population and human health, this would not take account of the latest developments in circular economy policy, or to take on board specific environmental and biodiversity considerations being undertaken as part of the fourth plan review.
Land and Soils	In the absence of the fourth Plan, the programme of remediation of unregulated historic landfills and licensed sites would continue and is currently being implemented through the Regional Waste Management Offices, EPA and local authorities. The EPA Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites (EPA, 2007) and the Guidance on contaminated Land and Groundwater at EPA Licensed Sites (EPA, 2013) would continue to be used when assessing unregulated historic landfills, licensed facilities and contaminated sites. The principal aim in dealing with contaminated land and groundwater related issues is to secure the protection of human health, water bodies (including groundwater) and the wider environment.
Water	In the absence of the fourth Plan, water quality in Ireland is likely to continue to improve in line with efforts being made by the RBMP and its Programme of Measures (PoM) throughout Ireland, though trends are mixed. The main challenges would remain: tackling diffuse pollution; eliminating serious pollution associated with point sources; and using the full range of legislative measures in an integrated way to achieve better water quality. Waste management activities in general represent a relatively small proportion of significant pressures on water bodies, which is dominated by agricultural sources, wastewater treatment discharges, and hydromorphological issues. The third cycle of the RBMP and its PoM would be initiated with continued gains expected regardless of the NHWMP.
Air and Climate	Air quality in Ireland is of a good standard across the country, meeting most EU air quality standards, though some pollutants area above WHO limits. The absence of the fourth Plan is not expected to affect this trend. As a result of anthropogenic greenhouse gas emissions generation, climate change is predicted to occur in the future regardless of action. The UN Intergovernmental Panel on Climate Change

Environmental Area	Discussion on the Evolution of the Baseline in the Absence of the draft Plan
	predicts sea level rise, changes in rainfall patterns and temperatures as well as changes in the frequency of droughts and extreme weather events, such as increased flooding. The potential impacts from sea level increases, increased flooding, summer droughts, etc. may impact on existing and any future hazardous waste management activities.
Material assets	The fourth Plan incorporates the requirements of existing European and national directives, regulations and measures to reduce and prevent hazardous waste generation. It provides for the coordination of these controls to reduce impacts to the environment and examines how hazardous waste management activities are impacting the wider environment and the measures needed to address these negative effects. In the absence of the fourth Plan, hazardous waste management might be managed in a less coordinated manner, thus the cumulative and synergistic impacts on the environment of increasing hazardous waste figures nationally would continue. The Industrial Emissions Directive is the primary initiative regulating industrial and licensed facilities. However it tends to be more focused on the management and regulation of process emissions rather than circular economy principles. Critically, the new plan will allow for a more coordinated approach to assessing and supporting more sustainable hazardous waste management approaches within the state.
Cultural Heritage	In the absence of the fourth Plan, cultural heritage concerns would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.
Landscape	In the absence of the fourth Plan, landscape and visual concerns would continue to be dealt with as part of the planning processes and related environmental assessments at lower planning tiers and at the project level.

6 FRAMEWORK FOR ASSESSMENT

6.1 Introduction

Strategic Environmental Assessment, as its name suggests, is set at a strategic level, therefore it is not possible for the baseline environment to be described (and assessed) in as much detail as could be done for a project-level EIA. Instead, SEA uses a system of objectives, targets and indicators to set a framework for assessment of the plan.

In order to streamline the assessment process, this report has used broad themes, based on the environmental topics listed in the SEA Directive, to group large environmental datasets, e.g. human health, soil, air quality, etc. Assigned to each of these themes is at least one high-level Strategic Environmental Objective (SEO) that specifies a desired direction for change, e.g. reduce soil contamination, against which the future impacts of the plans can be measured. These high-level SEOs are then paired with specific targets. The progress towards achieving these specific targets is monitored using Indicators, which are measures of identified variables over time.

6.2 Development of Strategic Environmental Objectives

6.2.1 Strategic Environmental Objectives

Establishing appropriate criteria for the assessment of the effects of the draft Plan started at scoping stage where a series of proposed SEA objectives and guide questions were developed. These objectives and questions are reflective of the extent of the assessment criteria listed in the SEA Directive; the scope of the draft Plan; wider environmental protection objectives at a national, European and international level (identified in **Chapter 4**); consultation feedback from scoping; and the baseline information collated in **Chapter 5**.

Each of the draft Plan alternatives and the draft Plan recommendations and actions have been assessed against these SEOs to establish where they will contribute (or not) to achieving the desired outcomes; see **Table 6-1**.

Interlinkages with relevant UN SDGs is also outlined. It should be noted that not every target for each SDG may relate directly to specific hazardous waste aspects as they are defined by the UN at a global level, however it aims to show how the Plan can contribute more generally to the national policy effort on achieving the SDGs through the implementation of its recommendations and actions.

Table 6-1: Strategic Environmental Objectives

Related to SEA Topic(s)	Strategic Environmental Objective(s)	To what extent will the draft NHWMP…	Relevant UN Sustainable Development Goal(s)
Population and Human Health (PHH)	**Objective 1:** *To protect human health from hazardous waste.*	• Reduce and promote better management of hazardous waste in household settings • Promote awareness and knowledge of hazardous waste issues • Support the protection of human health from hazardous substances and waste • Support and enable appropriate collection platforms	***GOAL 3:** Ensure healthy lives and promote well-being for all at all ages*  ***GOAL 12:** Ensure sustainable consumption and production patterns* 
Biodiversity, Flora and Fauna (BFF)	**Objective 2:** *Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU designated sites and protected species (including transboundary considerations) and integrate biodiversity considerations wherever possible into the NHWMP.*	• Support the protection of biodiversity from hazardous waste management activities • Support the regulatory processes for licensed facilities	***GOAL 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss* 
Land and Soil (LS)	**Objective 3(a):** *Safeguard soil quality and quantity (including geo-heritage sites) from hazardous waste.* **Objective 3(b):** *Reduce and eliminate soil contamination.*	• Protect the national soil resource from hazardous waste management activities • Remediate legacy sites where hazardous waste is present • Support increased remediation of contaminated soil within Ireland	***GOAL 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss* 
Water (W)	**Objective 4:** *Protect and restore water quality (surface waters, groundwaters and marine waters) from hazardous waste (including transboundary considerations).*	• Support the protection of water quality from hazardous waste management activities • Support the regulatory processes for licensed facilities	***GOAL 6:** Ensure availability and sustainable management of water and sanitation for all* 

Related to SEA Topic(s)	Strategic Environmental Objective(s)	To what extent will the draft NHWMP…	Relevant UN Sustainable Development Goal(s)
			GOAL 14: *Conserve and sustainably use the oceans, seas and marine resources for sustainable development* 
Air Quality (AQ)	**Objective 5(a):** *Protect air quality, including transboundary considerations, from hazardous waste and/ or reduce air pollution or limit to levels that do not damage the natural environment or human health.* **Objective 5(b):** *Maintain and promote continuing improvement in air quality through the reduction of emissions, including transboundary considerations.*	• Support the proximity principle • Support reductions in air and noise emissions from hazardous waste management activities • Support the regulatory processes for licensed facilities	***GOAL 11:*** *Make cities and human settlements inclusive, safe, resilient and sustainable* 
Climatic Factors (CF)	**Objective 6:** *Minimise emissions of greenhouse gases associated with hazardous waste management (including other waste treatment activities, transport, industry, agriculture and energy).*	• Support the proximity principle • Support reductions in GHG emissions from hazardous waste management activities	***GOAL 13:*** *Take urgent action to combat climate change and its impacts* 
Material Assets (MA)	**Objective 7(a):** *Prevent and minimise the generation of hazardous waste.* **Objective 7(b):** *Optimise use of existing infrastructure/ built environment, raw materials and energy.* **Objective 7(c):** *Minimise the export of hazardous waste for treatment and/ or disposal and reduce emissions due to transportation.* **Objective 7(d):** *Support and promote the use of waste as a resource.*	• Promote and contribute to implementing circular economy principles • Reduce and ultimately prevent generation of hazardous waste • Promote resource efficiency • Support self-sufficiency in hazardous waste management • Support the regulatory processes for licensed facilities • Reduce and promote better management of hazardous waste in business and commercial settings	***GOAL 8:*** *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*  ***GOAL 9:*** *Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation* 

Related to SEA Topic(s)	Strategic Environmental Objective(s)	To what extent will the draft NHWMP…	Relevant UN Sustainable Development Goal(s)
	Objective 7(e): *Support sustainable activities without conflicting with other environmental protection objectives.*	• Support and enable appropriate collection platforms	***GOAL 11:*** *Make cities and human settlements inclusive, safe, resilient and sustainable*  ***GOAL 12:*** *Ensure sustainable consumption and production patterns* 
Cultural Heritage (CH)	**Objective 8:** *Protect places, features, buildings and landscapes of cultural, historical archaeological or architectural heritage.*	*More appropriately dealt with at lower planning tiers.*	***GOAL 11:*** *Make cities and human settlements inclusive, safe, resilient and sustainable* 
Landscape (LandS)	**Objective 9:** *Protect and maintain the national landscape character, including geoheritage.*	*More appropriately dealt with at lower planning tiers.*	

7 CONSIDERATION OF ALTERNATIVES

7.1 Introduction

The consideration of alternatives is a requirement of the SEA Directive (2001/42/EC). Article 5(1)[41] states that: '*where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.*'

The Directive does not prescribe at what stage consideration of alternatives should be undertaken, however, to present a useful input into the plan making process, all guidance points to considering alternatives as early as possible. Guidance also recognises that multiple layers of alternatives may exist, particularly for plans of this nature.

Two principle guidance documents have been referenced in the development of alternatives:

- Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment, DEHLG 2004; and
- Developing and Assessing Alternatives in Strategic Environmental Assessment, EPA 2015.

Early discussion of possible alternatives was undertaken during the scoping stage for the draft Plan. This chapter of the Environmental Report considers the reasonable alternatives which have been developed through the evolution of the draft Plan. Given the nature of the draft Plan, alternatives have been focused at the strategic level.

7.2 Approach to Alternatives for the draft NHWMP

Given that the NHWMP is a high-level national plan, it has been important that alternatives are reflective of its strategic nature.

Both the Plan team and the SEA team have also been conscious of the need for iteration in this regard and consideration of alternatives therefore started early in the process. Alternatives were first discussed in relation to SEA scoping. A meeting was held with the plan team to establish possible reasonable alternatives. Further to this a workshop was held on the 10th February 2021 with the plan team where these alternatives were tabled for further discussion. The basis for alternatives discussions was the EPA Guidance: *Developing & Assessing Alternatives in SEA*[42]*.* This guidance points to four key criteria for identification of alternatives and broad categories of alternatives that might be considered as outlined in **Figure 7.1**. In the context of the NHWMP the criteria considered were:

- **Realistic:** Do the alternatives have the capacity to achieve NHWMP objectives, and those of other national plans;
- **Reasonable:** Do the alternatives consider baselines and trends in the marine area, and also reflect the legal requirement, such as those of the Habitats Directive;
- **Viable:** Are the alternatives technically possible and feasible; and
- **Implementable:** Are the alternatives capable of being put into action, within realistic timeframes, and for which there are adequate resources.

[41] Directive 2001/42/EC On the assessment of effects of certain plans and programmes on the environment, EC 2001

[42] Developing and Assessing Alternatives in SEA, EPA 2015

Figure 7.1: Criteria for Alternatives and Categories Considered [Source: EPA Guidance, 2015]

The SEA Scoping Report included a series of high level considerations on alternatives for discussion and these are reproduced in **Table 7-1**.

Table 7-1: Alternatives proposed for consideration in the SEA Scoping Report

Alternative Type	Description	Example Considerations with respect to the Fourth NHWMP
Strategic	*High-level options that achieve a given objective.* *These types are commonly realistic only at policy level.*	National policy outlines a commitment to managing hazardous waste in Ireland, as dictated by EU directives and the Waste Management Act, as amended. The NHWMP is Ireland's key policy and guidance document in this regard. • At the strategic level, given the statutory requirement [under both EU and national waste management legislation] for the plan to be reviewed and updated, it is not proposed to assess a *do nothing* scenario as this is not considered reasonable. • It is further noted that a *business as usual* scenario is not considered realistic as there have been a number of changes in the area of hazardous waste management since the second and third NHWMP's were published. A *modified business as usual* may be considered more relevant wherein some of the policies and recommendations remain unchanged from the Third NHWMP. • Consideration of the implications of any key developments in legislation relating to waste.
Value and Effects Oriented	*Alternatives that address policy priorities, cultural values or safety issues Such alternatives are most appropriate for addressing public perceptions, concerns and values.* *Alternatives that address issues identified during scoping. Such alternatives are effective at mitigating potential significant effects.*	• Continued implementation of the Waste Prevention Programme is a key action aimed at reducing volumes of hazardous waste in the first instance. • Assessment of the concept of greater self-sufficiency and critical mass of throughput in Ireland versus the export scenarios for a number of waste streams. • The fourth NHWMP can consider new issues that have arisen since the third plan e.g. appropriate management of expired healthcare products such as medicines. • Recommendations and actions that are reflective of the evolving public perception and understanding of hazardous waste management/ waste as a resource, and how the public can contribute, e.g. by encouraging appropriate household hazardous waste prevention and disposal/ recovery practices. • A plan that is supportive of knowledge transfer to stakeholders at all levels.
Spatial	*Alternative locations for the implementation of planning objectives.*	The scope of the NHWMP will not specify geographically where hazardous waste infrastructure should be sited, nor locations where

Alternative Type	Description	Example Considerations with respect to the Fourth NHWMP
		actions concerning historic unregulated waste disposal sites should be undertaken. However, policies/ recommendations arising from the plan may support the development or continued implementation of siting guidelines at the lower planning tier, e.g. under the Regional Waste Management Plans.
Modal	*Different technical/ mode alternatives to achieve the same objective*	Different technical/ mode alternatives to achieve the same objective may include consideration of various waste management technologies to deliver on NHWMP objectives, for example: • Can Ireland deliver the capacity to manage all hazardous waste solvents (46,813 tonnes generated in 2019) or is export still a reasonable alternative? • The Third NHWMP included provision for an asbestos landfill but should export or other chemical treatment be considered as a reasonable alternative? • The plan can consider options such as prevention, recovery and co-incineration of certain waste streams as alternatives to the lower tier disposal option.
Sectoral and/ or Temporal Prioritisation	*Alternatives that look at sectoral feasibility and needs at the strategic level, policies can be formulated to promote one sector versus another.* *Alternatives for the timing of implementation of plan/ programme measures.* *These are most suitable at the local level for addressing infrastructure development.*	Alternatives that look at sectoral and temporal feasibility could include: • Consideration of alternatives which are not currently feasible in this fourth iteration of the plan but may become feasible/ economically viable in the future. • Support for increasing indigenous capacity to treat certain waste streams versus continued or expanded export of waste.

Following this initial consideration these alternatives were further considered in the dedicated workshop with the Plan Team referenced above. The types of alternatives considered are summarised in **Table 7-2** and these largely reflect the issues raised during the scoping report.

Table 7-2: Alternatives discussed during Workshop on 10th February 2021

Alternative Type	Considerations with respect to the draft NHWMP
Strategic	• The evolving policy and legislative regime not only in relation to hazardous waste but also more generally such as the Chemicals Strategy, Green New Deal, industrial emissions BAT compliance, etc. These combined policies seek to both promote the reduction of the content of hazardous substances in materials and also to prevent the generation of hazardous wastes once these materials are used. • The prioritisation of hazardous waste prevention in the NHWMP versus the objectives set in the third NHWMP which had a broader focus including maximising the collection of hazardous waste, increased self-sufficiency in the management of these waste streams, reduced environmental impact as well as prevention. • The alternatives analysis needs to consider island of Ireland alternatives when looking at potential for indigenous treatment and reducing transports for treatment and whether or not this could be possible in the context of Brexit. This is particularly relevant in relation to the proximity and self-sufficiency principles.
Modal	• Consideration of alternatives on the approach to hazardous waste infrastructure within the NHWMP and how prescriptive or otherwise the plan needs to present in this area. • The consideration of producer responsibility schemes versus more traditional management measures for key waste streams (e.g. waste medicines and farm waste) need to be considered.

Alternative Type	Considerations with respect to the draft NHWMP
	• The analysis needs to consider the relative environmental impacts and economic drivers that dictate the proportion of hazardous waste export versus indigenous treatment and any recommendations for same.

7.3 Assessment Parameters

The approach used for assessing alternatives for the draft Plan was an objectives-led assessment. Each alternative has been assessed against a set of strategic environmental assessment objectives (See **Chapter 6** for details of the objectives). The assessment compares the likely impacts in terms of the Strategic Environmental Objectives to see how alternatives perform in relation to the stated environmental objectives.

For the purposes of the assessment of alternatives:

- Plus (+) indicates a potential positive environmental impact;
- Minus (-) indicates a potential negative environmental impact;
- Plus/minus (+/-) indicates that both positive and negative environmental impacts are likely or that in the absence of further detail the impact is unclear; and
- Zero (0) indicates neutral or no environmental impact.

The following notation is used in the assessment tables:

Symbol	Meaning
Plus (+)	Indicates a potential positive environmental impact
Minus (-)	Indicates a potential negative environmental impact
Plus/minus (+/-)	Indicates that both positive and negative environmental impacts are likely or that in the absence of further detail the impact is unclear
Zero (0)	Indicates neutral or no significant impact

Under each alternative a discussion is presented to support the assessment parameters shown and the reason for choosing the preferred alternative. Assessments include qualitative and where possible quantitative information.

7.4 Strategic Alternatives

Early discussions with the plan team identified three issues of a strategic nature which could drive the direction of the plan. These issues and their reasonable alternatives were considered by the SEA team and outcomes fed back to the plan team for consideration. The issues and alternatives considered are presented in the following sections of this report.

7.4.1 Business as Usual versus Modified Business as Usual

Description of Alternative
Strategic Alternative 1 (S1): Business as usual scenario whereby the policies and objectives of the previous plan are continued.
Strategic Alternative 2 (S2): A modified business as usual scenario whereby the policies and objectives of the previous plan are updated to reflect evolving policy and legislation and with a particular emphasis on hazardous waste prevention.

Reference	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
S1	+	+	+	+	+	+	+/-	+	+
S2	+/-	+	+	+	+	+	+	+	+

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

Background: The National Hazardous Waste Management Plan 2014-2020 was the third such plan and built on the objectives of the previous second plan. The stated objectives of the third plan were set out as the following:

- To prevent and reduce the generation of hazardous waste by industry and society generally;
- To maximise the collection of hazardous waste with a view to reducing the environmental and health impacts of any unregulated waste;
- To strive for increased self-sufficiency in the management of hazardous waste and to minimise hazardous waste export;
- To minimise the environmental, health, social and economic impacts of hazardous waste generation and management.

These objectives remain valid in the current hazardous waste planning hierarchy and, in this regard, the continued application of these business as usual objectives is considered reasonable. However, it is noted that since the third NHWMP was published, there have been a number of significant policy and legislative changes that should be considered within the revised Plan. In particular the Green New Deal for Europe and the Circular Economy Action Plan have shifted waste policy higher up the waste hierarchy with a far greater emphasis on waste prevention. In addition, the EU Waste Framework Directive was amended in 2018 by Directive (EU) 2018/851, which was an action of the EU Circular Economy Action Plan. The revised directive places responsibility on EU member states to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource. As a result, one of the key developments with respect to hazardous waste relates to the requirement for member states to establish separate collection of hazardous waste generated by households by 2025.

Also operating at EU level is the Chemicals Strategy for Sustainability Towards a Toxic-Free Environment, which also ties into the Green Deal and the Circular Economy Action Plan. It aims for zero pollution, including reducing hazardous waste streams, and to protect human and environmental health. It aims to streamline the coherence between waste, chemicals and products legislation, aiming to close gaps in how hazardous substances may be handled differently under different legislation.

At national level, the *Waste Action Plan for a Circular Economy – A Waste Policy for Ireland*, puts the focus on waste management further up the waste hierarchy, shifting away from disposal and treatment of waste towards circular product design, including reducing hazardous materials, and references the NHWMP as being at the top of the waste planning hierarchy.

The modified business as usual alternative therefore constitutes the broad continuation of the objectives of the third and current plan but with these policies modified to account for the evolving policy and in particular the focus on prevention, use of non-toxic/hazardous materials and product design. It is noted there are no prevention targets imposed or pending by the EPA or in the NWPP so it is difficult to impose within the SEA analysis.

Discussion: Both Alternatives S1 and S2 are assessed as having overall positive impacts for most environmental topics as each will contribute to achieving the stated SEA objectives. Both contribute to the improved management of hazardous wastes in a sustainable fashion with both direct and indirect positive environmental impacts.

However, the greater emphasis on the prevention of hazardous waste generation offered by S2 (modified business as usual) offers greater comparative benefits for material assets (MA). These benefits relate to a shift in current design and manufacturing practices to utilising less hazardous materials, or implementing

non-toxic material substitutions, and the reduced pressure on the hazardous waste management infrastructure to treat hazardous wastes.

Alternative Brought Forward in the draft NHWMP: The preferred alternative brought forward is S2, the modified business as usual alternative, which also takes into account value and effects-oriented issues for plan implementation. This alternative has built on the work of the third plan, implements circular economy principles and continues to identify and target priority sectors. Key actions included in the fourth NHWMP include supporting the implementation of the EU Chemicals Strategy, as well as examining options for establishing separate collections for various hazardous wastes. An action is also included to determine market surveillance priorities on the use of hazardous chemicals in mixtures and products.

7.4.2 All-Island Approach versus National Approach

Description of Alternative
Strategic Alternative 3 (S3): Implement the NHWMP and track treatment need and capacity in partnership with Northern Ireland to develop an all-island capacity database and market for collection and treatment of hazardous wastes.
Strategic Alternative 4 (S4): Establish the NHWMP on a purely national basis where volumes of hazardous waste generation and treatment capacity are reported for the Republic of Ireland only.

Reference	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
S3	+	+	+	+	+	+	+	+	0
S4	+-	+	+	+	+	+/-	+/-	+	0

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

Background: The Good Friday Agreement specified that the environment comprising the policy areas '*environmental protection, pollution, water quality, and waste management*' were to be areas for consideration of '*North-South co-operation and implementation*'. Under the terms of the Northern Ireland Protocol, Northern Ireland will continue to apply (EC) Regulation 1013/2006 on shipments of waste from the Republic of Ireland.

It is not anticipated that there will be any significant changes for waste shipments between the countries, but it is noted that Article 34 of the Regulation will prohibit Ireland (as a Member State) from exporting hazardous waste for disposal to Northern Ireland (as a third country).

The UK *Plan for Shipments of Waste* (2012) allows shipments of hazardous waste between Northern Ireland and Ireland, in either direction, provided that such waste is both generated and disposed of within Northern Ireland or Ireland (only in relation to D5 *engineered landfill*, D9 *physico chemical treatment* and D10 *incineration*). The Department for Environment, Food & Rural Affairs is currently updating the Plan to account for policy and regulation change and the January 2021 draft for consultation indicates no change to the arrangement for shipments between Ireland and Northern Ireland as per the 2012 Plan.

Ireland does not have the infrastructure required to treat the full range of hazardous wastes produced in the State. In 2019, 65% of Ireland's hazardous waste was exported for treatment in other European countries including 27,467 tonnes to Northern Ireland equating to 7% of all exports. This continues an increasing trend whereby hazardous waste from the Republic is being exported to Northern Ireland (refer to **Figure 7.2**). In the other direction, Northern Ireland exports waste oils for treatment within the Republic; these quantities are not readily reported in national statistics but are deemed to be small volumes, in the order of 10's of tonnes.

The economies of scale for some waste streams within the Republic of Ireland may be insufficient to make investment in treatment infrastructure viable. However, if combined with Northern Ireland the economies of scale may exist. An Enva facility which currently treats waste oil is an example of where one island facility can cover both jurisdictions.

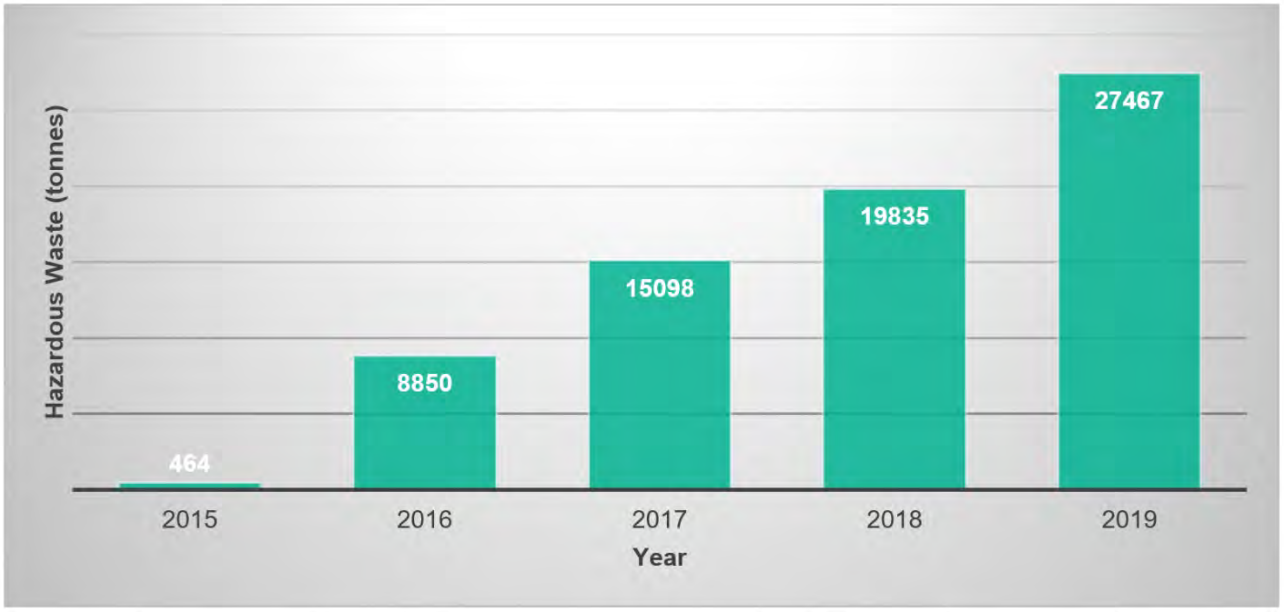


Figure 7.2: Annual Hazardous Waste exports to Northern Ireland [Source: EPA 2020]

Discussion: Broadly speaking both Alternative S3 and S4 are assessed as having positive impacts for all environmental topics as they will contribute to achieving the stated SEA objectives. Both contribute towards the tracking of hazardous waste generation volumes and capacity management to ensure these wastes are sustainably managed.

However Alterative S3 offers some environmental benefits over and above Alterative S4 including the following:

In terms of self-sufficiency, Article 16 of the Waste Framework Directive (WFD) requires Member States, *in cooperation with other Member States*, to establish an integrated and adequate network of waste disposal installations. While Northern Ireland is no longer a Member State the principle of the two States cooperating to achieve self-sufficiency is clear. To this end, Alternative S3 provides a greater self-sufficiency outcome in line with the WFD relative to Alternative S4.

Similarly, the Directive also requires that any network set up under Art. 16 of the WFD shall enable waste to be disposed of or recovered in one of the nearest appropriate installations in order to ensure a high level of protection for the environment and public health, i.e. the proximity principle. Again, Alternative S3 offers a greater potential to maximise the proximity principle relative to Alternative S4.

Establishment of agreements and cooperation with Northern Ireland may potentially reduce the volumes of waste exported to mainland Europe thereby potentially reducing the climate impacts for transport of this waste and the potential for accidental spillages; both alternatives are positive for CF, but there are considered to be slightly more positive effects for S3.

Similarly, through a greater cooperation, the feedstock from Northern Ireland for existing or new hazardous waste infrastructure within the Republic of Ireland may be more secure, offering benefits for MA for Alternative S3.

Preferred Environmental Alternative and Reason for Choosing: The preferred environmental alternative in this instance is Alternative S3. Broadly speaking, both S3 and S4 options are anticipated to give rise to similar positive effects as they are aimed at sustainably managing hazardous wastes. However, the analysis indicates that cooperation with Northern Ireland offers a number of significant benefits both in terms of waste policy, climate and material assets that results in this alternative been proposed over Alternative S4.

Alternative Brought Forward in the draft NHWMP: Recommendation No. 3 in the draft NHWMP sets out the requirement to: *Provide for all-island approaches on hazardous waste issues.*

This is designed to improve and address all-island issues with regard management of hazardous waste. The DECC will establish a working group with Northern Ireland authorities during 2021. The development of an agreed protocol with Northern Ireland would likely be mutually beneficial and providing overall positive environmental impact for the NHWMP.

7.5 Modal Alternatives

7.5.1 Indigenous Capacity versus Export

Description of Alternative
Modal Alternative 1 (M1): Implement specific policies aimed at reducing the level of hazardous waste export from the State to other jurisdictions to drive for greater self-sufficiency in hazardous waste management.
Modal Alternative 2 (M2): Maintain the business as usual approach and allow market forces to dictate the economic merits of indigenous treatment versus export.

Reference	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
M1	+/-	+/-	+/-	+/-	+/-	+	+/-	+/-	+/-
M2	+/-	+/-	+/-	+/-	+/-	-	+/-	+/-	+/-

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

Background: The latest hazardous waste statistics report that 65% of all hazardous waste managed in Ireland was exported. The Netherlands, Norway, Great Britain, Belgium, Germany, Northern Ireland, France and Portugal together accepted 98% of hazardous waste exports in 2019. This export is required as Ireland does not have the required infrastructure to treat the full range of hazardous wastes it produces. It is noted that Irish Cement Limited (Platin, Co, Meath, Licence Reg. P0030-05) has received planning consent (ABP Case Reference PL17 .PA0050) to co-incinerate 50,000 tonnes per annum of hazardous; Ireland would therefore continue to rely on exports.

It is fair to question if the draft NHWMP should include a greater emphasis on indigenous capacity to reduce the need for exports in line with the self-sufficiency and proximity principles. However, a counter argument would be that the approach should simply facilitate the improved management of hazardous wastes, and let market forces dictate the appropriate treatment destination without any market intervention by the State. Export costs remain low, and the cost to develop and operate a hazardous waste facility in Ireland are high and, in some cases, the necessary waste throughput is simply not available.

As an illustrative example, in 2009 the EPA commissioned a study to explore the economic aspects of solvent treatment in Ireland[43] and determined that while the use of blended solvent in cement kilns in Ireland is a low cost option with a potential cost of €36 per tonne, exporting material for recovery and reuse would be €24 per tonne. Note that these are 2009 costs and used here as illustration but the overall trend is not expected to have varied significantly.

Discussion: As all hazardous waste treatment operations across the EU are subject to the same development (EIA Directive and Habitats Directive) and operational (Industrial Emissions Directive and associated BAT Conclusions), the operation of a hazardous waste landfill or incinerator would be the same in Ireland as in other Member States. Significant environmental protection is built into these requirements and hence the overall environmental impact of treatment in Ireland or treatment in other Member States is not significantly varied.

The export Alternative M2 will have a greater climate (CF) impact through the greater carbon emissions generated during transport of this waste. **Table 7-3** sets out a simple illustrative example of transporting a tonne of hazardous waste from a facility in Dublin to a hazardous waste facility in Cork. The same calculation

[43] EPA (2012) Economic Study of Solvent Recycling and Treatment. Available at: https://www.epa.ie/publications/monitoring--assessment/waste/hazardous-waste/economic-study-of-solvent-recycling-and-treatment.php

is compared to transporting the same tonne to a waste facility in Rotterdam. The results show the export option is circa 50% higher in emissions relative to the indigenous treatment option.

Table 7-3: Example of CO_2 Emissions Generated within the State vs. Export

Alternative	Journey	Approx. Distance (km)	Emission Factor[44] ($kgCO_2e$ per tonne.km)	Emissions ($kgCO_{2e}$) per tonne of waste
M1	Dublin to Cork by Road	260	0.07524 (100% laden all HGV)	**19.56**
M2	Dublin to Dublin Port	50	0.07524 (100% laden all HGV)	**30.06**
	Dublin to Rotterdam by ship	1163 [628 nautical miles]	0.01614 (average container ship)	
	Rotterdam Port to Waste Facility	100	0.07524 (100% laden all HGV)	

The other parameters that vary between the alternatives are Material Assets in terms of resources and infrastructure which would be more positive under the M1 alternative given the need to develop and maintain national assets to treat the waste as well as the retained value in using the wastes for recovery within the Irish energy system (through thermal recovery). However, for Material Assets in terms of economics, the impact is more varied between the two alternatives. The current economic drivers would suggest that the M2 alternative facilitating export is more beneficial for waste generators with little incentive for the indigenous capacity (M1). These impacts will likely remain in flux with external market forces dictating the pace of an change.

Preferred Environmental Alternative and Reason for Choosing: Given the level of market uncertainty in the export market and the generally lower cost for export of hazardous wastes it is not feasible at this point to include policies to limit the export opportunities in favour of indigenous capacity. As such, Alternative M2 is the preferred environmental alternative in economic grounds despite that relatively poor climate impact and loss of resources for the State.

Alternative Brought Forward in the draft NHWMP: Recommendation 9 has been included in the draft NHWMP to set out a commitment to: *Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle*. As a result, there is an action to update and maintain an inventory of national capacity for storage, treatment and disposal of hazardous wastes. This alternative acknowledges the current limitations in terms of economic factors and viability, while actively keeping under review indigenous hazardous waste treatment capacity.

7.5.2 Infrastructure Specific versus Infrastructure Supportive

Description of Alternative
Infrastructure Alternative 1 (I1): Present specific policies and objectives on the nature and extent of required hazardous waste infrastructure within the NHWMP to provide policy support for the current infrastructure gaps.
Infrastructural Alternative 2 (I2): Provide a general support for required hazardous waste infrastructure but do not specify policies and any individual hazardous waste stream or infrastructure within the NHWMP.

Reference	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
I1	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
I2	+/-	+/-	+/-	+/-	+/-	+/-	+	+/-	+/-

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

[44] UK Greenhouse gas reporting: conversion factors 2020.

Background: In 2019, the majority (65%) of Ireland's hazardous waste was exported for treatment in other European countries for treatment in 2019. This figure would suggest that there is a significant infrastructure deficit within the State to manage hazardous wastes. For example, there is currently no commercial hazardous waste landfill or hazardous waste incinerator in Ireland. The question arises as to whether the NHWMP should be specific in defining the infrastructure needs for the State and thereby provide the necessary planning support for development of same within the plan period.

As an example, the Third NHWMP specifies the need for a hazardous waste landfill to accept asbestos waste with a capacity for up to 20,000 tonnes of asbestos waste per annum for planning purposes. A measure such as this may be cited by waste developers in planning to demonstrate policy support for such a development. The absence of such policies may prove a barrier for developers whereby the policy is silent on new infrastructure.

In 2018, the EPA published a report to investigate hazardous waste capacity in Ireland to identify the various hazardous waste streams and sources with a view to understanding current and future capacity needs. This report identified that, in reality, only solvents, waste oils and thermal treatment residues represent waste streams with a potential requirement for indigenous infrastructure.

Note that solvent waste generation has reduced from 161,162 tonnes in 2004 to 46,813 tonnes in 2019 showing a clear declining trend in this waste stream. This would suggest that a shift from solvent-based chemistry methods to water-based chemistry in industry. This illustrates the difficulty in trying to establish infrastructure requirements in this dynamic waste market.

Discussion: Modal Alternative I1 presents a scenario where the EPA, as the plan maker, sets out more precise requirements on the hazardous waste infrastructure needs within the NHWMP. This would include an analysis of the existing and predicted waste stream generation coupled with an analysis of the increased capacity for waste treatment within the State.

The Alternative I2 scenario avoids the need for the EPA to make policy for any infrastructure specifics but includes a broader provision to support the development of necessary and sustainable infrastructure.

For both scenarios, the development of hazardous waste infrastructure for the incineration, chemical treatment or landfill of hazardous waste would be subject to Environmental Impact Assessment[45] and by extension Appropriate Assessment. As such, the development of any new infrastructure would have to be designed and operated without any significant effects on the environment providing the relevant protection for all SEA objectives. Hence, the majority of the environmental parameters are assessed as having ? both positive and negative environmental impacts.

The only variance between the two alternatives relates to Material Assets (MA) which is positive for both alternatives given the overall improved infrastructure and greater self-sufficiency in waste treatment. Alternative I2 offers a slight Material Asset advantage in that this approach is more dynamic with support provided where a need is demonstrated. In comparison I1 would require the EPA to make recommendations in 2021 for a six year period. Given the solvent example provided above, there is a need for a more dynamic consideration of infrastructure to ensure that policies are not rendered out of date within the plan period.

Preferred Environmental Alternative and Reason for Choosing: The preferred environmental alternative in this instance is Alternative I2, while there is little to separate the two approaches, the less specific alternative has a likely better outcome for Material Assets given the need for ongoing review and analysis of capacity and to support new infrastructure on the evolving data which can be considered during future plan iterations.

Alternative Brought Forward in the draft NHWMP: Alternative I2 is incorporated within the draft NHWMP specifically through Recommendation 9 outlined above.

This measure is designed to improve knowledge of hazardous waste capacity to inform infrastructure development priorities and contingency planning. The draft Plan specifies that a review and update of

[45] Paragraph 9, Part 1 of Schedule 5 of the Planning and Development Regulations 2011, as amended.

hazardous waste capacity in the State should be undertaken, and this may be used to more clearly inform the relevant infrastructure requirements.

7.6 Overall Preferred Scenario

The overall preferred scenario brought forward for assessment is therefore a combination of strategic alternatives S1 and S3, with modal alternatives M2 and I2.

8 ASSESSMENT OF PREFERRED SCENARIO

8.1 Assessment Parameters

The preferred strategy identified in **Chapter 7** has been progressed and a series of actions have been developed which are grouped under the following areas:

- Policy and Regulation;
- Prevention;
- Collection and Treatment; and
- Implementation.

The approach used for assessing the policies and policy actions for the draft NHWMP was an objectives-led assessment. Each action grouping has been assessed against a set of strategic environmental assessment objectives (See **Chapter 6** for details of the objectives). The assessment compares the likely impacts in terms of the strategic environmental objectives to see which policies and policy actions meet the strategic environmental objectives and which, if any, contradict them.

Under each policy heading, a discussion is presented to support the assessment parameters shown. Not all actions are suitable for detailed assessment as they may relate to administration issues, coordination or data gathering etc. In these cases, a qualitative statement has been made to describe how the action might support the overall strategy approach.

Within the scope of this SEA, temporary impacts have not been assessed. *Temporary impacts* arising from implementation of the draft NHWMP and proposals contained therein would typically be associated with the construction phase of hazardous waste infrastructure. However, no specific location activities are addressed at this strategic level. It is therefore considered that the scope of the draft NHWMP does not lend itself to an assessment of such impacts, but such impacts will be addressed at lower-level planning hierarchies (i.e. local authority planning, EIA at project level). *Permanent effects* are addressed in the assessment which follows.

The draft NHWMP will cover the period from 2021 up to 2027. In line with the SEA Directive, *short, medium and long-term impacts* must be considered during the assessment. The long-term horizon would represent possible effects beyond the 2027 horizon year. As a result, the timelines proposed for assessment of long-term impacts extends beyond the timeframe of the actual plan as some recommendations put forward in the draft NHWMP may take a number of years for certain aspects to be implemented and take effect. Therefore short-term (2021 – 2023) and medium-term (up to 2027) impacts are also addressed in the assessment which follows.

Cumulative effects arise for instance where several measures may each have an insignificant effect but together have a significant effect. *Synergistic effects* interact to produce a total effect greater than the sum of the individual effects so that the nature of the final impact is different to the nature of the individual impact. Cumulative/ synergistic impacts are addressed in the assessment which follows.

The primary effect of the draft NHWMP is to improve the management of hazardous waste, focus on prevention, coordination activities and increased hazardous waste awareness, and to minimise environmental, health, social and economic impacts of hazardous waste generation and management into the future. Many of the actions under consideration will have *direct* positive impacts for population and human health and material assets in particular as a result. However, a number of the measures also have the potential to directly and indirectly impact on other environmental receptors. These *secondary and indirect* effects have been taken into account in the assessment which follows.

8.2 Integration of the SEA and AA Processes

To assist the Plan team in developing recommendations/ actions which have had due regard for the environment, the SEA and AA teams have worked closely with the Plan team to ensure feedback on proposed wording and actions. This included workshops and meetings to discuss overall strategy and specific action areas. The SEA and AA have, as a result, had a positive influence on the evolution of the Plan. Specifically both the AA and SEA teams:

- Undertook an iterative review of emerging recommendations/ actions;
- Inputted to a workshop on alternatives (see **Chapter 7**) and Monitoring (see **Chapter 9**);
- Provided feedback on action language to address issues in particularly in relation environmental issues and AA considerations; and
- Developed additional mitigation measures for inclusion in the plan.

Through iterative discussion, the Plan team have reviewed SEA/ AA assessment material generated on the emerging action areas and have considered this in preparation of the draft NHWMP. Through further consultation on the draft NHWMP it is anticipated that environmental protection measures and the mitigation proposed in this SEA and the accompanying AA will be incorporated in advance of finalisation of the draft Plan. Note that a numbered referencing has been applied to the draft Plan Actions (1.1, 1.2 etc.) for the purposes of the SEA assessment for ease of reference.

8.3 Assessment of Plan Actions

8.3.1 Policy and Regulation

Recommendation	Action(s)	Lead Org(s)	Timeframe
Recommendation 1: Ensure a coordinated national approach on hazardous waste in the context of the Circular Economy, with focus on prevention.	**1.1:** Incorporate prevention & management of hazardous waste into the national Circular Economy Programme.	DECC/EPA	By Q3-2021
	1.2: Incorporation of relevant NHWMP objectives in national waste management planning.		By Q4-2021
	1.3: Support HSA-led implementation of the EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment as it relates to hazardous waste management.		Ongoing
Recommendation 2: Deliver strong and collaborative enforcement of hazardous waste legislation to ensure protection of human health and the environment.	**2.1:** Agree and implement annual enforcement priorities for the storage, movement and treatment of hazardous waste.	EPA/National Waste Enforcement Committee	Annual
	2.2: Initiate an annual regulatory forum on legislative and regulatory developments, sharing best practice and emerging hazardous waste issues.		By Q4-2021
	2.3: Determine annual market surveillance priorities to prevent unauthorised use of hazardous chemicals in mixtures and products.		Annual
Recommendation 3: Provide for all-island approaches on hazardous waste issues.	**3.1:** Establish a working group with Northern Ireland waste authorities to maximise opportunities for co-ordinated management and enforcement of hazardous waste activities.	DECC	By Q4-2021
Recommendation 4: Strengthen systemic resilience for management of hazardous waste.	**4.1:** Commission a review of hazardous waste management during the COVID-19 pandemic.	EPA	By Q1-2022
	4.2: Conduct a business continuity assessment for Ireland's hazardous waste management system to identify at-risk waste streams and associated infrastructure.		By Q3-2022

Action	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
1.1	0/+	0/+	0/+	0/+	0/+	0/+	0/+	0/+	0/+
1.2	0/+	0/+	0/+	0/+	0/+	0/+	0/+	0/+	0/+
1.3	+	+	+	+	+	+	+	+	+
2.1	+	+	+	+	+	+	+	+	+
2.2	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+
3.1	+	+	+	+	+	+	+	+	+
4.1	+	+	+	+	+	+	+	+	+
4.2	+	+	+	+	+	+	+	+	+

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

Discussion

Recommendation 1: ***Ensure a coordinated national approach on hazardous waste in the context of the Circular Economy, with focus on prevention.***

Action 1.1 and Action 1.2 relate to incorporating prevention and management of hazardous waste in the National Circular Economy Programme and the National Waste Management Plan respectively. While it is acknowledged that Actions 1.1 and 1.2 seek to incorporate prevention and management into other related significant plans and programmes, the actions in this draft Plan lack specificity on what this could include. However, it is noted that the new National Waste Management Plan is to be prepared in the coming months and will undergo SEA and AA. At that point, any hazardous waste management recommendations/actions incorporated into the National Waste Management Plan will be assessed. It is also noted that the draft Circular Economy Programme 2021-2027 was published for consultation in March 2021. It states that a pre-screening exercise was undertaken where it was determined that an SEA was not required. This programme aims to support national and strategic programmes and its key objectives are to: provide leadership; maintain a programme of supports; knowledge building and sharing; and looking at opportunities to support new business models. It is noted that its operation pillars include waste characterisation surveys, education/awareness surveys, supporting green public procurement, and looking at improvements in regulation of industry and waste management activities and promoting circularity in these processes, a mong others. These elements align with the recommendations of the draft NHWMP.

Actions 1.1 and 1.2 could be expected to give rise to positive impacts across all environmental topics by acknowledging and addressing prevention and management in related documents. However, without context at this point on what is to be included for instance in the National Waste Management Plan, the impacts are therefore assessed as being neutral to positive across environment receptors.

Given the recent publication of a draft National Strategy for Ireland to transition to a Circular Economy, as well as the Waste Action Plan for a Circular economy, and the successor to the National Waste Prevention Programme in the form of the afore-mentioned draft Circular Economy Programme, and forthcoming new National waste Management Plan for a Circular Economy - the number of interrelated plans/ programmes in the area of waste management across government departments and agencies may lead to a lack of clarity on the tiering and responsibility not only for delivery of the actions but responsibility for protection of the environment with respect to implementation of the multiple plans/programmes. It is currently unclear how environmental considerations can be integrated and implemented in a consistent manner across the waste hierarchy, and how the various plans/programmes sit with respect to each other.

Action 1.3 relates to supporting the implementation of the EU Chemicals Strategy. This action will have positive effects on all of the environmental objectives in the long term as quantities of hazardous substances in waste streams will reduce and there will be correct management of hazardous chemicals throughout their life cycle, resulting in positive impacts to the environment and protection of human health. These positive impacts will see a reduction in the quantity of toxic wastes entering our waters (ground and surface) and atmosphere, which will have a positive impact on PHH, W, LS AQ and BFF.

Recommendation 2: ***Deliver strong and collaborative enforcement of hazardous waste legislation to ensure protection of human health and the environment.***

Action 2.1 will have positive effects on all of the environmental objectives. The policy involves maintaining a collaborative approach to enforcement activities between responsible authorities such as the EPA and the Waste enforcement Committee. This will involve agreement and implementation of enforcement priorities which will lead to consistent and co-ordinated approaches related to waste enforcement activities and actions. As such this will result in overall positive indirect impacts on the environment. Management of waste activities through enforcement via ongoing enforcement activity will result in improvements to waste prevention and minimisation of hazardous waste.

Discussion

Action 2.2 will have long-term broadly positive effects as it will establish an annual regulatory forum. This will help ensure implementing of the NHWMP as well as future versions of it will have regard to relevant legislative developments and emerging hazardous waste issues.

Action 2.3 concerns determining appropriate levels of market surveillance. As a key enforcement activity of the EPA, this action is broadly positive across all environmental receptors. Market surveillance will ensure monitoring of hazardous substances in materials and labelling requirements, as well as incorporating product checks and product compliance testing. Regulating and enforcing products and materials through appropriate market surveillance will have medium and long term positive impacts, as well as cumulative positive impacts, for all environmental receptors, and particularly for PHH and MA. Where restrictions are imposed on materials or mixtures in articles, as well as hazardous substance substitution, this should directly reduce the quantities of hazardous substances ending up in the related waste streams. Surveillance and enforcement can therefore prevent hazardous material from reaching the consumer or result in products being taken off the market, which in turn helps enforce the waste hierarchy, and also helps avoid products/materials becoming more difficult to reuse or recycle.

Recommendation 3: ***Provide for all-island approaches on hazardous waste issues.***

Action 3.1 is positive as it brings a more holistic and efficient approach to improve communication on the island of Ireland to address issues in relation to improving the management of hazardous waste by working with Northern Ireland on transboundary issues relating to the management of hazardous waste. This North-South cooperative group will facilitate greater ease of coordination, reduced administrative provisions, and improved resource use. The establishment of a cooperative group will allow for more effective decision making to occur in terms of meeting existing and determining future policy and will ensure that sufficient structures in practice are in place to the management of hazardous waste issues. There will be positive effects from this policy action on all of the environmental objectives.

Recommendation 4: ***Strengthen systemic resilience for management of hazardous waste.***

Action 4.1 will review how hazardous waste management was conducted during the COVID-19 pandemic, while Action 4.2 aims to conduct a business continuity assessment on at-risk waste streams and associated infrastructure. These are positive steps and represent consideration of new and emerging issues, as the COVID response worldwide has led to new and hugely increased volumes of healthcare risk waste being generated, some of which will be hazardous in nature.

Proposed SEA Mitigation Measures:

- **General Mitigation:** Clarity should be provided in the NHWMP on how the various waste/ circular economy strategy, programmes and plans interface within the newly emerging circular economy/ waste hierarchy.
- **Action 1.2:** Recommend adding the following wording to the action to ensure environmental protection at other planning levels: *Incorporation of relevant NHWMP objectives (including reference to environmental protection objectives and the mitigation from the NHWMP) in national waste management planning.*

8.3.2 Prevention

Recommendation	Action(s)	Lead Org(s)	Timeframe
Recommendation 5: Promote reduced consumption of hazardous substances in household settings.	**5.1:** Conduct awareness raising campaigns to highlight best-practices and alternatives, with initial focus on paints, cleaning products and gardening chemicals.	RWMPOs	Ongoing
	5.2: Develop new coherent information on household hazardous waste and guidance on disposal of hazardous waste; and disseminate via targeted & national campaigns; and through the EPA website & www.mywaste.ie.		By Q4-2021
	5.3: Conduct national survey on householder awareness & behaviours regarding hazardous substances to inform prevention initiatives and measures.		By Q2-2022
	5.4: Examine potential of product & in-store labelling of hazardous substances to inform consumer purchasing and waste management decisions.		By Q4-2022
Recommendation 6:	**6.1:** Utilise the regulatory regime to encourage usage of non-toxic alternatives in production and processing steps.	EPA/DECC	Ongoing

Recommendation	Action(s)	Lead Org(s)	Timeframe
Prevent hazardous waste in industrial sectors and support a safe circular economy.	**6.2:** Review the environmental regulatory framework as a means to promote circularity in industrial processes, and reduce industrial waste generation.		Ongoing
Recommendation 7: Support applied research to inform policy & industry on hazardous waste prevention.	**7.1:** Provide research funding focussed on reducing use of hazardous substances in commercial operations.	EPA/SFI	Ongoing
	7.2: Support research & surveys to develop behavioural insights regarding public attitudes and actions on hazardous waste.		Ongoing
Recommendation 8: Use Green Public Procurement (GPP) to specify products and services that reduce the use of hazardous substances.	**8.1:** Implementation of GPP criteria and practices.	OGP/EPA	Ongoing
	8.2: Establish supports for the transition to greener purchasing through guidance, and training for purchasers & suppliers.		By Q4-2021

Action	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
5.1	+	+	+	+	+/-	+/-	+/-	+	+
5.2	+	+	+	+	+	+	+	+	+
5.3	+	+	+	+	+	+	+	+	+
5.4	+	+	+	+	+	+	+	+	+
6.1	+	+	+	+	+/-	+/-	+/-	+	+
6.2	+	+	+	+	+/-	+/-	+/-	+	+
7.1	+	+	+	+	+	+	+	+	+
7.2	+	+	+	+	+	+	+	+	+
8.1	+	+	+	+	+	+	+	+	+
8.2	+	+	+	+	+	+	+	+	+

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Discussion

Recommendation 5: ***Promote reduced consumption of hazardous substances in household settings.***

Actions 5.1 to 5.4 aim to promote measures to reduce consumption of hazardous substances in household settings. It will have positive benefits to the environmental objectives in the long term in meeting the obligations of the EU's Waste Framework Directive in relation to the separate collection of hazardous waste generated by households. In the short term there may be increased capture of hazardous waste through organised collections from households. However, if not managed properly, these household hazardous wastes have the potential to create adverse impacts on the environment and human health due to unauthorized disposal. The proposed awareness campaigns have the potential for positive impacts on human health, through better knowledge of identification of hazardous household wastes and a reduction in those wastes requiring management.

Developing information and provision of information through central points such as websites for information and guidance on household hazardous waste is broadly positive across environmental receptors, and particularly positive for PHH and MA, as better knowledge of household hazardous wastes and can lead to a direct positive impacts through better management at local scales. Characterisation studies and take-back days run for household sources of such waste highlights that small sources are an issue. Data to date also highlights as well as the importance of keeping household hazardous waste separate from other bin collections to prevent contamination of other waste streams, as well as to protect PHH.

Increased awareness provides significant opportunity for positive cumulative impacts over the short, medium and long term with a very significant impact on proper handling and disposal and ultimately prevention. Providing information and keeping websites up to date can provide good results within short-time frames and for minimal relative monetary investment. Conducting surveys on behavioural insights can also help shape information campaigns and result in better dissemination of information.

Examining the potential for labelling of hazardous waste to inform consumer purchasing decisions would be broadly positive across environmental receptors, particularly in the longer term, as it sets packaging and labelling obligations on manufacturers, importers and downstream users. This should help improve awareness of hazardous waste content and its characteristics, and therefore allow for better management of waste generated.

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Recommendation 6: ***Prevent hazardous waste in industrial sectors and support a safe circular economy.***

Actions 6.1 and 6.2 relate to using the regulatory regime to encourage use of non-toxic alternatives in production and processing steps, as well as awareness raising. In the long term will have positive impacts on the environmental objectives. The IED regulatory regime will be utilised to encourage licensees as producers of waste stream to use non-toxic alternatives in production and processing. This will be facilitated through the BREF process and will promote the circular economy. As the action is focused on the prevention and minimisation of hazardous waste generation in the first instance, it should assist Ireland in meeting its obligations under the EU and National Circular Economy Action Plans. Multiple agencies operate in the area of waste enforcement such as the EPA (e.g. the Office of Environmental Enforcement), DECC etc.

Utilising the existing environmental regulatory regime of the IED, the OEE BAT Conclusions which are legally binding, can be used to promote and implement circular economy principles. This will focus on waste reduction and a shift by manufacturers to supply products with a longer term life cycle. In the long term, environmentally, a shift of this nature would reduce the need for virgin materials which would in turn lead to reduced emissions to air and water. This would have significant, positive long-term effects for air quality and climate in particular and also on water quality. Indirectly this would also have positive impacts for biodiversity and human health. As the bulk of resources are imported, transport related emissions would also reduce with indirect positive impacts for air quality, climate, human health and biodiversity (e.g. reduced atmospheric deposition of NO_x).

Recommendation 7: ***Support applied research to inform policy & industry on hazardous waste prevention.***

Action 7.1 aims to support research and innovation, and in the long term will have positive impacts on the environmental objectives. Overall this action aims to prevent and minimise hazardous waste, by encouraging innovation through research, with a particular focus on the commercial sector. When achieved, this will result in less waste to be transported, treated or disposed, with consequent positive impacts on the environment generally.

Action 7.2 will also have long term positive effects across environmental objectives as the information and insights gathered will help inform future awareness campaigns which can further tackle hazardous waste management issues.

Recommendation 8: ***Use Green Public Procurement (GPP) to specify products and services that reduce the use of hazardous substances.***

Actions 8.1 and 8.2 in the long term will have positive impacts for the majority of environmental objectives. Green public procurement recognises the purchasing power of the public sector and can leverage that to bring about efficiencies in resource use, cost saving and environmental benefits. Examples include energy efficient computers, fuel efficient vehicles and sustainable construction materials. The EPA has produced guidance to assist the public sector to implement and maintain procedures for green public procurement. This EPA Green Procurement Guidance for the Public Sector is currently under review.

The action will have positive benefits as it will improve the process whereby public and semi-public authorities choose goods, services, works and utilising by choosing solutions that have a reduced impact on the environment throughout their life-cycle – including the avoidance and/ or appropriate management of hazardous substances and ultimately lead to a reduction in hazardous waste generation. Provision of training for both purchasers and suppliers will help ensure the implementation and uptake of green procurement principles throughout the supply chain. In the long term, the policy will assist in meeting the obligations of developing and implementing a sustainable procurement policy as part of the Programme for Government: Our Shared Future (October 2020).

Proposed SEA Mitigation Measures:

- **Action 5.2:** Consider liaising with and encouraging waste collection providers to provide information on household hazardous waste on their websites and in future leaflets to ensure a wider reach of information.

8.3.3 Collection and Treatment

Recommendation	Action(s)	Lead Org(s)	Timeframe
Recommendation 9: Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle.	**9.1:** Update & maintain inventory of national capacity for storage, treatment and disposal of hazardous wastes.	EPA, DECC	By Q2-2022
	9.2: Examine legislation and procedures for development of waste management infrastructure, as proposed in the Waste Action Plan for a Circular Economy.		Ongoing
Recommendation 10: Prepare for separate collection for hazardous waste fractions produced	**10.1:** Carry out a review of waste licensing and permitting legislation to facilitate take-back,	DECC	By Q2-2022

Recommendation	Action(s)	Lead Org(s)	Timeframe
by households by 2025, as required under Waste Framework Directive.	transport and temporary storage of certain hazardous wastes from small sources. **10.2:** Establish collection of household and small-scale hazardous waste through civic amenity sites and/or via special collections.		By Q4-2024
Recommendation 11: By 2022, establish nationwide collection and transfer of farm hazardous wastes, including unused veterinary products.	**11.1:** Develop and launch suitable national collection scheme, having regard to findings from the 2014-2017 pilot scheme.	DECC/ DAFM	By Q2-2022
Recommendation 12: By 2023, establish national collection of surplus and out-of-date medicines from household waste stream.	**12.1:** Develop a proposal with options, building on experience with DUMP project; EPA characterisation report; and stakeholder input. **12.2:** Implement a nationwide collection system.	DECC/ Dept. of Health	By Q2-2022 By Q2-2023
Recommendation 13: By 2023, establish collection platforms for surplus paint from household and commercial sources.	**13.1.** Initiate large-scale collection(s), building on current initiatives by local authorities and industry.	DECC/ RWMPOs	By Q2-2023
Recommendation 14: Promote best practice in the management of commercial hazardous wastes streams.	**14.1:** Publish Smart Garage guide and promote responsible management of waste oils and other wastes from vehicle maintenance operations. **14.2:** Prepare and publish guidelines for the safe storage of Lithium-ion batteries at waste handling facilities. **14.3:** Develop training to promote awareness on identification and proper management of hazardous fractions in C&D waste.	EPA	By Q3-2021 By Q4-2021 By Q2-2022
Recommendation 15: Promote best practice in the management of asbestos-contaminated waste	**15.1:** Produce best-practice guide for handling asbestos waste; and identify options for collection of asbestos and asbestos-contaminated wastes.	EPA	By Q2-2022
Recommendation 16: Put in place arrangements for temporary storage of orphan radioactive sources.	**16.1:** Identify options for the safe and secure storage of orphan radioactive wastes, pending disposal.	EPA	By Q2-2022
Recommendation 17: Remediate identified legacy waste disposal sites containing hazardous waste.	**17.1:** Continued remediation of sites, in line with EPA Code of Practice and appropriate authorisations.	Local authorities	Ongoing

Action	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
9.1	+	+	+	+	+/-	+/-	+/-	+	+
9.2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
10.1	+/-	+	+	+	+/-	+/-	+/-	+	+
10.2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
11.1	+/-	+/-	+/-	+/-	+	+	+	+	+
12.1	+	+	+	+	+	+	+	+	+
12.2	+/-	+/-	+/-	+	+	+	+/-	+	+
13.1	+/-	+/-	+/-	+	+	+	+/-	+	+
14.1	+	+	+	+	+	+	+	+	+
14.2	+	+	+	+	+	+	+	+	+
14.3	+	+	+	+	+	+	+	+	+
15.1	+	+	+	+	+/-	+/-	+	+	+/-

Action	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
16.1	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
17.1	+/-	+/-	+/-	+/-	+/-	+/-	+	+/-	+/-

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Discussion

Recommendation 9: ***Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle.***

Action 9.1 is broadly positive for the environment as it ensures that existing authorised capacity is considered in the first instance prior to developing new infrastructure. This approach has direct positive impacts for all environmental receptors. This action is designed to improve knowledge of hazardous waste capacity to inform infrastructure development priorities and contingency planning. It will ensure that capacity for the future is secured, with contingency planning reducing the risk of waste treatment capacity deficits in the event that export markets for hazardous and recyclable wastes may close at short notice, thus ensuring that waste can continue to be collected and disposed of in licensed/ authorised facilities reducing the health risk to humans, livestock and the environment. In the long-term, development of hazardous waste treatment capacity for new infrastructure would result in some emissions locally (e.g. land take and resources/energy), however there would be a reduction in transport and transport-related greenhouse gas emissions.

Action 9.2 will examine the legislation and procedures for development of waste infrastructure. Similar to Action 8.1, this will allow for future planning and infrastructural needs. As Action 8.1 does not preclude the development of new infrastructure or treatment capacity, any infrastructural development has the potential to negatively impact on the receiving environment if sited inappropriately, particularly with regard to PHH, BFF, W and LS.

Recommendation 10: ***Prepare for separate collection for hazardous waste fractions produced by households by 2025, as required under Waste Framework Directive.***

Action 10.1 relates to a review of waste licensing and permitting legislation relating to small sources of hazardous waste, and will have positive effects on all of the environmental objectives. Hazardous waste can pose a risk to health or the environment if not managed and disposed of correctly. The EPA is responsible for licensing certain activities in the waste sector under the Environmental Protection Agency, Waste Management and Protection of the Environment Acts. Hazardous waste management activities are managed primarily through the licensing of facilities granted under the Waste, Integrated Pollution Control (IPC) and Industrial Emissions Directive (IED) authorisations. These regulatory regimes are currently focused on the management of environmental releases with less emphasis on minimisation and recovery. This action places more emphasis on waste within the licensing process. There will be greater collection and recovery of hazardous waste streams. This will assist with Ireland meeting its obligations under the Waste Framework Directive. In the short term there may be some negative effects particularly for PHH, MA, CF and AQ associated with continued increases in hazardous waste generation, increased transport and transport-related emissions from the increased collection of hazardous waste associated with take-back schemes. However, in the longer term, this policy offers greater environmental benefit as there will be greater controls and reporting of hazardous waste streams.

Action 10.2 aims to enable the capture of more hazardous waste at civic amenity sites (CAS's) which might otherwise go unmanaged and as such, has a long term positive environmental impact. However, there is also potential for short term negative impacts on AQ, MA and PHH due to indirect impacts associated with transport of waste and noise/ disturbance from segregation activities. The development of additional CAS's or expanded infrastructure at existing sites would improve collection infrastructure for hazardous waste and contribute to a decrease in unmanaged hazardous wastes. This will have positive impacts on BFF, LS, AQ and PHH by ensuing that these hazardous materials are collected and treated appropriately, which will reduce the risks to soils, water and air quality associated with unregulated disposal activities like backyard burning and illegal dumping. Indirect impacts to AQ and CF include the potential for increased emissions from the transport of waste to and from CAS's.

Construction of additional CAS's would however result in additional land take and associated negative environmental impacts. Any area defined for collection and storage of waste (including temporary storage), may have the potential to give rise to contaminated run-off if stored inappropriately. This may give rise to risk to soils and water in particular with indirect impacts for BFF and PHH. Existing facilities may also be subject to flood risk, either due to historic siting choices or from general increased vulnerability to the effects of climate change. It is noted that some CAS's already provide for collection of hazardous wastes from householders e.g. batteries, and pilot projects have been undertaken by the EPA in relation to collection of farm wastes at local marts which provide an evidence base for this activity.

Recommendation 11: ***By 2022, establish nationwide collection and transfer of farm hazardous wastes, including unused veterinary products.***

Action 11.1 concerns collection and transfer of farm hazardous waste. This will have overall positive impacts on the environment as it would lead to better management of this waste stream which has potential to give rise to significant negative impacts on the environment if not treated and managed correctly. The Pilot Farm Hazardous Waste Collection

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programmes conducted across Ireland between 2013 and 2017 indicated that considerable quantities of unapproved pesticides may still be illegally stored on farms.

Better management of farm hazardous wastes would result in positive impacts across environmental receptors, particularly for PHH, LS, W, AQ, CF and MA, namely through reduced leachate generation, as well as health and safety risks to people, livestock and wildlife. The nationwide arrangement of the collection and transfer of farm hazardous waste may also reduce illegal stockpiling on farms and illegal dumping, reducing risks to human health and the environment. In addition, in the longer term, the nationwide arrangement for collection and transfer of farm hazardous waste will have positive benefits for Ireland and assist with Ireland meeting its obligations in various national and international programmes and legislation, for instance the NWPP/Circular Economy Programme, the Stockholm Convention on Persistent Organic Pollutants, and the Water Framework Directive.

However, similar to rolling out collections at CAS's, areas used for collection and (temporary) storage have the potential to give rise to contaminated run-off if wastes are stored inappropriately. The EPA report on the 2013 Farm Hazardous Waste Collection Pilot noted there were some difficulties managing some waste streams, such as waste oils, where the condition of containers for instance posed a spillage risk. Inappropriately controlled storage or collection points may give rise to risk to LS and W in particular, with potential for direct and indirect impacts for BFF and PHH also.

Recommendation 12: ***By 2023, establish national collection of surplus and out-of-date medicines from household waste stream.***

Action 12.1 involves drawing up a proposal of options for how a collection system might be developed, and **Action 12.2** relates to the establishment of this collection system. The findings of the HSE's DUMP initiative indicate the interest of consumers and the public in disposing of this waste stream correctly. There is a need for appropriate management of this waste stream as the volumes collected at participating pharmacies increased year on year for the duration of the project, from 4.7 tonnes in 2004 to 12 tonnes in 2007. Facilitating appropriate tack-back measures will therefore allow for proper handling and quantification of this waste stream, and clarify whether volumes are increasing year on year.

These actions will therefore enable improved collection of this hazardous waste stream which might otherwise go unmanaged and as such will have long-term positive environmental impacts. Surplus and out-of-date medicines pose a risk to the environment and human health if not appropriately managed, with products able to permeate soil and groundwaters, entering the food chain and contaminating water supplies, leading to impacts on PHH, LS and W in particular. In the long term, these actions will have positive benefits for Ireland to meet its obligations under EU Directive 2004/27/EC (relating to medicinal products for human use) which requires that '*appropriate collection systems are in place for human medicinal products that are unused or have expired*'. In the short term there would be some negative impacts to MA and PHH through the continued generation of this waste stream in the absence of a separate collection system.

Recommendation 13: ***By 2023, establish collection platforms for surplus paint from household and commercial sources.***

Action 13.1 relates to initiating large-scale collection(s) building on current initiatives being undertaken by local authorities and industry. During the period of the third NHWMP, a number of collection days were run by the Regional Waste Authorities which saw the take-back of household hazardous waste. The amount collected across 11 sites during the 2018 collection campaign amounted to almost 170,000 kg, of which the main waste stream was paint (130,398 t). However much of this comprised water-based paints which are non-hazardous. Industry and farms are also sources for waste paints containing hazardous substances.

Establishing a collection platform/system will therefore be broadly positive across environmental receptors as this waste stream, and particularly legacy sources of hazardous paint, will be better managed. This action will also work positively in tandem with higher level instruments such as the EU Decorative Paints Directive which currently limits the solvent content of several classes of paint product. Further, from July 2021, Regulation (EU) 2019/1020 will implement a market surveillance and compliance strategy to help keep non-compliant/ unsafe products from being placed on the EU market. The *Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025* will also examine the feasibility of introducing an Extended Producer Responsibility (EPR) Scheme which will include paints (as well as medicines and farm hazardous waste). Similarly to Action 12.2, in the short term there would be some negative impacts to MA and PHH through the continued improper storage/generation of this waste stream in the absence of a separate collection system.

Recommendation 14: ***Promote best practice in the management of commercial hazardous wastes streams.***

Action 14.1 relates to developing guidance to promote responsible management of waste oils and other wastes from vehicle maintenance operations. This is a very positive action; many aspects of waste management relating to vehicles are in place e.g. end of life vehicles and battery recycling, however this guidance would be a positive step to ensure other aspects such as management of waste oils from vehicles is taken into account by garages, and would be expected to

Action 14.2 relates preparing guidelines for the safe storge of lithium ion batteries. Poor management practices and inappropriate segregation of this waste stream may result in risk to the environment and/or human health if inappropriately managed through poor operator awareness (e.g. fires while being kept in storage). The amount of this

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particular waste stream is predicted to increase greatly, particularly as a result of the promotion and wider uptake of electric vehicles (EVs) which utilise such batteries (compared to typical lead-acid batteries). This action will therefore have medium to long-term positive and cumulative benefits across environmental objectives as knowledge and management of this waste stream will be improved.

Action 14.3 relates to developing training in relation to the hazardous fractions of C&D waste. C&D waste can contain a variety of materials such as concrete, wood, glass and plastics etc much of which is amenable to recycling and reuse. The volume of C&D waste generated in Ireland is reflective of economic and construction activity; in 2018, the volume generated was 6.2 million tonnes, an increase of 1.8 million tonnes on the previous year. The majority of this consisted of soil and stone (77%) and the vast majority of C&D waste was treated within Ireland, with just 4% exported abroad for final treatment. Small amounts of hazardous materials such as solvents and asbestos can however also be present. This can impede recycling/reuse of the rest of the waste or result in contamination, and can lead to environmental impacts. This action is therefore broadly positive across environmental objectives as it will lead to upskilling and awareness in the management of hazardous waste elements in this sector and waste fraction.

Recommendation 15: ***Promote best practice in the management of asbestos-contaminated waste.***

Action 15.1 will look at producing best practice guidance and will address the collection and transfer of asbestos waste, which is generated during refurbishment works and during removal of known asbestos. There are concerns that the quantities of this waste stream currently managed is relatively low, however it is likely that there are significant volumes of this waste in the built environment as this waste was widely used in products up to 1999. There are currently two EPA facilities licensed to accept asbestos waste, with the waste then exported to Germany for disposal.

The action will have long term positive benefits as the quantities of this hazardous waste captured will improve, thereby reducing the volume of waste currently unreported or disposed of incorrectly. This would have consequent positive impacts on human health as asbestos contains carcinogenic fibres which are easily inhaled. In the short term, there would be improved collection and transfer infrastructure for this hazardous waste. This may lead to some increased waste related transport, with potential transport-related emissions both nationally and internationally. There would be positive impacts to soils as appropriate collection and management of this waste would by reducing the risk of soil contamination from inappropriate disposal such as burial.

Recommendation 16: ***Put in place arrangements for temporary storage of orphan radioactive sources.***

Action 16.1 aims to review options for the secure storage of orphan sources of radioactivity. Ireland does not have a national storage facility to assist in the management and storage of radioactive waste and disused sources. However, since 2010, and with the introduction of take-back agreements, there was a national effort to significantly reduce legacy sources, typically from decades-old industrial uses which had no return or disposal route in Ireland. Under the IED, waste-to-energy facilities must also have portal monitoring systems to detect the presence of radioactive materials. Monitoring data to date indicates that the majority of detections are arising from short-lived isotopes from medical sources which can safely decay while being stored. However some long-lived isotopes have also been detected which are being closely monitored to detect whether there is an increasing trend. Given advances in, for instance, medical care and healthcare screening approaches, increased generation of radioactive medical waste could become a greater issue for hazardous waste management in the longer term. A lack of responsiveness and information on this emerging issue could therefore result in direct emissions to AQ, LS and W from the storage, handling and export of radioactive waste.

There is also potential for direct impacts on PHH in relation to the health and safety aspects of radioactive waste management. This however depends on risk of exposure and dose-response relationships, and the sector is heavily regulated. For example, the International Atomic Energy Agency (IAEA) of which Ireland is a member, produces safety standards including for the *Storage of Radioactive Waste* (Safety Guide No. WS-G-6.1). This guidance sets out the roles and responsibilities for governments, regulators and operators, and also covers the design and operation of storage facilities, as well as the requirements for safety assessments. This would be a useful basis for informing the development of similar guidance from the Irish perspective.

Recommendation 17: ***Remediate identified legacy waste disposal sites containing hazardous waste.***

Action 17.1 concerns historic and legacy dump/landfill sites. The remediation of such sites will have overall direct permanent positive long-term impacts across environmental receptors. There are however potential negative impacts some of which could be long term in relation to the unknown nature of unregulated closed landfills. A such, there is potential for negative impacts on BFF, LandS, PHH, W and AQ from such remedial works. The potential short to medium term negative effects associated with this action may result in the movement of controlled leachate to receiving water bodies, sensitive peatland habitats through nutrient enrichment, soils, public water supplies and the potential release of harmful gas emissions to the atmosphere. Heavy plant/ machinery movements also have the potential to directly or inadvertently introduce or disturb invasive and alien species. It should be noted that such plant species themselves are not hazardous waste. However in the context of hazardous waste management, such material might be classed as a 'difficult waste' on treatment with chemicals for instance.

Remediation of sites is broadly positive for LandS in terms of reducing the overall volume of any contaminated materials. An indirect negative effect however is that export of soil for treatment abroad represents a net loss of the Irish soil resource.

Discussion

Potential short term and temporary negative impacts will be offset through remediation works to ensure closed landfills are not continuing to impact on receiving environments and European sites. The application of the EPA Code of Practice and Guidance on Contaminated Land and Groundwater at EPA Licensed Sites are key aspects of this. The approval of any remediation option including the removal of waste is currently subject to an authorisation procedure. Any remedial works proposals will be assessed in the context of Section 22 of the Waste Management Acts 1996, as amended, as part of the authorisation process. Site-specific measures are also set out as part of the licence/ permit conditions for unregulated waste disposal sites closed landfills, which has direct positive medium to long term impacts.

Proposed SEA Mitigation Measures:

- **General Mitigation:** It is Recommended that the following is added to the plan as a specific recommendation: *Ensure that all plans, projects and activities requiring consent arising from the NHWMP are subject to the relevant regulatory environmental assessment requirements including SEA, EIA and AA as appropriate.*
- **General Mitigation:** It is recommended that the NHWMP supports the use of the EPA Environmental Sensitivity Mapping (ESM) Webtool and the Appropriate Assessment GeoTool which can be applied at the lower tiers of waste management planning to inform decision-making in terms of infrastructural/siting considerations as well as consideration of environmental sensitivities e.g. as part of environmental risk assessments.
- **Actions 9.1 and 9.2:**
  - In addition to updating the 2018 capacity report, it is recommended that an economic study/cost-benefit analysis forms part of this review process to examine the economic viability of managing various waste streams in Ireland.
  - The updated review should consider emerging issues to inform any capacity/infrastructure needs e.g. trends in healthcare risk waste generation and management, the growing uptake in EVs and recycling needs for lithium batteries etc.
- **Action 10.2:**
  - It is recommended that prior to this action being implemented, a feasibility study or site assessment is undertaken at CAS's to determine the suitability and capacity of these facilities and the existing infrastructure to accept hazardous waste streams (related factors such as the population catchment being served could also be considered). This will assist in determining what CAS's may or may not be appropriate for the collection and/or temporary storage of hazardous waste based on existing site conditions, infrastructure, capacity, and surrounding environmental sensitivities.
  - The site assessment should ensure as a minimum that the site location and drainage is suitable for the protection of the soils and water environment from run-off and human health in order to prevent cumulative negative impacts.
- **Action 11.1:**
  - This action would also benefit from including an action on effective enforcement of the Biocidal Product Regulations to help ensure these are managed correctly. It is also recommended that the EPA work with the HSA and/or other authorities as appropriate to either develop or review the enforcement approach to biocides, including pesticides.
  - Recommend including an action to increase awareness among farmers with respect to hazardous waste sources which could be included as part of future awareness campaigns.
- **Actions 10.2, 11.1, 12.1 & 12.2, 13.1 and 15.1:**
  - It is recognised there are potential impacts from hazardous waste collection and storage, particularly outside of licensed facilities, e.g. from accidental spillages to nearby watercourses. Prior to the establishment of any nationwide system for collection and transfer of household, farm hazardous waste, surplus/expired medicines, paint and asbestos waste, all collection points (e.g. marts or similar), the transport systems, temporary storage areas and management solutions should be fully established to ensure that these systems pose no adverse risk to the environment or human health
  - An environmental risk assessment should be undertaken at all collection/storage sites to determine the suitability and capacity of these sites to accept and store these hazardous waste streams with no adverse risk. It is recommended these checks are reported and recorded in advance of the implementation of any such system.
  - As part of conducting environmental risk assessments, it would be beneficial to develop or set out siting criteria which considers key environmental sensitivities such as proximity to watercourses, ground conditions, protected sites etc.
- **Recommendation 14:** Would benefit from the inclusion of an action to keep under review the development of future guidance for key emerging issue areas e.g. healthcare risk waste.
- **Action 16.1:**
  - Consider including an action to prepare guidance or a code of practice on the approaches to storing radioactive wastes, which could be based around existing guidance (e.g. IAEA).
  - It is recommended that an environmental risk assessment and a safety assessment are undertaken as part of the process for developing options/proposals for existing or new storage sites.

Discussion

- **Action 17.1:** Continued application of the *EPA Waste Sites Code of Practice* (2007) and *Guidance on Contaminated Land and Groundwater at EPA Licensed Sites* (2013). Any waste authorisation should also be accompanied by an AA Screening.

8.3.4 Implementation

Recommendation	Action(s)	Lead Org(s)	Timeframe
Recommendation 18: Report annually on hazardous waste generation and treatment in Ireland, with a breakdown by category/sector.	**18.1:** Expand reporting protocols to provide more detailed data to inform measures and policy options for best practice on hazardous waste management. **18.2:** Conduct hazardous waste characterisation studies from household and commercial bins.	EPA	Annually By Q2-2022
Recommendation 19: Provide leadership on achievement of NHWMP objectives; with regular progress reports on implementation of the plan recommendations.	**19.1:** Establish a working group to support implementation of plan recommendations. **19.2:** Report annually on progress of plan recommendations. **19.3:** Conduct a mid-term review of the NHWMP and update actions for the second half of the plan.	EPA	By Q3-2021 Annually By Q4-2024

Action	PHH	BFF	LS	W	AQ	CF	MA	CH	LandS
18.1	+	+	+	+	+	+	+	+	+
18.2	+	+	+	+	+	+	+	+	+
19.1	+	+	+	+	+	+	+	+	+
19.2	+	+	+	+	+	+	+	+	+
19.3	+	+	+	+	+	+	+	+	+

***Key: PHH** – Population and Human Health; **BFF** – Biodiversity, Flora and Fauna; **LS** – Soils; **W** – Water; **AQ** – Air Quality; **CF** – Climatic Factors; **MA** – Material Assets; **CH** – Cultural Heritage; **LandS** – Landscape.*

Discussion

Recommendation 18: ***Report annually on hazardous waste generation and treatment in Ireland, with a breakdown by category/sector.***

Action 18.1 will improve knowledge on the quantities and treatment of hazardous waste generated in Ireland through expanded reporting protocols, which is broadly positive over the short to long term for all environmental receptors, and particularly for PHH, MA, AQ, W and LS. The EPA currently complies national statistics on waste generation and management in the Republic of Ireland. This will have long term positive impacts on environmental objectives as it will assist Ireland in meeting its legislative reporting obligations to the EU. In addition, it will assist in informing national waste management and prevention policies, facilitate better knowledge of previously unmanaged and unreported waste streams, improve self-sufficiency for sustainable treatment and allocation of resources for tackling illegal waste activity.

Action 18.2 involves carrying out characterisation studies to profile hazardous waste arisings from smaller sources. This will, in the long term, improve the knowledge on the composition of hazardous waste from households and commercial sources. This will enable data gathering and provide insights on smaller scale sources. This can then help reduce the potential for contamination of hazardous waste streams with other waste streams such as dry recyclables, mixed residual waste, thus reducing the risk to the environment and human health. This has overall very positive medium to long term impacts across environmental receptors. This will also have benefits on receptors as it should lead to better awareness of these smaller waste streams, which can help target specific awareness campaigns and initiatives. Ultimately, a reduction in cross-contamination will result in a reduced quantity of waste requiring specialist transport and treatment.

Unmanaged household waste can also contribute to backyard burning and illegal dumping. Data on what fraction of this could be hazardous waste is unknown. Also of relevance to this characterisation action is the issue of so-called 'difficult wastes', which because of their properties require special management. They may also have no treatment option to meet waste acceptance criteria limits. Examples include expired/ unexploded ordnance, marine flares, noxious weeds, seized controlled substances etc. The draft Plan states that the actual arisings nationally are not known, which makes it difficult to assess the degree to which they may be impacting on environmental receptors. Impacts could include physical disturbance to habitats/species, pollutant emissions to air from burning, littering, health and safety issues etc.

Discussion

Recommendation 19: ***Provide leadership on achievement of NHWMP objectives; with regular progress reports on implementation of the plan recommendations.***

Actions 19.1 to 19.3 will have positive benefits in the long term across all environmental receptors as an oversight/ implementation group can optimise how policy and practical measures are established in order to implement the actions of the NHWMP. The establishment of an implementation group, along with reporting on Plan progress and a mid-term review of the Plan are also very beneficial, as these actions will reduce unnecessary pressures and result in positive cumulative environmental effects. These actions will allow for the Plan to take cognisance of what is happening on the ground, emerging issues, what needs to be addressed, and projecting what new changes might be coming down the line. This will allow for the actions to be managed and implemented in an effective manner, allowing for more overall effective decision-making. Best practice from SEA would be for the plan-makers to include the proposed SEA Monitoring Programme as part of the plan's implementation. Should any modifications be made to the plan following the mid-term review, the changes would need to be screened for SEA and AA to determine if the changes would be likely to have significant effects on the environment.

Proposed SEA Mitigation Measures:

- **General Mitigation:** To emphasise the consideration of this plan at lower planning tiers, it is recommended that the following is included in the Plan: *Local authorities should consider the information provided in this revised Plan and environmental reports, and in accordance with sections 22 (8) and 26 (6) of the Waste Management Act 1996, as amended.*
- **Action 18.1:** It is recommended that the use of agreed Key Performance Indicators (KPIs) be considered in reporting of hazardous waste generation and treatment.
- **Action 18.2:**
  - On the issue of 'difficult wastes' in order to address data gaps on arisings, it is recommended to undertake a pilot characterisation study to estimate the quantities of such waste streams nationally. This could include a review to collate current management approaches and data gaps on difficult waste streams, and develop guidance or a code of practice for dealing with such wastes. It would be useful to identify any regulatory gaps and liaise with the appropriate bodies to develop an integrated enforcement approach.
  - Quantities of unmanaged waste remains poorly understood. It is recommended to develop a pilot study to characterise and quantify the volumes of unmanaged waste (e.g. illegally dumped, fly-tipped etc.) to identify hazardous components, and the most common waste stream(s). This would also help highlight where more prevention programmes, campaigns and awareness-raising could be targeted.
- **Action 19.3:** The following to be added to the action: *In accordance with Art. 9(2) of S.I. No. 435 of 2004, as amended, any modifications to the Plan following the interim review will need to determine if the modifications are likely to have significant effects on the environment.*

8.4 Cumulative Effects

Broadly speaking cumulative effects at the plan level can occur from two sources as follows:

- Interaction of actions within the draft NHWMP; and
- Interaction from policies and proposals in other related plans, programmes and policies.

Interaction of Actions within the Draft NHWMP

The anticipated cumulative impacts associated with the actions proposed in the draft Plan are summarised as follows:

Population and Human Health: There is potential for overall positive cumulative effects for human (and environmental health) as well as safety aspects, arising from the implementation of the draft Plan's actions, as this plan iteration is placing a greater emphasis on prevention activities. The actions relating to awareness-raising, and liaison/ coordination with other agencies and key sectors aims to prevent hazardous waste generation in the first instance, with a focus on activities that promote substitution of hazardous materials and increased market surveillance. The actions around education, awareness, characterisation studies and producing guidance for various sectors provides significant opportunity for positive cumulative impacts over the lifetime of the plan and beyond. Households, industry and state agencies for instance, all implementing small changes derived from these education and awareness campaigns, could cumulatively have a very significant positive impact on prevention.

Biodiversity Flora and Fauna: Shipping of hazardous waste for export remains a key transport mode**.** Should the trend of increasing hazardous waste volumes continue, this may increase the transport associated with Ireland's hazardous waste management approach. However, there are broadly positive cumulative impacts for BFF associated with the wider action base of the Plan, arising from the hazardous waste prevention and reduced hazardous materials/ use of non-hazardous substances which has an overall cumulative positive impact., it is noted that other polices seek to improve self-sufficiency in thermal recovery which may offset some of this international transport.

Land, Soil and Water: There is potential for both positive and negative cumulative impacts as a result of actions which include ongoing remediation of historic dumping sites and siting of new infrastructure, or modifications to existing infrastructure. Remediation activities could lead to the generation of significant volumes of contaminated materials which is a negative aspect. However there is already a well-established remediation protocol in place which ensures that there is a consistent approach to the remediation of closed landfill sites, including those which contain hazardous waste. This has positive outcomes on environmental receptors having particular regard to LS, but also to BFF, PHH and W.

Air Quality and Climatic Factors: Transport is the second-biggest contributor to national greenhouse gas emissions. Continued movements/exports of hazardous waste via land-based vehicles (and also via shipping) . has the potential to cumulatively impact negatively on AQ and CF, as well as PHH and BFF. However the actions relating to continual process improvements (e.g. BAT) as required under the Industrial Emissions Directive, and keeping under review treatment capacity for various waste streams have positive cumulative impacts for AQ and CF, provided as well that awareness campaigns, market surveillance and knowledge sharing are successful in reducing volumes of waste generation.

Material Assets: By taking account of treatment capacity, markets and trends, cumulative impacts can be controlled as unnecessary additional infrastructure can be avoided. Infrastructural deficits can also be identified at a strategic level. Small-scale collection infrastructure also has overall positive impacts in terms of capturing household hazardous wastes by ensuring a comprehensive network of easily-accessible facilities, and to accommodate better small-scale segregation of hazardous wastes. Actions relating to other emerging priority sectors such as tackling farm hazardous waste and unused/ expired medicines will also have cumulative positive impacts for MA (as well as PHH) as these action will lead to overall improvements in human and environmental health, safety, and hazardous waste management. Regulating and enforcing products and materials through appropriate market surveillance will have medium and long term positive impacts, as well as cumulative positive impacts, for all environmental receptors, and particularly for MA.

Cultural Heritage and Landscape: The actions proposed in the draft NHWMP would have broadly indirect neutral to positive cumulative impacts on both cultural heritage and landscape. The main impacts to LandS and CH would relate to siting of new waste management/ collection infrastructure. At local planning level, sensitive site optioneering and consideration of the wider environment prior to the siting of any new waste infrastructure will greatly reduce any potential cumulative impacts.

Across all environmental receptors, in general, the actions relating to improved regulation, enforcement, producer responsibility, market surveillance, awareness raising and improved collection infrastructure are all cumulatively positive. The Plan actions are anticipated to lead to improved awareness of hazardous waste streams, as well as reducing/ removing hazardous substances from products/ materials, thereby allowing for overall better management of hazardous wastes.

Interaction from Policies and Proposals in Other Related Plans

There are a number of key national policies which have the potential to result in cumulative impact (both positive and negative) on the receiving environment with the NHWMP. The most noteworthy of these are policies relating to the built environment e.g. waste management infrastructure, as well as awareness and prevention campaigns, such as those operated through the National Waste Prevention Programme. These can positively contribute to achieving the objectives laid out in the draft NHWMP if implemented in an integrated, holistic and coordinated manner.

Another key interaction is with land use planning, namely the National Planning Framework and the three Regional Spatial and Economic Strategies. Directed by the national target, the three RSES's have specified targets for brownfield and infill development within existing built-up areas, in order to contribute to better compact growth and offset urban sprawl. While this is overall positive in terms of avoiding greenfield development, given the historical and previous industrial uses in many built up areas, there is potential for

these national and regional targets to lead to the generation of significant volumes of contaminated land/ soil. Any contaminated material would need to be appropriately managed and treated, and as such there is potential for long-term cumulative negative effects on receptors such as LS, BFF, W and MA in particular, as well as AQ and CF as some contaminated material would need to be exported for treatment.

Another key interaction is with the Regional Waste Management Planning tier, with the regional plans being consolidated into one National Waste Management Plan which will be prepared from 2021. The responsibility for implementing the revised national plan will continue to lie with the Regional Waste Management Offices. As this planning deals with waste management in general, they should have regard to the aims and actions of the NHWMP in relation to hazardous waste. Critical to this is the linking of national policy with this regional and lower level planning hierarchies (e.g. top-down influence of policies/actions on county and local planning), so that waste management issues can be evaluated from both the local and strategic regional perspectives. In this regard, there are positive cumulative impacts with the implementation of the Circular Economy Programme, a draft of which was published for consultation in March 2021, whose operational pillars align with several of the recommendations of the draft NHWMP.

On a wider scale, the draft Plan interacts positively as part of a hierarchy of sustainability which is being driven from a global perspective through the UN SDGs, then through European level through the EU Circular Economy Action Plan, Green Deal and Chemicals Strategy. Each of these is aiming to promote and integrate sustainability principles, circularity and elimination of pollution

Chapter 4 outlines other plans and programmes with relevance to the draft NHWMP and which could have a cumulative impacts with the actions proposed.

9 MITIGATION AND MONITORING

9.1 Mitigation

The Environmental Report has highlighted the more significant potential positive and negative environmental impacts from the implementation of the draft NHWMP (including cumulative impacts). It has also had regard to the assessment work carried out to inform the Appropriate Assessment of the draft NHWMP. The mitigation measures presented in **Table 9-1** (SEA mitigation) and **Table 9-2** (AA mitigation) have been identified to reduce the negative impacts identified. A number of the mitigation measures have been included in the draft NHWMP and the remaining are for discussion during the consultation period.

Chapters 7 and 8 of this Environmental Report have highlighted the reasonable alternatives considered and the significant environmental impacts from the implementation of the draft NHWMP. It has also had regard to the assessment work carried out to inform the AA. In line with Annex I(g) of the SEA Directive, this chapter presents the measures envisaged to prevent, reduce and as fully as possible offset and significant adverse effects on the environment of implementing the draft Plan.

Table 9-1: SEA Mitigation

Action Area	Proposed Mitigation
Policy & Regulation	• **General Mitigation:** Clarity should be provided in the NHWMP on how the various waste/ circular economy strategy, programmes and plans interface within the newly emerging circular economy/ waste hierarchy. • **Action 1.2:** Recommend adding the following wording to the action to ensure environmental protection at other planning levels: *Incorporation of relevant NHWMP objectives (including reference to environmental protection objectives and the mitigation from the NHWMP) in national waste management planning.*
Prevention	• **Action 5.2:** Consider liaising with and encouraging waste collection providers to provide information on household hazardous waste on their websites and in future leaflets to ensure a wider reach of information.
Collection & Treatment	• **General Mitigation:** It is Recommended that the following is added to the plan as a specific recommendation: *Ensure that all plans, projects and activities requiring consent arising from the NHWMP are subject to the relevant regulatory environmental assessment requirements including SEA, EIA and AA as appropriate.* • **General Mitigation:** It is recommended that the NHWMP supports the use of the EPA Environmental Sensitivity Mapping (ESM) Webtool and the Appropriate Assessment GeoTool which can be applied at the lower tiers of waste management planning to inform decision-making in terms of infrastructural/siting considerations as well as consideration of environmental sensitivities e.g. as part of environmental risk assessments. • **Actions 9.1 and 9.2:** – In addition to updating the 2018 capacity report, it is recommended that an economic study/cost-benefit analysis forms part of this review process to examine the economic viability of managing various waste streams in Ireland. – The updated review should consider emerging issues to inform any capacity/infrastructure needs e.g. trends in healthcare risk waste generation and management, the growing uptake in EVs and recycling needs for lithium batteries etc. • **Action 10.2:** – It is recommended that prior to this action being implemented, a feasibility study or site assessment is undertaken at CAS's to determine the suitability and capacity of these facilities and the existing infrastructure to accept hazardous waste streams (related factors such as the population catchment being served could also be considered). This will assist in determining what CAS's may or may not be appropriate for the collection and/or temporary storage of hazardous waste based on existing site conditions, infrastructure, capacity, and surrounding environmental sensitivities. – The site assessment should ensure as a minimum that the site location and drainage is suitable for the protection of the soils and water environment from run-off and human health in order to prevent cumulative negative impacts. • **Action 11.1:** – This action would also benefit from including an action on effective enforcement of the Biocidal Product Regulations to help ensure these are managed correctly. It is also

Action Area	Proposed Mitigation
	recommended that the EPA work with the HSA and/or other authorities as appropriate to either develop or review the enforcement approach to biocides, including pesticides. – Recommend including an action to increase awareness among farmers with respect to hazardous waste sources which could be included as part of future awareness campaigns. • **Actions 10.2, 11.1, 12.1 & 12.2, 13.1 and 15.1:** – It is recognised there are potential impacts from hazardous waste collection and storage, particularly outside of licensed facilities, e.g. from accidental spillages to nearby watercourses. Prior to the establishment of any nationwide system for collection and transfer of household, farm hazardous waste, surplus/expired medicines, paint and asbestos waste, all collection points (e.g. marts or similar), the transport systems, temporary storage areas and management solutions should be fully established to ensure that these systems pose no adverse risk to the environment or human health – An environmental risk assessment should be undertaken at all collection/storage sites to determine the suitability and capacity of these sites to accept and store these hazardous waste streams with no adverse risk. It is recommended these checks are reported and recorded in advance of the implementation of any such system. – As part of conducting environmental risk assessments, it would be beneficial to develop or set out siting criteria which considers key environmental sensitivities such as proximity to watercourses, ground conditions, protected sites etc. • **Recommendation 14:** Would benefit from the inclusion of an action to keep under review the development of future guidance for key emerging issue areas e.g. healthcare risk waste. • **Action 16.1:** – Consider including an action to prepare guidance or a code of practice on the approaches to storing radioactive wastes, which could be based around existing guidance (e.g. IAEA). – It is recommended that an environmental risk assessment and a safety assessment are undertaken as part of the process for developing options/proposals for existing or new storage sites. • **Action 17.1:** Continued application of the *EPA Waste Sites Code of Practice* (2007) and *Guidance on Contaminated Land and Groundwater at EPA Licensed Sites* (2013). Any waste authorisation should also be accompanied by an AA Screening.
Implementation	• **General Mitigation:** To emphasise the consideration of this plan at lower planning tiers, it is recommended that the following is included in the Plan: *Local authorities should consider the information provided in this revised Plan and environmental reports, and in accordance with sections 22 (8) and 26 (6) of the Waste Management Act 1996, as amended.* • **Action 18.1:** It is recommended that the use of agreed Key Performance Indicators (KPIs) be considered in reporting of hazardous waste generation and treatment. • **Action 18.2:** – On the issue of 'difficult wastes' in order to address data gaps on arisings, it is recommended to undertake a pilot characterisation study to estimate the quantities of such waste streams nationally. This could include a review to collate current management approaches and data gaps on difficult waste streams, and develop guidance or a code of practice for dealing with such wastes. It would be useful to identify any regulatory gaps and liaise with the appropriate bodies to develop an integrated enforcement approach. – Quantities of unmanaged waste remains poorly understood. It is recommended to develop a pilot study to characterise and quantify the volumes of unmanaged waste (e.g. illegally dumped, fly-tipped etc.) to identify hazardous components, and the most common waste stream(s). This would also help highlight where more prevention programmes, campaigns and awareness-raising could be targeted. • **Action 19.3:** The following to be added to the action: *In accordance with Art. 9(2) of S.I. No. 435 of 2004, as amended, any modifications to the Plan following the interim review will need to determine if the modifications are likely to have significant effects on the environment.*

Table 9-2: AA Mitigation

Recommendation/ Action Area	Proposed Mitigation
Policy & Regulation	• *None proposed.*
Prevention	• *None proposed.*
Collection & Treatment	• **Recommendation 9:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the development of waste infrastructure takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the development of that infrastructure. **Include the following general mitigation as follows:** *Ensure that all plans, projects and activities requiring consent arising from the NHWMP are subject to the relevant regulatory environmental assessment requirements, including SEA, EIA and AA as appropriate*. • **Recommendation 10:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the collection and management of waste takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9. • **Recommendation 11:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the development of a suitable collection scheme takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9. • **Recommendation 12:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the development of a suitable collection scheme takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9. • **Recommendation 13:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the development of a nationwide, large-scale collection of waste takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9. • **Recommendation 15:** Ensure that the NHWMP secures a requirement that all actions arising with respect to the identifying options for the collection of asbestos and asbestos-contaminated wastes takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9. • **Recommendation 16:** Ensure that the NHWMP secures a requirement that any new temporary storage facilities are subject to Appropriate Assessment with respect to the EU Habitats Directive to ensure no adverse effects prior to being consented. Include the general mitigation as per Recommendation 9. • **Recommendation 17:** Ensure that the NHWMP secures a requirement that all actions arising with respect to remediating legacy waste disposal sites containing hazardous waste takes into account the legal protection of European Sites; including the application of AA processes with respect to any subsequent plans or projects which emerge as part of the implementation of this objective. Include the general mitigation as per Recommendation 9.
Implementation	• *None proposed.*

9.2 Monitoring

Article 10 of the SEA Directive requires that monitoring be carried out in order to identify, at an early stage, any unforeseen adverse effects due to implementation of a plan, and to be able to take remedial action. Monitoring is carried out by reporting on a set of indicators, which enable positive and negative impacts on the environment to be measured. The environmental indicators of relevance to the plan were identified from the SEA process. These are intended to be used to identify unforeseen adverse effects from implementation of the Plan.

Monitoring has focused on the aspects of the environment that are likely to be significantly impacted by the Plan and from the identification of the key trends and issue areas. Where possible, indicators have been chosen based on the availability of the necessary information and to show changes that would be attributable to implementation of the plan.

It is the responsibility of the EPA to coordinate the monitoring of their plan however it is acknowledged that EPA will, to a large extent, rely on existing monitoring programmes managed, for instance, by other relevant sections within the agency itself. It remains the responsibility of the EPA to liaise with these data holders to get the data and to report on the monitoring of the NHWMP.

It is acknowledged that remediation of any unforeseen effects is likely to require a more integrated response across agencies, departments and other authorities and to fully establish the correct response/actions should such effects be identified. **Table 9-3** presents the proposed Environmental Monitoring Programme. The sources of information for monitoring are include in the table. Note, the term ‘hazardous waste’ is abbreviated to ‘HW’.

Table 9-3: Proposed SEA Monitoring Programme

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
Monitoring Objective 1: To protect human and environmental health from inappropriately managed HW. ***Cross-cutting Areas:*** *Population & Human Health* *Biodiversity, Flora & Fauna* *Air Quality* *Water* *Land & Soil* *Material Assets*	• Levels of mismanaged hazardous waste. • Increasing trends in small HW streams. • Need improvements in awareness and compliance in households and key sectors e.g. unused medicines, healthcare, farms.	• Decrease in the current known levels of mismanaged hazardous waste in tonnes/annum	• Continued downward trends in levels of mismanaged HW. • % of EPA budget allocation for the NWPP which is allocated to HW education and awareness. • Number of hits to HW website and mywaste.ie. • Quantitative progress towards the 2025 target on establishing separate collection of HW generated by households under Art. 20 of the revised Waste Framework Directive.	• Hazardous waste statistics Environmental Protection Agency (EPA). • National Waste Bulletin, published annually (EPA). • National Waste Prevention Programme/ Circular Economy Programme (EPA).	• Carry out specific compliance tests on key waste streams e.g. medicines, farm hazardous waste etc. • Should the quantities of mismanaged hazardous waste for certain waste streams be unknown, carry out characterisation surveys. • Track the level of engagement with the websites and review areas for improvement e.g. work with waste collection providers to disseminate HW information.
Monitoring Objective 2: Reduce and eliminate legacy hazardous waste issues. ***Cross-cutting Areas:*** *Biodiversity, Flora & Fauna* *Land & Soil* *Water*	• The degree to which closed/ illegal landfills and dumping sites with HW that are being remediated.	• Reduce the level of mismanaged HW (*See targets under Objective 1*). • Remediation of all known illegal sites with HW that pose a risk to the achievement of the objectives of the Habitats Directive, Birds Directive, and Water Framework Directive.	• % of known illegal sites with HW where remediation has commenced.	• EPA. • Regional Waste Management Offices (RWMO's). • Local Authorities (LA's).	• EPA should engage with the RWMO's and LA's to identify any bottlenecks in the process and develop a tailored response.
Monitoring Objective 3: Safeguard soil quality and quantity from hazardous waste, reduce and	• Trends in the volumes of contaminated soil being generated.	• Aim for an overall % decrease in contaminated soil	• Volume of hazardous soil accepted and managed at authorised facilities.	• RWMO's. • LA's.	• Where increasing trends in contaminated soil generation has been identified, the EPA should

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
eliminate soil contamination, and reduce exports/ loss of the soil resource. ***Cross-cutting Areas:*** *Land & Soil* *Biodiversity, Flora & Fauna* *Water* *Material Assets*	• Trends in the volumes of contaminated soil being exported for treatment.	being generated per annum. • Retain the national soil resource as much as possible.	• % decrease in contaminated soil being exported per annum. • % increase in volumes being treated to non-hazardous status within Ireland to preserve the soil resource.		implement the recommendations of the Revised Capacity Review.
Monitoring Objective 4: Improve air quality and reduce emissions to air from the key issues: backyard/ illegal burning and from transport emissions from moving HW. ***Cross-cutting Areas:*** *Air Quality* *Climatic Factors* *Human Health*	• Trends in the level of illegal/ backyard burning. • Trends in the levels of transport of HW as a proxy for emissions to air.	• Aim for an overall decrease in levels of illegal/ backyard burning. • Minimise the distance travelled for HW (*see also Objective 5*).	• Number of complaints/ enquiries made on illegal and backyard burning. • Quantify the kilometres travelled by hazardous waste both within the State and through exports (*see also Objective 5*).	• Enforcement Unit statistics (EPA). • Annual hazardous waste statistics (EPA).	• Review awareness campaigns/ initiatives in relation to air quality issues to improve knowledge and awareness. • Transport statistics requires additional quantification of this distance travelled in the annual EPA hazardous waste statistics. (*see also Objective 5*).
Monitoring Objective 5: Minimise emissions of greenhouse gases associated with hazardous waste management. ***Cross-cutting Areas:*** *Climatic Factors* *Air Quality* *Material Assets*	• Overall reduction in hazardous waste generation *(see Objective 6)*.	• In line with the proximity principle, minimise the distance for the transport of hazardous waste for treatment.	• Quantify the kilometres travelled by hazardous waste both within the State and through exports. • Quantify the type of transport used where possible to reflect any shifts to low-carbon/ carbon-neutral fuels.	• Annual hazardous waste statistics (EPA).	• Requires additional quantification of this distance travelled and the transport types in the annual EPA hazardous waste statistics.

Aim for Monitoring & Environmental Issue Area	What is being monitored?	Target	Indicator	Data Source/ Responsibility	Remedial Action
Monitoring Objective 6: Prevent and minimise the generation of HW, minimise exports and promote circular economy principles. ***Cross-cutting Areas:*** *Material Assets* *Climatic Factors* *Population and Human Health*	• Trends towards waste prevention and reduction in various sectors, particularly in the key identified priority sectors: medicines, healthcare, farms. *(Links closely to Objective 1 on mismanagement).*	• % decrease in HW generated per sector.	• Continued downward trends in levels of sectoral HW.	• Hazardous waste statistics (EPA). • National Waste Bulletin, published annually (EPA). • National Waste Prevention Programme/ Circular economy Programme (EPA). • Reporting on healthcare risk waste (HSE).	• Should the quantities of sectoral HW waste streams be unknown/ uncertain, characterisation surveys should be carried out. • For specific issues which show a rising trend, (e.g. increased HW generation arising from the COVID response in the healthcare sector), work with the relevant stakeholders to develop a tailored response (e.g. target awareness and guidance aimed at prevention and management). • The EPA should implement the recommendations of the Revised Capacity Review.

10 NEXT STEPS

There is still some important work to be done before the fourth National Hazardous Waste Management Plan can be adopted. The next step in the SEA and draft NHWMP process will be a public consultation period. During this time, comment on the findings of the Environmental Report, the Natura Impact Statement and the content of the draft NHWMP may be submitted for consideration. **Table 10-1** outlines the remaining steps in this process.

Table 10-1: Remaining Steps in the draft NHWMP, SEA and AA Processes

National Hazardous Waste Management Plan	SEA and AA Milestones
Publication of draft National Hazardous Waste Management Plan	Publication of Environmental Report and Natura Impact Statement
End of statutory consultation	End of statutory consultation
Review of submissions and changes to the draft National Hazardous Waste Management Plan	Review of submissions and assessment of proposed changes to the Plan, ensuring integration of any changes with the changes made to the draft Plan
Finalisation of National Hazardous Waste Management Plan	Preparation of SEA Statement
Adoption of National Hazardous Waste Management Plan by the EPA	Finalisation of the Natura Impact Statement to support the EPA in making the AA Determination
Publication of final National Hazardous Waste Management Plan	Publication of SEA Statement, final Natura Impact Statement, and AA Determination

Witten submission or observation on the draft National Hazardous Waste Management Plan or associated environmental reports can be made by **5pm on Friday 17th September 2021** via:

1. **Email to the following email address:** hazwaste@epa.ie

2. **Writing to the following address:** National Hazardous Waste Management Plan Submissions, Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co Wexford, Y35 W821.

These submissions/ observations will be taken into consideration before finalisation of the draft NHWMP. Early responses would be appreciated to allow more time to clarify and resolve issues that may arise.

It should be noted that in the interests of transparency, written submissions received may be made publicly available on the EPA's website. Receipt of submissions will be acknowledged but it will not be possible to issue individual responses.

Appendix A
List of Key Relevant Plans and Programmes

Note: This appendix is not intended to be an exhaustive inventory of all environmental or waste-related legislation, plans, programmes and policies. Rather, it is a consideration of the objectives of key texts which are relevant to the NHWMP and supplements **Chapter 4** of the SEA Environmental Report.

Review of International Level Plans, Programmes and Policies

Topic	Title	Summary of Objectives: International
Waste	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	The Basel Convention regulates the transboundary movements of hazardous wastes and other wastes and obliges its parties to ensure that such wastes are managed and disposed of in an environmentally sound manner.
Human Health/ Air Quality/ Emissions	Kyiv Protocol on Pollutant Release and Transfer Registers (PRTR) (2009)	The Protocol is a legally-binding instrument on PRTRs and is an 'open global treaty' which can be joined by UN Member States, as well as those which are not members of the United Nations Economic Commission for Europe (UNECE) or those which have not ratified the Aarhus Convention. Its objective is "*to enhance public access to information through the establishment of coherent, nationwide pollutant release and transfer registers (PRTRs)*." PRTRs comprise inventories of pollutant emissions from industrial sites as well as other sources. The protocol regulates the information on pollution, rather than pollution itself, but nevertheless exerts a top-down influence to help reduce levels of pollution.
	Stockholm Convention on Persistent Organic Pollutants (POPs) (2004)	Global treaty with the objective of seeking to protect human health and the environment from persistent organic pollutants (POPs).
	World Health Organisation (WHO) Air Quality Guidelines (1999) and Guidelines for Europe (1987)	Objectives seek the elimination or minimisation of certain airborne pollutants for the protection of human health.
	The Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (1999)	The 1999 Gothenburg Protocol (known as the Multi-effect Protocol or the Gothenburg Protocol) is a multi-pollutant protocol designed to reduce acidification, eutrophication and ground-level ozone by setting emissions ceilings for sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia to be met by 2010. As of August 2014, the Protocol had been ratified by 26 parties, which includes 25 states and the European Union.
	The 1979 Geneva Convention on Long-range Transboundary Air Pollution (LRTAP)	The LRTAP was the first international legally binding instrument to deal with problems of air pollution on a broad regional basis. It was signed in 1979 and entered into force in 1983. It has since been extended by eight specific protocols. The Convention is one of the central means for protecting our environment. It has substantially contributed to the development of international environmental law and has created the essential framework for controlling and reducing the damage to human health and the environment caused by transboundary air pollution. It is a successful example of what can be achieved through intergovernmental cooperation.
	Minamata Convention on Mercury (2017)	Global treaty with the objective of protecting human health and the environment from the adverse effects of mercury.
Biodiversity	UN Convention on Biological Diversity (1992)	The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is a multilateral treaty. The Convention has three main goals: • Conservation of biological diversity (or biodiversity);

Topic	Title	Summary of Objectives: International
		• Sustainable use of its components; and • Fair and equitable sharing of benefits arising from genetic resources. In other words, its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is often seen as the key document regarding sustainable development. The Convention was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993.
	Ramsar Convention on Wetlands of International Importance (1971 and amendments)	Objectives include protection and conservation of wetlands, particularly those of importance to waterfowl as Waterfowl Habitat.
	The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR) (1992)	Objectives include international cooperation on the protection of the marine environment of the north-east Atlantic.
	Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals) 1983	The Bonn Convention focuses on preserving the habitats used by migratory species and aims to enhance the conservation of terrestrial, marine and avian species on a global scale throughout their range. Key actions/ provisions under the Convention include: • Establishment of a legal foundation for internationally coordinated conservation measures throughout a migratory range; • Migratory species threatened with extinction are listed on Appendix I of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them; and • In Europe, legislation to ensure that the provisions of the Bonn Convention are applied includes the Birds Directive and the Habitats Directive.
	Bern Convention (Convention on European Wildlife and Natural Habitats) 1982	The Bern Convention is a binding international legal instrument in the field of nature conservation, covering most of the natural heritage of the European continent and extending to some States of Africa.
	UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)	The Aarhus Convention has the objective of guaranteeing the rights of access to information (first pillar), public participation in decision-making (PPDM) (second pillar), and access to justice (third pillar) in environmental matters in order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being.
Climate Change	Paris Agreement (UNFCCC, 2015)	The Paris Agreement and the outcomes of the UN climate conference (COP21) cover all the crucial areas identified as essential for a landmark conclusion: • Mitigation – reducing emissions fast enough to achieve the temperature goal; • A transparency system and global stock-take – accounting for climate action; • Adaptation – strengthening ability of countries to deal with climate impacts; • Loss and damage – strengthening ability to recover from climate impacts; and

Topic	Title	Summary of Objectives: International
		• Support – including finance, for nations to build clean, resilient futures.
	DOHA Climate Gateway (2012)	A UN climate change conference in Doha, Qatar, concluded in December 2012 with a new agreement called the 'Doha Climate Gateway.' Its major achievements included the extension until 2020 of the 1997 Kyoto Protocol on reducing greenhouse gas emissions, as well as a work plan for negotiating a new global climate pact by 2015, to be implemented starting in 2020.
	Cancun Agreements (2010)	The Cancun Agreements are a set of significant decisions by the international community to address the long-term challenge of climate change collectively and comprehensively over time and to take concrete action now to speed up the global response. The agreements, reached on December 11 in Cancun, Mexico, at the 2010 United Nations Climate Change Conference represent key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures.
	Bali Road Map (2007)	The Bali Climate Change Conference in 2007 produced the Bali Road Map, which comprised a number of decisions to present various tracks essential to reaching a secure climate future.
	UN Kyoto Protocol, The United Nations Framework Convention on Climate Change (UNFCC, 1997)	The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty negotiated at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992, then entered into force on 21 March 1994. The UNFCCC objective is to 'stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. The framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called 'protocols' or 'Agreements') may be negotiated to set binding limits on greenhouse gases. Annual UNFCCC Climate Change Conferences (Conference of the Parties) are held to discuss measures, particularly those that were to be taken after the second commitment period ended in 2020. This resulted in the 2015 adoption of its successor, the Paris Agreement (see entry above) at COP21, which is a separate instrument under the UNFCCC rather than an amendment to the Protocol.
Sustainability	UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) 1991	This convention entered into force in 1997. It sets out the obligations of parties to carry out, at an early stage, an EIA of certain activities. It sets out the general obligation of States to notify and consult with each other on major projects that are likely to have a significant adverse environmental impact across boundaries.
	United Nations Sustainable Development Goals	The United Nations Sustainable Development Goals (SDGs) frame national agendas and policies to 2030. The SDGs build on the UN Millennium Development Goals and have a broader agenda that applies to all counties.
Cultural Heritage	World Heritage Convention United Nations Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)	Objectives seek to ensure the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage and ensure that effective and active measures are taken for these.

Review of European Level Plans, Programmes and Policies

Topic	Title	Summary of Objectives: European
Biodiversity	EU Biodiversity Strategy to 2030	The biodiversity strategy aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet. In the context of the post-COVID-19 pandemic, it aims to build resilience to future threats, including climate change, security of food supplies, forest fires, outbreaks of disease and combating the illegal trade in wildlife. It aims to increase the Natura 2000 network, and will launch an EU restoration plan by the end of 2021. To enable implementation, it also aims to allow better tracking of progress, improving knowledge transfer and emphasising 'respect for nature' in decision making (public and business).
	EC 8th Environmental Action Programme (EAP) to 2030	In October 2020, the EC published a proposal for the 8th EAP. Its aim would be to support and build on the environmental aspects of the Green Deal to 2050. Its six priority objectives are to: • Achieve greenhouse gas reduction targets and for the EU to be climate neutral by 2050. • Enhance adaptiveness and increase resiliency to the effects of climate change. • To decouple economic growth from resource use and therefore degradation of the environment, while transitioning to a circular economy. • Aiming for a zero-pollution environment and to protect the health and wellbeing of all Europeans. • Restoring biodiversity and enhancing natural capital/ecosystems. • To reduce pressures on the environment and the climate from consumption/production, namely industry, energy , buildings, infrastructure, mobility and food systems.
	EU 7th Environmental Action Programme to 2020	Objectives seek to make the future development of the EU more sustainable. It identifies three key objectives: • To protect, conserve and enhance the Union's natural capital; • To turn the Union into a resource-efficient, green, and competitive low-carbon economy; and • To safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing. Two additional horizontal priority objectives complete the programme: • To make the Union's cities more sustainable; and • To help the Union address international environmental and climate challenges more effectively.
	Prioritised Action Framework for Natura 2000 (2014-2020)	This plan identifies the range of actions needed to help improve the status of Ireland's habitats and wildlife.
	Conservation of Natural Habitats and of Wild Flora and Fauna (Habitats) Directive (92/43/EEC)	The Habitats Directive (92/43/EEC) provides legal protection for habitats and species of wild plants and animals of European importance. The Directive protects around 1200 European species, other than birds, which are considered to be endangered, vulnerable, rare and/or endemic. Included in the Directive are mammals, reptiles, fish, crustaceans, insects, molluscs, bivalves and plants. Together with the Birds Directive, it underpins a European network of protected areas known as Natura 2000: Special Protection Areas (SPAs, classified under the Birds Directive) and Special Areas of Conservation (SACs, classified under the Habitats Directive). Objectives of the Habitats Directive include: • Propose and protect sites of importance to habitats, plant and animal species;

Topic	Title	Summary of Objectives: European
		• Establish a network of Natura 2000 sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range; • Carry out comprehensive assessment of habitat types and species present; and • Establish a system of strict protection for the animal species and plant species listed in Annex IV.
	Conservation of Wild Birds (Birds) Directive (79/409/EEC)	The Birds Directive protects all wild birds, their nests, eggs and habitats within the European Community. It gives EU member states the power and responsibility to classify Special Protection Areas (SPAs) to protect birds which are rare or vulnerable in Europe, as well as all migratory birds which are regular visitors. Objectives seek to prevent and eliminate the causes of bird species loss and maintain and enhance current levels of biodiversity; • Preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Annex I; • Preserve, maintain and establish biotopes and habitats to include the creation of protected areas (Special Protection Areas); • Ensure the upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones, re-establish destroyed biotopes and creation of biotopes; and • Measures for regularly occurring migratory species not listed in Annex I is required as regards their breeding, moulting and wintering areas and staging posts along their migration routes; and • Ensuring the protection of wetlands and particularly wetlands of international importance.
Air Quality/ Noise	EU Clean Air Package (2013) & A Clean Air Programme for Europe (COM(2013) 918)	The clean air package aims to substantially reduce air pollution across the EU. The proposed strategy sets out objectives for reducing the health and environmental impacts of air pollution by 2030, and contains legislative proposals to implement stricter standards for emissions and air pollution. The package was published by the Commission on 18 December 2013, and consists of a communication on the 'clean air programme for Europe', plus three legislative proposals on emissions and air pollution.
	Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) and Fourth Daughter Directive (2004/107/EC)	The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was published in May 2008. It replaced the Framework Directive and the first, second and third Daughter Directives. The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). It replaces the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999. The fourth Daughter Directive was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009).
	Industrial Emissions Directive (IED) (2010/75/EU)	The IED is the successor of the IPPC Directive. Objectives seek the reduction and control of emissions to the atmosphere arising from industrial activities through established permit procedures and the requirements for discharges (integrated pollution prevention and control (IPPC)). The Directive was transposed onto Irish law under the Industrial Emissions Regulations S.I. 138/2013.

Topic	Title	Summary of Objectives: European
	National Emissions Ceiling (NEC) Directive (2016/2284/EU)	The Convention on Long-Range Transboundary Air Pollution (CLRTAP) and aims to control and reduce local and long-range air pollution. The protocol is enacted in Directive (EU) 2016/2284 of the European Parliament of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing the previous NEC Directive (2001/81/EC). The Directive sets national reduction commitments for the five pollutants (sulphur dioxide, nitrogen oxides, volatile organic compounds, ammonia and fine particulate matter) The NECD sets national emission ceilings for four main pollutants, namely that of sulphur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs) and ammonia (NH_3). These pollutants are responsible for long-range transboundary air pollution such as acidification, eutrophication and ground-level ozone pollution. Data on these four pollutants are reported to the European Commission under the National Emissions Ceiling Directive on an annual basis.
	The 1979 Geneva Convention on Long-range Transboundary Air Pollution (LRTAP)	The LRTAP was the first international legally binding instrument to deal with problems of air pollution on a broad regional basis. It was signed in 1979 and entered into force in 1983. It has since been extended by eight specific protocols. The Convention is one of the central means for protecting our environment. It has substantially contributed to the development of international environmental law and has created the essential framework for controlling and reducing the damage to human health and the environment caused by transboundary air pollution. It is a successful example of what can be achieved through intergovernmental cooperation.
	Environmental Noise Directive (END) (2002/49/EC)	Objectives seek to limit the harmful effects to human health from environmental noise.
Sustainable Development	European Green Deal (EC, December 2019)	The green deal is the strategy to make the EU more sustainable by 2050, recognising climate change and degradation of the natural environment as critical threats. It has an action plan which sets out a roadmap and actions. The actions areas cover the following: • Biodiversity: measures to protect ecosystems • From Farm to Fork: Looking at more sustainable food production systems • Sustainable agriculture: across the EU in both agriculture and in rural areas, driven by the CAP • Clean energy • Sustainable industry: Sustainable and more environmentally-friendly production cycles • Building and renovating: The need for a cleaner construction sector • Sustainable mobility: Promoting more sustainable means of transport • Eliminating pollution: Measures to cut pollution rapidly and efficiently, aiming for zero pollution, and supported by the EU Chemicals Strategy • Climate action: Aiming to make the EU climate-neutral by 2050
	EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment (EC, October 2021)	Global chemical use is projected to double by 2030, and while essential for life, chemicals can also have hazardous properties and can be toxic to human health and the environment. As such, the EU has prepared this strategy which also ties into the Green Deal and the Circular Economy Action Plan. It aims for zero pollution, including reducing hazardous waste streams, and to protect human and environmental health. It aims to streamline the coherence between waste, chemicals and products legislation, aiming to close gaps in how hazardous substances may be handled differently under different legislation.

Topic	Title	Summary of Objectives: European
	The Common Agricultural Policy (CAP)	Aims to provide farmers with a reasonable standard of living, consumers with quality food at fair prices and to preserve rural heritage. With increased development pressure from urban areas, protection of rural communities and agricultural enterprise must be considered.
	EC LIFE Programme (2021-2027)	This programme will succeed Horizon 2020 and the EC has indicated it will be the only European funding programme exclusively aimed at the areas of environment, energy and climate. The key priorities will be to halt biodiversity loss, protection and improvement of the environment, and enabling the transition to a circular economy.
	Horizon Europe	Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion. It supports European partnerships and operates across five 'mission areas' as follows: • Adaptation to climate change including societal transformation • Healthy oceans, seas, coastal and inland waters • Cancer • Soil health and food • Climate-neutral and smart cities
	Horizon 2020: the EU Framework Programme for Research and Innovation (2014-2020)	Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Seen as a means to drive economic growth and create jobs, Horizon 2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.
	SEA Directive (2001/42/EC)	The SEA Directive requires that Plans & Programmes must take into account protection of the environment and integration of the Plan into the sustainable planning of the country as a whole. Eleven sectors are specified in the Directive and Competent Authorities (Plan/ Programme makers) must subject specific Plans and Programmes for these sectors to an environmental assessment where they are likely to have significant effects on the environment. The SEA Directive was transposed into Irish law under S.I. 435/2004, as amended in 2011.
	EIA Directive (85/337/EEC), as codified by Directive 97/11/EC, amended Directive 2014/52/EU	The EIA Directive's objective is to require Environmental Impact Assessment of the environmental effects of those public and private projects, which are likely to have significant effects on the environment. The EIA Directive was transposed into Irish law under S.I. 349/1989 (as amended).
	Innovating for Sustainable Growth: A Bio-economy for Europe (EU, 2012)	Launched and adopted on 13 February 2012, Europe's Bio-economy Strategy addresses the production of renewable biological resources and their conversion into vital products and bio-energy. It aims to focus Europe's common efforts in the right direction in this diverse and fast-changing part of the economy. Its main purpose is to streamline existing policy approaches in this area. The Strategy is also needed to ensure that fossil fuels are replaced with sustainable natural alternatives as part of the shift to a post-petroleum society.
	Indirect Land Use Change Directive (2015/1513)	Directive 2015/1513 amends the Renewable Energy Directive and the Fuel Quality Directive to address indirect land-use change (ILUC). Member States are obliged to transpose the Directive into national legislation by 10 September 2017 and should establish the level of their national indicative sub-targets for advanced biofuels by 6 April 2017.

Topic	Title	Summary of Objectives: European
		While biofuels are important in helping the EU meet its greenhouse gas reductions targets, biofuel production typically takes place on cropland which was previously used for other agriculture such as growing food or feed. Since this agricultural production is still necessary, it may be partly displaced to previously non-cropland such as grasslands and forests. This process is known as indirect land use change (ILUC).
	Ecodesign Framework Directive (2009/125/EC)	This Directive establishes a framework for the setting of Community eco design requirements for energy-related products with the aim of ensuring the free movement of such products within the internal market. This Directive provides for the setting of requirements which the energy-related products covered by implementing measures must fulfil in order to be placed on the market and/or put into service. It contributes to sustainable development by increasing energy efficiency and the level of protection of the environment, while at the same time increasing the security of the energy supply.
Water	Water Framework Directive (WFD) (2000/60/EC) (as amended by Decision 2455/2001/EC and Directives 2008/32/EC, 2008/105/EC and 2009/31/EC)	WFD objectives overall seek to maintain and enhance the quality and quantity of all surface waters i.e. rivers, estuaries, coasts and aquifers, in the EU and to prevent the deterioration of aquatic ecosystems and associated wetlands by setting out a timetable until 2027 to achieve good ecological status or potential. Member States are required to manage the effects on the ecological quality of water which result from changes to the physical characteristics of water bodies. Action is required in those cases where these 'hydro-morphological' pressures are having an ecological impact which will interfere with the ability to achieve WFD objectives. The assessment of potential impacts on water quality needs to be considered in the context of the WFD and the River Basin Management Plan and Programme of Measures for the River Basin districts which lays out the objectives for all waters within the individual district. It is noted the next cycle of River Basin Management Plans is due in 2017. Key objectives of the WFD include: • Identification and establishment of individual river basin districts; • Preparation of individual river basin management plans for each of the catchments. These contain the main issues for the water environment and the actions needed to deal with them; • Establishment of a programme of monitoring water quality in each RBD; and • Establishment of a Register of Protected Areas (includes areas previously designated under the Freshwater Fish and Shellfish Directives which have become sites designated for the protection of economically significant aquatic species under WFD and placed on the Protected Areas register). Promotion of sustainable management of the water environment by carefully considering current land use and future climate scenarios, minimising the effects of flooding and drought events and facilitating long term improvements in water quality, including the protection of groundwater near landfill sites, as well as minimising agricultural runoff. The following Directives have been subsumed into the Water Framework Directive: • The Drinking Water Abstraction Directive; • The Sampling Drinking Water Directive; • The Exchange of Information on Quality of Surface Freshwater Directive; • The Shellfish Directive; • The Freshwater Fish Directive; • The Groundwater (Dangerous Substances) Directive; and • The Dangerous Substances Directive.

Topic	Title	Summary of Objectives: European
	Marine Strategy Framework Directive (MSFD) (2008/56/EC)	The aims of the MSFD are to protect the marine environment across Europe through achieving and maintaining good environmental status of marine waters by 2020, and acts as complimentary legislation to the WFD. To achieve this goal the directive has set out marine regions; Ireland falls within the North-east Atlantic Ocean Region and for the purposes of the MSFD Ireland is required to produce a Maritime Spatial Plan (MSP), preparation of which is underway and required on or before March 2021 at the latest. The first phase of work and public consultation has been completed and involved the assessment and characterisation of Ireland's marine waters. The Marine Strategy Framework Programme of Measures has been prepared and the next phase will involve the eventual implementation of environmental targets. The MSP will ensure there is a system in place for managing human activities and to achieve and maintain good environmental status of marine waters.
	Floods Directive (2007/60/EC)	The Floods Directive applies to river basins and coastal areas at risk of flooding. It prescribes a three-step procedure for the assessment and management of flood risks: The first stage was the preparation of Preliminary Flood Risk Assessments. The second stage was carrying out Risk Assessments, and the third stage was the preparation of the Flood Risk Management Plans.
	Bathing Water Directive (2006/7/EC)	The overall objective of the revised directive remains the protection of public health whilst bathing, but it also offers an opportunity to improve management practices at bathing waters and to standardise the information provided to bathers across Europe. Bathing waters are an important resource and it is therefore essential that the standards within the Bathing Water Directive are adhered to. The Directive was transposed onto Irish law under the Bathing Water (Amendment) Regulations S.I. 79/2008.
	Groundwater Directive (2006/118/EC)	Objectives seek to maintain and enhance the quality of all groundwaters in the EU. The Environmental Objectives (Groundwater) Regulations S.I. 9/2010 was transposed into Irish Law and gives effect to the Groundwater Directive.
	Drinking Water Directive (80/778/EEC) as amended by Directive 98/83/EC and new Directive (EU) 2020/2184 (recast)	The primary objective is to protect the health of the consumers in the European Union and to make sure drinking water is wholesome and clean. Following a review of fitness, the recast directive will enter in force from January 2021. The revised directive goes beyond the WHO's recommendations and applies more stringent quality standards and introduces a risk-based approach.
	Urban Wastewater Treatment Directive (91/271/EEC), as amended by Directive 98/15/EEC	The primary objective is to protect the environment from the adverse effects of discharges of urban wastewater, by the provision of urban wastewater collecting systems (sewerage) and treatment plants for urban centres. The Directive also provides general rules for the sustainable disposal of sludge arising from wastewater treatment.
	Sewage Sludge Directive (86/278/EEC)	The objective of the directive is to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals and man. To this end, it prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil. The Directive is given effect in Irish law by the Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations (S.I. 267/2001).
	Nitrates Directive (91/676/EEC)	The directive has the objective of reducing water pollution caused or induced by nitrates from agricultural sources. Under the regulations, sewage sludge is considered a fertiliser under the definitions of the regulations: 'fertiliser' means any substance containing nitrogen or phosphorus or a nitrogen compound or phosphorus compound utilised on land to enhance growth of vegetation and may include livestock manure, the residues from fish farms and sewage sludge. The Nitrates Regulations provide for the mandatory implementation of agricultural measures for protecting surface and groundwater quality by all Irish farmers. The measures include limits on storage and land spreading of nutrients,

Topic	Title	Summary of Objectives: European
		including no-spread zones adjacent to drinking water abstraction points, and uncultivated buffer/riparian strips, to prevent nutrients and sediment from entering water.
	Priority Substances Directive (2013/39/EU)	This directive amends Directives 2000/60/EC and 2008/105/EC regarding priority substances and water policy. Directive 2000/60/EC set out a strategy against water pollution, including the identification of priority substances pose a significant risk to, or through, the aquatic environment. The first list of priority substances (Annex X to the WFD) was established through Decision 2455/2001/EC. This list was replaced by Annex II of the EQSD, also known as the Priority Substances Directive, which also set EQS for the substances in surface waters. The list was replaced again in 2013 by Annex I to Directive 2013/39/EU, which also included EQS and some other provisions on chemical pollutants.
	Environmental Liabilities Directive (2004/35/EC)	The Directive was transposed onto Irish law under S.I. 547/2008. The objective is the 'polluter pays' principle wherein those whose activities have caused environmental damage are held financially liable for remedying that damage; the legislation is particularly aimed at impacts to water quality status under the Water Framework Directive.
	A Blueprint to Safeguard Europe's Water Resource (COM(2012)673)	This Communication outlines actions that relate to better implementation of current water legislation, integration of water policy objectives into other policies and filling gaps particularly in relation to water quantity and efficiency. These actions are to ensure that water of sufficient quantity and good quality is available to service the needs of people as well as the environment and the EU's economy. The Blueprint's time horizon is closely related to the EU 2020 Strategy particularly the Resource Efficiency Roadmap, of which the Blueprint is the water milestone. However, the Blueprint covers a longer time span, up to 2050, and is expected to be the driver of long-term EU water policy.
Waste	Waste Framework Directive (2008/98/EC)	The directive sets out the definitions of waste and basic management principles for waste in order to ensure waste is managed so as to not impact the environment or human health. The Directive lays down some basic waste management principles: it requires that waste be managed without endangering human health and harming the environment, and in particular without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest. The Directive requires that waste legislation and policy of EU Member States is applied according to a waste management hierarchy.
	Amendment to the EU Waste Framework Directive, 2018	The new Directive places responsibility on EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.
	Landfill Directive (99/31/EC)	The Landfill Directive sets targets to reduce landfilling of biodegradable municipal waste.
	The Packaging and Packaging Waste Directive (94/62/EC)	Aims to prevent packaging waste production and transition towards a circular economy in how packaging waste is treated with a greater focus on reuse and recycling.
	EU Circular Economy Action Plan (2020)	In response to the challenges faced regarding the sustainable use of resources linking issues such as the extraction of raw materials, the production and use of products and how we handle waste, the EU signed up to a Circular Economy (CE) Package in December 2015. The EU's first Circular Economy Action Plan was completed in 2019, with much progress made on its 54 actions. The new Circular Economy Action Plan was published in March 2020 and forms one of the pillars of the EU Green Deal – the strategy to make the EU more sustainable by 2050. As part of this Action Plan, the Waste Framework Directive was amended in 2018 by Amending Directive (EU) 2018/851. The revised directive places responsibility on EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.

Topic	Title	Summary of Objectives: European
		The policies and legislative proposals contained in the EU's Circular Economy Package and Circular Economy Action Plan are designed to aid the transition towards a circular economy and provide the legal framework to enable the circular economy.
	EU Circular Economy Strategy (2015)	The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a concrete and ambitious programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The annex to the action plan sets out the timeline when the actions will be completed. The proposed actions will contribute to 'closing the loop' of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy.
	Use and Disposal of Animal By-products (2011/EU/142)	Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive.
	EU Health Rules Regarding Animal By-products Not Intended for Human Consumption Directive (2002/1774/EC)	This Directive lays down animal and public health rules for: (a) the collection, transport, storage, handling, processing and use or disposal of animal by-products, to prevent these products from presenting a risk to animal or public health; (b) the placing on the market and, in certain specific cases, the export and transit of animal by-products and those products derived therefrom referred to in Annexes VII and VIII.
	Seveso III Directive (2012/18/EU)	The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances or 'COMAH') Regulations 2015 (S.I. 209/2015) implement the Seveso III Directive in Ireland and seeks to reduce the risk and to limit the consequences to both man and the environment, of accidents at manufacturing and storage facilities involving dangerous substances that present a major accident hazard.
Human Health	Biocidal Products (98/8/EC and 2007/107/EC)	A biocide is classified as a substance (whether chemical or biological) designed to destroy or render harmless a harmful organism (e.g. disinfectants, preservatives etc.). These products have a high degree of regulation owing to the potential effects on human health and the environment. The directive is regularly updated as new products are manufactured and authorised. The new Biocidal Products Regulation (Regulation EU 528/2012) has been transposed by the European Union (Biocidal Products) Regulations S.I. 427/2013.
Climate/ Energy	The EU Policy Framework for Climate and Energy in the period from 2020 to 2030	A Policy Framework for Climate and Energy in the Period 2020-2030 (EU (COM),2014) sets out the EU's 2030 framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. These targets aim to help the EU achieve a more competitive, secure and sustainable energy system and to meet its long-term 2050 greenhouse gas reductions target. This Communication develops a framework for future EU energy and climate policies and launches a process to arrive at a shared understanding of how to take these policies forward in the future. The 2030 Framework sets targets for the period 2020 to 2030: • Target of 27% renewable energy in the EU; • Increase energy efficiency by 27% by 2020; and • Reaching electricity interconnection target of 15% between EU countries by 2030.

Topic	Title	Summary of Objectives: European
	Effort Sharing Regulation for 2030 (Regulation 2018/842)	This legislation establishes binding annual GHG targets for Member States for the periods 2013–2020 and 2021–2030. The targets cover most sectors not included in the EU ETS, such as transport, buildings, agriculture and waste. If national targets are met, this will lead to a collective 10% reduction by 2020 in total EU emissions from the covered sectors, and a 30% reduction by 2030 (compared to 2005 levels). To achieve EU climate neutrality by 2050, the EC is proposing to revise this Regulation and has published an inception impact assessment and is conducting public consultation on the revision.
	Effort Sharing Decision 2009 (Decision No. 406/2009/EU) and	The 2009 Effort Sharing Decision (Decision No. 406/2009/EU) set individual Member State targets for reductions in non-ETS GHG emissions. The target agreed for Ireland for the year 2020 is that non-ETS emissions should be 20% below their level in 2005 compared to an EU average reduction of 10%. The non-ETS target is legally binding on the State.
	The EU 20-20-20 Climate and Energy Package Agreement (2007)	The climate and energy package are a set of binding legislation which aims to ensure the European Union meets its ambitious climate and energy targets for 2020. The targets were set by EU leaders in March 2007, when they committed Europe to become a highly energy-efficient, low carbon economy, and were enacted through the climate and energy package in 2009. These targets, known as the '20-20-20' targets, set three key objectives for 2020: • A 20% reduction in EU greenhouse gas emissions from 1990 levels; • Raising the share of EU energy consumption produced from renewable resources to 20%; and • A 20% improvement in the EU's energy efficiency. These targets represent an important first step towards building a low-carbon economy. They are also headline targets of the Europe 2020 strategy for smart, sustainable and inclusive growth. This recognises that tackling climate and energy challenge contributes to the creation of jobs, the generation of 'green' growth and a strengthening of Europe's competitiveness. In relation to reductions in GHG emissions, the 2009 Effort Sharing Decision (Decision No. 406/2009/EU) set individual Member State targets for reductions in non-ETS GHG emissions. The two main directives which set about achieving this target are the Energy Efficiency Directive (2012/27/EC, transposed into Irish law by the Energy Efficiency Obligation Scheme Regulations 2014 S.I. 131/2014) and the Renewable Energy Sources (RES) Directive (2009/28/EC, transposed into Irish law by the Renewable Energy Regulations S.I. 147/2011).
	Renewable Energy Directive (2009/28/EC) and revised Renewable Energy Directive (EU) 2018/2001 (recast)	The Renewable Energy Directive establishes an overall policy for the production and promotion of energy from renewable sources in the EU. It requires the EU to fulfil at least 20% of its total energy needs with renewables by 2020 – to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020. A national target of 16% renewable energy by 2020 has been set for Ireland. The recast directive sets a target of at least 32% for renewable energy, at EU-wide level, with a review clause by 2023 for a potential upward revision of the EU level target.
	EU Strategy on Adaptation to Climate Change 2013	The strategy was adopted by the EC in April 2013. It outlines the measures for taking climate change preparedness to a new level. The strategy has three main objectives: • Promote climate action in Member States through encouraging the adoption of adaptation strategies; • The promotion of informed decision-making through addressing knowledge gaps and the development of the European Climate Adaptation Platform for better knowledge dissemination; and

Topic	Title	Summary of Objectives: European
		• Promoting adaptation in key vulnerable sectors.
	Energy Roadmap 2050	The ultimate goal is to cut EU-wide emissions by 90% of 1990 levels by 2050. The EC analysed the implications of this goal as part of its communication 'A Roadmap for moving to a competitive low carbon economy in 2050'. This 2050 Roadmap explores the challenges of this decarbonisation objective while maintaining competitiveness as well as security of supply.
	European Framework Policy's Seventh Action Programme and Roadmap to a Resource Efficient Europe	Both focus on encouraging a resource efficient, low carbon economy. Both have energy and climate targets. The Roadmap to a Resource Efficient Europe's main aim is to 'to decouple economic growth from resource use and its environmental impacts, and proposed a long-term vision, 2020 milestones and a number of short-term actions to start the transition'.
	The Green Paper - A 2030 Framework for Climate and Energy Policies (EC, 2013)	This framework integrates different policy objectives such as reducing greenhouse gas (GHG) emissions, securing energy supply and supporting growth, competitiveness and jobs through a high technology, cost effective and resource efficient approach. These policy objectives are delivered by three headline targets for GHG emission reductions, renewable energy and energy savings. There are additional targets for energy used by the transport sector. In parallel, the EU has put in place a regulatory framework to drive the creation of an open, integrated and competitive single market for energy which promotes the security of energy supplies.
	EU Emissions Trading Directive (2003/87/EC)	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (Text with EEA relevance). This Directive establishes a scheme for greenhouse gas emission allowance trading within the Community (hereinafter referred to as the 'Community scheme') in order to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner.
	Energy Efficiency Directive (2012/27/EC) and revised Energy Efficiency Directive (EU) 2018/2002	Under the Energy Efficiency Directive: • EU countries make energy efficient renovations to at least 3% of buildings owned and occupied by central government; • EU governments should only purchase buildings which are highly energy efficient; and • EU countries must draw-up long-term national building renovation strategies which can be included in their National Energy Efficiency Action Plans. The revised directive sets a target of at least 32.5% for energy efficiency at EU-wide level.
	EU Energy Performance of Buildings Directive (2002/91/EC) and updated Directive (2010/31/EU)	The 2010 Energy Performance of Buildings Directive and the 2012 Energy Efficiency Directive are the EU's main legislation when it comes to reducing the energy consumption of buildings. Under the Energy Performance of Buildings Directive: • Energy performance certificates are to be included in all advertisements for the sale or rental of buildings; • EU countries must establish inspection schemes for heating and air conditioning systems or put in place measures with equivalent effect; and • All new buildings must be nearly zero energy buildings by 31 December 2020 (public buildings by 31 December 2018).

Topic	Title	Summary of Objectives: European
		• EU countries must set minimum energy performance requirements for new buildings, for the major renovation of buildings and for the replacement or retrofit of building elements (heating and cooling systems, roofs, walls, etc.) EU countries have to draw up lists of national financial measures to improve the energy efficiency of buildings.
	Second European Climate Change Programme (ECCP II) 2005	The objectives seek to develop the necessary elements of a strategy to implement the Kyoto Protocol.
	EU Fuel Quality Directive (2009/30/EC)	This Directive amends Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.
	Medium Combustion Plant Directive (MCPD) Directive (EU) 2015/2193	This Directive concerns the limitation of emissions of certain pollutants into the air from medium combustion plants (Medium Combustion Plant (MCP) Directive) and regulates pollutant emissions from the combustion of fuels in plants with a rated thermal input equal to or greater than 1 megawatt (MWth) and less than 50 MWth.
	Directive (UE) 2015/1513 amending Directives 98/70/CE and 2009/28/CE - Regarding the promotion of renewable energy usage	The Directive (EU) 2015/1513 of the European Parliament and of the Council of September 9th 2015 was issued, amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 10 September 2017.
	EU Transport Greenhouse Gas: Routes to 2050 (2010)	This was a 15-month project funded by the European Commission's DG Climate Action that started in January 2011 and was completed in July 2012. The context of the project was the Commission's long-term objective for tackling climate change.
	A Sustainable Bioenergy Policy for the period after 2020 (under consultation)	EU Member States have agreed on a new policy framework for climate and energy. In January 2014, in its Communication on A policy framework for climate and energy in the period from 2020 to 2030, the Commission stated that 'an improved biomass policy will also be necessary to maximise the resource-efficient use of biomass in order to deliver robust and verifiable greenhouse gas savings and to allow for fair competition between the various uses of biomass resources in the construction sector, paper and pulp industries and biochemical and energy production. This should also encompass the sustainable use of land, the sustainable management of forests and address indirect land-use effects as with biofuels'.
	A Roadmap for moving to a competitive low carbon economy in 2050 (EC (COM), 2011/0112))	A Roadmap for Moving to a Competitive Low Carbon Economy in 2050 is a fifteen-page document produced by the European Commission in 2011 as a communication to other European Union (EU) institutions. As part of the Europe 2020 flagship initiative for a resource-efficient Europe, it outlines a long-term policy framework for actions to be taken across the EU region to ensure that 2050 greenhouse gas reduction targets are met.
	Transport White Paper 2011 (Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system) (COM/2011/0144 final)	The European Commission adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. The roadmap confirms that our low-carbon goal is economically feasible. All the scenarios reach it with no major differences in overall costs or security of supply implications.
	EU Biofuels Directive (2003/30/EC)	The Directive on the Promotion of the use of biofuels and other renewable fuels for transport, officially 2003/30/EC and popularly better known as the biofuels directive is a European Union directive for promoting the use of biofuels for EU

Topic	Title	Summary of Objectives: European
		transport. The directive entered into force in May 2003, and stipulates that national measures must be taken by countries across the EU aiming at replacing 5.75% of all transport fossil fuels (petrol and diesel) with biofuels by 2010. The directive also called for an intermediate target of 2% by 31 December 2005. The target of 5.75% is to be met by 31 December 2010. The percentages are calculated on the basis of energy content of the fuel and apply to petrol and diesel fuel for transport purposes placed on the markets of member states. Member states are encouraged to take on national 'indicative' targets in conformity with the overall target.
	Alternative Fuels Infrastructure Directive (2014/94/EU) (*Still to be transposed into Irish Law*)	This Directive establishes a common framework of measures for the deployment of alternative fuels infrastructure in the Union in order to minimise dependence on oil and to mitigate the environmental impact of transport. This Directive sets out minimum requirements for the building-up of alternative fuels infrastructure, including recharging points for electric vehicles and refuelling points for natural gas (LNG and CNG) and hydrogen, to be implemented by means of Member States' national policy frameworks, as well as common technical specifications for such recharging and refuelling points, and user information requirements.
	Roadmap to a Resource Efficient Europe (Roadmap 2050)	The mission of Roadmap 2050 is to provide a practical, independent and objective analysis of pathways to achieve a low-carbon economy in Europe, in line with the energy security, environmental and economic goals of the European Union. The Roadmap focuses on establishing EU policy to cut total greenhouse gas emissions by 80-95% (compared to 1990 levels) by 2050. The National Low-Carbon Roadmap will be coordinated by the Department of the Environment, Community and Local Government with substantial input from other relevant Departments. The sectoral roadmap for the transport sector will be developed by the Department of Transport, Tourism and Sport.
Landscape	European Landscape Convention, 2000	The Convention's purpose is to promote landscape protection, management and planning of European landscapes and to organise European co-operation on landscape issues. It is the first international treaty to be exclusively concerned with protection, management and enhancement of European landscape. It is extremely wide in scope: the Convention applies to the Parties' entire territory and covers natural, rural, urban and rural-urban transitional areas, also including land, inland water and marine areas. The Convention covers every-day or degraded landscapes as well as those that can be considered outstanding i.e. recognition of the importance of all landscape types. The Convention incorporates a number of measures which are to be undertaken to put into effect at national level General Measures, including: • To recognise landscapes in law as being an essential component of people's surroundings; • The establishment and implementation of policies which aim to protect landscapes, and to inform landscape management and planning considerations; • To better incorporate the public, local and regional authorities as well as other organisations in defining and implementing landscape policies; and • The integration of landscape into local and regional planning policies that have possible direct or indirect impacts on the landscape.
Cultural Heritage	Convention for the Protection of the Archaeological Heritage of Europe (revised) (Valletta, 1992)	Objective is to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study.

Topic	Title	Summary of Objectives: European
	Convention for the Protection of the Architectural Heritage of Europe (Granada, 1985)	Objectives seek to provide a basis for protection of architectural heritage and are a means for proclaiming conservation principles, including a definition of what is meant by architectural heritage, such as monuments, groups of buildings and sites. The Convention also seeks to define a European standard of protection for architectural heritage and to create legal obligations that the signatories undertake to implement.

Review of National Level Plans, Programmes and Policies

Topic	Title	Summary of Objectives: National
Waste	Waste Management (Amendment) Act 2001	Objectives include (amongst others) the more effective and environmentally sensitive management of wastes in Ireland.
	Waste Management Act 1996 (as amended) and the European Communities (Waste Directive) Regulations 2011 (S.I. 323 of 2011 & S.I. 126 of 2011)	The Waste Framework Directive sets out the approach for the sustainable management of waste in the Member States of the European Community and this has been transposed into Irish law by the Waste Management Act 1996 and the European Communities (Waste Directive) Regulations 2011. This legislation requires the preparation of a regional waste management plan for all regions within the state, as well as a national hazardous waste management plan for the state.
	Draft Whole of Government Circular Economy Strategy 2021-2022	This was published in In April 2021. This strategy acknowledges that climate action requires reducing consumption of natural resources which also has benefits for better sustainability and reduction of environmental pressures associated with extraction, manufacturing, and disposal of products and waste.
	National Waste Management Plan for a Circular Economy *[in prep.]*	The preparation of Regional Waste Management Plans (RWMPs) are a requirement of the Waste Management Act, as amended. The three RWMPs for the Eastern-Midlands Regional, Southern Region and Connaught-Ulster Region were published in 2015 and cover the period to 2021. As part of the next review cycle, the three RWMPs will be consolidated into one national plan which is due for preparation starting in 2021, and will continue to be supported and implemented by the three Regional Waste Management Authorities.
	Draft Circular Economy Programme 2021-2027	A draft was published in March 2021. This programme will be the successor to the EPA's National Waste Prevention Programme (NWPP). Ireland's policy document, Waste Action Plan for a Circular Economy, called for the NWPP to be to be established as a Circular Economy Programme. The EPA have therefore set out the new Circular Economy Programme which incorporates the NWPP. It will operate across four key pillars of: • Advocacy, Insights and Coordination; • Innovation and Demonstration; • Delivering through partnerships; and • Regulatory Framework for Circularity.
	National Waste Prevention Programme (EPA)	The NWPP is a government initiative which is led by the EPA. It supports national programmes and aims to encourage sustainability and circularity, and targets funding at programmes that support these aspects. Reports are

Topic	Title	Summary of Objectives: National
		published annually. The NWPP is preparing Sectoral Sustainability Factsheets and Case Studies for businesses and enterprises.
	Waste Action Plan for a Circular Economy – Ireland's National Waste Policy (DECC, 2020)	This new Waste Action Plan was published as a key action under the Programme for Government. It builds on *A Resource Opportunity* as the previous waste management policy for Ireland, and takes on board the changes in waste management and legislation that have occurred since. It aligns with the EU Green Deal and the EU Circular Economy Action Plan, on the need to drive transition to a circular economy, as well as embedding climate action. Ireland's Action Plan contains over 200 actions across the different areas of waste and waste management.
	Waste Management (Landfill Levy) Regulations 2015 (S.I. 189 of 2015)	These Regulations replace the Waste Management (Landfill Levy) Regulations 2011. They make provision for the continued operation of the landfill levy provided for under section 73 of the Waste Management Act 1996 and make some amendments to application of the levy.
	Waste Management (Food Waste) Amendment Regulations 2015 (S.I. 190 of 2015)	These Regulations amend the Waste Management (Food Waste) Regulations 2009 (S.I. 508/2009) and are designed to promote the segregation and recovery of food waste arising in the commercial sector and to take account of the advent of 'Type 8' plants in Ireland providing for the successful coexistence of these and composting plants within the overall waste treatment infrastructure in Ireland.
	Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009)	These Regulations are designed to promote the segregation and recovery of food waste arising in the commercial sector. They will facilitate in particular the achievement of the targets set out in Directive 99/31/EC on the landfill of waste for the diversion of biodegradable municipal waste from landfill sites to composting and to other forms of authorised treatment. They will also increase the amount of food waste that is recovered.
	The Environment (Miscellaneous Provisions Act 2015 (No. 29 of 2015))	An Act to make provision for transfer of certain functions under the Bourn Vincent Memorial Park Act 1932 to the Minister for Arts, Heritage and the Gaeltacht; to amend and extend the Finance (Excise Duties) (Vehicles) Act 1952 , the Air Pollution Act 1987, the Environmental Protection Agency Act 1992 , the Waste Management Act 1996 , section 6 of the Local Government Act 1998; to amend the Water Services Act 2007, the Water Services (No. 2) Act 2013 and the Water Services Act 2014 ; to amend other Acts and to provide for related matters.
	Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations (S.I. 267/2001).	These Regulations amend the Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 (S.I. 148/1998) by replacing the two tonne per hectare per year limit on the amount of dry matter to be added to soil, with limits based on absolute quantities of specified heavy metals which may be introduced into soil per hectare per year subject to the carrying out of nutrient management plans. The regulations also require that sludge is used in accordance with a nutrient management plan and provide for the inclusion of additional technical parameters to be entered in the sludge register provided for in the 1998 Regulations.
	Waste Statistics Regulation (2150/2002/EC, as amended)	The EU has created a framework for the production of statistics on the generation, recovery and disposal of waste. This regulation permits the gathering of regular and comparable data in EU countries and their transmission to Eurostat. The statistics collected allow the EU waste policy implementation to be monitored and evaluated.
	S.I. No. 137 of 1997 – Waste Management (Planning) Regulations 1997	Provides for, in part, the relationship between the National Hazardous Waste Management Plans and local and regional waste management plans.
	S.I. No. 163 of 1998 – Waste Management (Hazardous Waste) Regulations	Makes certain provisions including for the supply of batteries, the reporting of certain PCB-contaminated equipment and the management and disposal of polychlorinated biphenyls (PCBs) and PCB-containing wastes and waste asbestos.

Topic	Title	Summary of Objectives: National
	S.I. No. 117 of 2003 – European Communities (Port Reception Facilities for Ship-Generated Waste and Cargo Residues) Regulations (as amended)	Obliges harbour masters and port authorities to prepare waste management plans for the management of ship-generated waste and cargo residues at Irish ports and harbours.
	S.I. No. 395 of 2004 – Waste Management (Licensing) Regulations 2004 (as amended)	Provides for the issuing and enforcement of waste licences by the EPA.
	S.I. No. 419 of 2007 – Waste Management (Shipments of Waste) Regulations	Streamlines the administration of Regulation (EC) No. 1013/2006 on the shipment of waste and establishes the National TFS Office (NTFSO) as the competent authority in respect of the import, export and transit of waste through Ireland.
	S.I. No. 786 of 2007 – European Communities (Animal Remedies) Regulations	Sets out obligations concerning unused or expired animal remedies.
	S.I. No. 820 of 2007 – Waste Management (Collection Permit) Regulations 2007 (as amended)	Provides for the issuing and enforcement of waste collection permits. The National Waste Collection Permit Office (operated by Offaly County Council) has responsibility for the issuing of collection permits.
	S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)	Provides for the issuing and enforcement of waste facility permits and certificates of registration for prescribed activities.
	S.I. No. 113 of 2008 – Waste Management (Registration of Brokers and Dealers) Regulations	Regulates waste contractors who arrange shipment of waste. A waste broker arranges to handle, transport, dispose of or recover controlled waste on behalf of others. Waste brokers include waste dealers who acquire waste and sell it on.
	S.I. No. 116/2003 - European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations 2003, as amended	Aims to protect from the effects of dangerous chemicals by requiring suppliers to provide information about the dangers and to package them safely. Hazards must be identified on the label and through safety data sheets.
	S.I. No. 488 of 2008 – Regulation of Retail Pharmacy Businesses Regulations 2008 (as amended)	Regulate how a pharmacy may accept returned medicines for proper disposal.
	S.I. No. 524 of 2008 – Waste Management (Certification of Historic Unlicensed Waste	Provide primarily for the certification of historic unlicensed local authority waste disposal sites in operation between 1977 and 1996.

Topic	Title	Summary of Objectives: National
	Disposal and Recovery Activity) Regulations	
	S.I. No. 566 of 2009 – Waste Management (Management of Waste from the Extractive Industries) Regulations	Provides for measures on the management of waste from the extractive industries including hazardous waste.
	S.I. No. 126 of 2011 – European Communities (Waste Directive) Regulations 2011 (as amended)	Transposes Directive 2008/98/EC on waste and formalises the concepts of 'by-product' and 'end-of-waste' in Irish law.
	S.I. No. 324 of 2011 – European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations	Details the control of hazardous waste shipments in Ireland.
	S.I. No. 465 of 2011 – Control of Substances that Deplete the Ozone Layer Regulations	Makes provision for the full and effective implementation of Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer.
	S.I. No. 155 of 2012 – European Communities (Sustainable Use of Pesticides) Regulations 2012 (as amended)	Gives effect to the Directive concerning measures to achieve the sustainable use of pesticides. These regulations detail specifications such as a register of pesticides, application of pesticides including distance from water courses, and equipment.
	S.I. No. 513 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations (as amended)	Transposes the provisions of the RoHS Directive in Ireland.
	S.I. No. 564 of 2012 – European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) Regulations 2012 (as amended)	Governs installations and activities using organic solvents, such as vehicle refinishers and dry cleaners, for the purpose of preventing or limiting emissions of volatile organic compounds.
	S.I. No. 565 of 2012 – European Union (Installations and Activities Using Organic Solvents) Regulations	Regulations which relate to installations and activities using organic solvents.
	S.I. No. 595 of 2017 – European Union (Medium Combustion Plants) Regulations 2017	Various regulations which provide for the issuing and enforcement of licences by the EPA for Industrial Emissions Directive activities.

Topic	Title	Summary of Objectives: National
	S.I. No. 138 of 2013 – European Union (Industrial Emissions) Regulations (as amended) S.I. No. 137 of 2013 – Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations S.I. No. 148 of 2013 – European Union (Waste Incineration Plants & Waste Co-incineration Plants) Regulations S.I. No. 566 of 2012 – European Union (Large Combustion Plants) Regulations S.I. No. 565 of 2012 – European Union (Installations and Activities using Organic Solvents)	
	S.I. No. 72 of 2013 – European Communities (Metallic Mercury Waste) Regulations	Brings into force specific criteria for the storage of metallic mercury considered as waste.
	S.I. No. 149 of 2014 – European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (as amended)	Gives effect to the provisions of Directive 2012/19/EU on waste electrical and electronic equipment.
	S.I. No. 281 of 2014 – European Union (End-of-Life Vehicles) Regulations 2014 (as amended)	Places specific obligations on vehicle owners, producers and authorised treatment facilities relating to the deposit, treatment and disposal of end-of–life vehicles. Further amendments establish a mechanism for the introduction of a compliance scheme in Ireland, ELVES.
	S.I. No. 283 of 2014 – European Union (Batteries and Accumulators) Regulations 2014 (as amended)	Governs the transport, recycling and disposal of waste batteries and accumulators and forms part of a Producer Responsibility Initiative whereby the person or company that places the product on the Irish market has responsibility for financing the collection, storage, recycling and treatment of the product when it becomes waste. These regulations give effect to the provisions of European Parliament and Council Directive 2013/56/EU of 20 November 2013 amending Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as regards the placing on the market of portable batteries and accumulators containing cadmium intended for use in cordless power tools, and of button cells with low mercury content.
	S.I. No. 233 of 2015 – European Union (Properties of Waste which Render it Hazardous) Regulations 2015	Amends the Waste Management Act 1996 to replace the second schedule with a new schedule for the ‘Properties of waste which render it hazardous’.

Topic	Title	Summary of Objectives: National
	S.I. No. 658 of 2016 – European Union (Fluorinated Greenhouse Gas) Regulations 2016	Gives further effect to certain elements of the European Regulation on fluorinated greenhouse gases EU No. 517/2014 (Repealing regulation (EC) No. 842/2006).
	S.I. No. 383 of 2018 – European Union (Properties of Waste which Render it Hazardous) Regulations 2018	Amends the Waste Management Act 1996 to replace Ecotoxic in the second schedule.
	S.I. No. 533 of 2018 – European Union (Mercury) Regulations 2018	Gives effect to the EU Mercury Regulation (EU) 2017/852 which establishes a regulatory framework to ensure a high level of protection of human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. The regulations cover measures and conditions concerning: o the management of mercury waste; o the manufacture and use of and trade in mercury-added products: o the use and storage of and trade in mercury, mercury compounds and mixtures of mercury.
	S.I. No. 146 of 2020 – European Union (Persistent Organic Pollutants) Regulations 2020	Replaces the Persistent Organic Pollutants Regulations, S.I. No. 235 of 2010. The regulations identify the Environmental Protection Agency as the competent authority and the requirement for a National Implementation Plan on POPs. The regulations detail the roles of other public authorities and how any person involved in producing or holding waste should provide information to the nominated competent authority.
	S.I. No. 189 of 2020 – Environmental Protection Agency (Integrated Pollution Control) (Licensing) (Amendment) Regulations 2020	Amends S.I. No. 283 of 2013, the Environmental Protection Agency (Integrated Pollution Control) (Licensing) Regulations 2013.
	S.I. No. 321 of 2020 – European Union (Landfill) Regulations 2020	Gives effect to Directive (EU) 2018/8501 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC2 on the landfill of waste. The aim of these Regulations is to ensure a progressive reduction of landfilling of waste, in particular of waste that is suitable for recycling or other recovery, and, by way of stringent operational and technical requirements on the waste and landfills, to provide for measures to prevent or reduce as far as possible negative effects on the environment from landfilling of waste, during the whole life-cycle of the landfill.
	S.I. No. 322 of 2020 – European Union (Packaging) Regulations 2020 (as amended)	Promotes the recovery and recycling of packaging waste. Its provisions particularly concern achievement of the targets for the recovery of packaging waste established by Directive 94/62/EC on packaging and packaging waste as amended by European Parliament and Council Directive 2004/12/EC and EU Packaging Directive EU 2018/852 amending Directive 94/62/EC.
	S.I. No. 323 of 2020 European Union (Waste Directive) Regulations 2020	The regulations give effect to Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 on waste and amending certain directives. The purposes for which these Regulations are made include the purpose of giving effect to provisions of the Waste Directive and partial effect to the Batteries, ELV, WEEE, Packaging and Landfill Directive(s).
Biodiversity	National Biodiversity Action Plan 2017 – 2021	In response to the requirements set out in Article 6 of the UN Convention of Biological Diversity 1992, the first Biodiversity Action Plan (BAP) was prepared by the Department of Arts, Heritage and the Gaeltacht, subsequently

Topic	Title	Summary of Objectives: National
		revised in 2011. The aims are to achieve Ireland's Vision for Biodiversity through addressing issues ranging from improving the management of protected areas to increasing awareness and appreciation of biodiversity and ecosystem services. Ireland's third iteration of the BAP for conserving and restoring Ireland's biodiversity covers the period 2017 to 2021.
	Wildlife Acts 1976 – 2012 (as amended)	The purpose of the Wildlife Acts 1976-2010 is to provide for the protection of wildlife (both flora and fauna) and the control of activities, which may impact adversely on the conservation of wildlife.
	Flora Protection Order 2015	Objectives are to protect listed flora and their habitats from alteration, damage or interference in any way. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation.
	European Communities (Natural Habitats) Regulations, SI 94/1997, as amended S.I. 233/1998 and S.I. 378/2005	These Regulations give effect to Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and the Minister to designate special areas of conservation (endangered species and habitats of endangered species) as a contribution to an EU Community network to be known as NATURA 2000. See EU Habitats Directive.
	All Ireland Pollinator Plan 2015-2020	Ireland has developed a strategy to address pollinator decline and protect pollinator service. A total of 81 actions have been identified in order to achieve this. It is about raising awareness about pollinators and how to protect them.
	Quality of Salmonid Waters Regulations 1988 (S.I. 293/1988)	Prescribe quality standards for salmonid waters and designate the waters to which they apply, together with the sampling programmes and the methods of analysis and inspection to be used by local authorities to determine compliance with the standards. They gave effect to Council Directive No. 78/659/EEC on the quality of fresh waters needing protection or improvement in order to support fish life. These regulations are repealed, having been superseded by the WFD (see entry on the WFD). However the legal status of these regulations at national level remains unclear, as the Irish Statute Book continues to list them as 'not affected' rather than 'revoked'. Note these regulations specify which water bodies are designated as Salmonid Rivers.
	NPWS Conservation Plans for SACs and SPAs and NHAs	The NPWS produces a draft conservation plan for each SAC, SPA and NHA. Each plan lists the wildlife resources of the area, the current human uses, any conflicts between the two, and strategies for retaining the conservation value. These documents are made available on the NPWS website and to interested parties for a consultation period, following which the final version of the conservation plan is completed. It is intended that plans will be reviewed every 5 years. It is expected that these plans will be consulted/referenced during the preparation of farm management plans for holdings within and nearby the nature conservation site.
	National Peatland Strategy (DAHG, 2015) and National Peatlands Strategy Progress Report 2017 (DCHG, 2018)	In April 2011 the Government made a number of key decisions relating to the conservation and management of Ireland's peatlands, particularly those sites nominated for designation as Special Areas of Conservation and Natural Heritage Areas. A commitment was made to draw up a national strategy on peatlands conservation and management, in consultation with bog owners and other stakeholders, to deal with long-term issues such as land management & development, restoration, conservation, tourism potential, carbon accounting and community participation in managing this resource. In order to ensure that actions are implemented, the Peatlands Strategy Implementation Group (PSIG) was established, which comprises a cross-departmental group to monitor the strategy's implementation. The group published its progress report in August 2018.

Topic	Title	Summary of Objectives: National
	Review of Raised Bog Natural Heritage Area Network (NPWS, 2014)	In 2014, following approval by Government, the Minister for Arts, Heritage and the Gaeltacht, published three documents, a draft National Peatlands Strategy, a draft National Raised Bog Special Areas of Conservation (SAC) Management Plan and a Review of Raised Bog Natural Heritage Areas (NHAs). These documents set out a strategic, long term vision for the future use and management of Ireland's peatlands including specific measures for the protection of sites designated for the protection of endangered bog habitats.
	Raised Bog SAC Management Plan (DAHG, 2014)	
	National Raised Bog Special Areas of Conservation Management Plan 2017-2022	
	European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011)	The Birds Directive was transposed into Irish law under the Birds and Habitats Regulations S.I. 477/2011 (as amended).
	Peatland Restoration Plan (Bord na Móna, 2020)	This plan involves an investment of €115 million and intends to secure a store of over 100m tonnes of carbon and capture millions of tonnes more in the coming years.
	Brown to Green Strategy (Bord na Móna)	The strategy moves the company away from traditional peat business into renewables and resource recovery. The strategy, driven by climate change and decarbonisation initiatives has resulted in a cessation of peat harvesting in 2020 and a shift toward bog rehabilitation in the medium to long term.
	Fisheries Natura Plans & Declarations made under European Union (Birds and Natural Habitats) (Sea-fisheries) Regulations 2013, as amended	Sea-fisheries are in Natura 2000 areas are regulated in accordance with: • The European Communities (Birds and natural Habitats) Regulations 2011 (S.I. 477/2011); and • The European Union (Birds and Natural Habitats) (Sea-fisheries) Regulations 2013 (S.I. 290/2013). These two sets of Regulations transpose into Irish law the obligations on the Minister with regard to sea-fisheries arising from the EU Habitats and Birds Directives. Regulation 27 of SI 477 of 2011 places legal obligations on the Minister for Agriculture Food and the Marine in relation to his functions. These obligations transpose article 6.2 of the Habitats Directive and in short require the Minister to manage sea-fisheries to ensure that significant impacts on designated habitats and species are avoided. Regulation 42 of S.I. 477/2011 places legal obligations on the Minister for Agriculture Food and the Marine in consenting to or adopting a plan or project that may have significant impacts on a Natura 2000 site. These obligations transpose article 6.3 of the Habitats Directive. In short, the Minister is required to conduct a screening for appropriate assessment before consenting to or adopting the plan or project. On the basis of that screening assessment, the Minister must determine if an appropriate assessment is required. He must conclude that it is required where he cannot exclude significant impacts based on objective scientific information. The Minister may only consent to a plan or project or adopt or implement the plan or project where he has determined that it will not affect the integrity of the Natura 2000 site.
Population/ Human Health	Healthy Ireland – a Framework for Improved Health and Wellbeing 2015-2025	The main aims of Healthy Ireland are: to increase the numbers of people experiencing good health (mental and physical) at all life stages; reduce health inequalities with a focus on social factors; protect the public and increase preparedness for threats to public health; and to encourage every individual and society as a whole to collaboratively engage with its own health and wellbeing. The first Implementation Plan has been published covering 2015-2017.

Topic	Title	Summary of Objectives: National
	Ireland's National Action Plan for Antimicrobial Resistance 2017-2020 (iNAP)	iNAP aims to implement policies and actions and to prevent, monitor and combat AMR across the health, agricultural and environmental sector by reducing the inappropriate use of antimicrobial medicines, as well as preventing the transmission of infections and disease. In order to reduce the spread of infection and disease, iNAP identifies implementing the NHWMP priorities as part of its strategic objectives.
Climate/ Energy	Climate Action and Low Carbon Development (Amendment) Bill 2021	The purpose of the bill is to amend the Climate Action and Low Carbon Development Act 2015 in order to strengthen the governance framework on climate action by the State.
	Climate Action Plan (DECC, 2019) *[2021 update in prep.]*	The CAP sets out ambitious actions across all sectors of society to address climate breakdown. The plan was created in response to the accelerating impact of climate change, as well as other serious issues such as rapid biodiversity loss. A rapid response to reach decarbonisation targets and climate neutrality is emphasised, and sets out a trajectory to meet Ireland's climate targets by 2030, and towards the EU's goal of climate neutrality by 2050. An updated plan is currently being developed for 2021 with initial consultation taking place until May 2021. Also from 2021, the former National Mitigation Plan process will be replaced by annual updates to the CAP. These annual revisions will focus on the short and medium term perspectives; will be aligned with the carbon budget programme; and are to provide a roadmap of actions needed to comply with said budgets and sectoral emission ceilings.
	National Energy and Climate Plan 2019-2030 (DECC, 2019)	The Governance of the Energy Union and Climate Action Regulation requires Member States to develop National Energy and Climate Plans (NECPs). A draft Plan was submitted to the European Commission in December 2018. In accordance with the Regulation, the European Commission will engage in an iterative process with Ireland and will provide feedback by 30th June 2019, prior to the finalisation of the NECPs by 31st December 2019. The aim of the NECPS is to provide an integrated policy framework for the period up to 2030 to ensure regulatory certainty and a coordinated approach among Member States. In March 2019, the Joint Oireachtas Committee on Climate Change recommended a more ambitious target be set for RES-E than was proposed in the first draft NECP – from 55% to 70% RES-E by 2030.
	Investing in the Transition to a Low-Carbon and Climate-Resilient Society 2018-2027 (June 2018)	Project Ireland 2040 includes an investment strategy which outlines the Government's commitment to achieving a low carbon and climate resilient future by 2050. To achieve this, actions must be undertaken to reduce GHG emissions, and resilience entails reducing vulnerability to climate change impacts which are happening now, and what might occur in the future. Project Ireland has committed to an investment of €22 billion towards climate action over the coming decade, with the National Development Plan allocating a further €8.6 billion for investments in sustainable mobility. The Climate Action Fund was also launched in 2018, with €500 million supporting the delivery of projects necessary to achieve the low carbon, climate-resilient transition.
	National Policy Position on Climate Action and Low-Carbon Development (2015)	The National Policy Position establishes the fundamental national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally economy by 2050. It sets out the context for the objective, clarifies the level of GHG mitigation ambition envisaged and establishes the process to pursue and achieve the overall objective.
	Ireland's Transition to a Low Carbon Energy Future 2015-2030 (DCENR White Paper, 2015)	The White Paper is a complete energy policy update, which sets out a framework to guide policy and the actions that Government intends to take in the energy sector from now up to 2030. The paper takes into account European and International climate change objectives and agreements, as well as Irish social, economic and employment priorities.

Topic	Title	Summary of Objectives: National
		As we progress towards a low carbon energy system, this policy update will ensure secure supplies of competitive and affordable energy to our citizens and businesses.
	Climate Action and Low Carbon Development Act 2015	An Act to 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; to establish a body to be known in the Irish language as *An Chomhairle Chomhairleach um Athrú Aeráide* or, in the English language, as the Climate Change Advisory Council; and to provide for matters connected therewith.
	National Climate Change Adaptation Framework 2012	Sets out how Ireland is to meet its adaptation objectives under the Kyoto Protocol. The Strategy sits within the National Climate Change Adaptation Framework which provides the policy context for the national response to achieving the objectives in a strategic manner. The Framework also requires Local Authorities, relevant agencies and Government Departments to prepare and publish draft adaptation plans. With the establishment of the Climate Action and Low Carbon Development Act 2015, there is now a statutory basis on which National Climate Change Adaptation Frameworks and Sectoral Adaptation Plans are to be established. The National Climate Change Adaptation Framework was published in 2018. Under this, a suite of sectoral adaptation plans has been published.
	Energy Efficiency Regulations (S.I. 426/2014)	These regulations set out several obligations on public bodies with respect to their 'exemplary role' for energy efficiency. These include obligations with regard to: Energy efficient procurement; Exemplar energy management practices; Energy audits; Energy services; Use of energy efficient buildings – public bodies may only purchase or lease buildings with Building Energy Ratings of A3 or higher; Maintenance and construction of energy efficient buildings; & Reporting data.
	National Energy Efficiency Action Plans (NEEAP)	Ireland's third National Energy Efficiency Action Plan (NEEAP 3) reaffirmed Ireland's commitment to delivering a 20% reduction in energy demand across the whole of the economy by 2020, along with a 33% reduction in public sector energy use. Each NEEAP outlines the energy efficiency measures that will be implemented to reach the national energy saving targets as well as the progress towards this target. NEEAPs shall also include information on the exemplary role of the public sector and on provision of information and advice to final customers. The fourth NEEAP was produced in 2017.
	Renewable Electricity Policy and Development Framework (*under development*)	To ensure Ireland meets its future needs for renewable electricity in a sustainable manner, the Renewable Electricity Policy and Development Framework will guide the development of renewable electricity projects which are key objectives of Irish energy policy.
	National Policy Framework for Alternative Fuels Infrastructure in Transport 2017-2030	The Department of Transport, Tourism and Sport (DTTAS) is tasked with transposing the Alternative Fuels Infrastructure Directive (2014/94/EU). Given the close relationship between transport and energy in this area, the Department is working closely with the Department of Communications, Climate Action and Environment (DCCAE). Ireland's National Policy Framework was published in March 2017 and addresses such infrastructure requirements as EV charging points and natural gas refuelling stations.
	National Renewable Energy Action Plan (NREAP)	Ireland's NREAP (a requirement of the Renewable Energy Directive) commits to achievement of the 16% RES target for 2020 to be met by 40% from electricity (RES-E), 12% from heat (RES-H), and 10% from transport (RES-T).
	Offshore Renewable Energy Development Plan (OREDP)	The OREDP recognises the opportunity for developing, in a sustainable manner, Ireland's offshore renewable energy resources and sets out the principles, policy actions and enablers for realising this potential. This would lead to an

Topic	Title	Summary of Objectives: National
		increase in the production of renewable electricity indigenously, which would contribute to greenhouse gas reductions and improve security of energy supply. The Sustainable Energy Authority of Ireland (SEAI) is providing financial support for wave and tidal ocean research, development and demonstration projects.
	European Union (Renewable Energy) Regulations 2014 S.I. No. 483/2014	This regulation pertains to the implementation of Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Elements of the directive are transposed including the provisions relating to access to and operation of the grid; guarantees of origin and the exemplary role of public bodies regarding public buildings.
	Biofuel Obligation Scheme (2010)	The BOS Scheme places an obligation on suppliers of mineral oil to ensure that 8.695% (by volume) of the motor fuels (generally Gasoline and Motor Diesel) they place on the market in Ireland is produced from renewable sources, e.g. Ethanol and Biodiesel. The obligation was increased from the 1st January 2017. It was previously 6.383% Under the terms of the National Oil Reserves Agency Act 2007 (Returns and Biofuel Levy) Regulations 2010, a Biofuel Levy of 2.00 cent per litre is payable on the sales of all Biofuels into the market with effect from 1st July 2010.
Planning	Ireland 2040 Our Plan: The National Planning Framework	The new framework document will be the successor to the National Spatial Strategy 2002 (NSS) and will be known as the National Planning Framework (NPF). The National Planning Framework will be the long-term, 20 year strategy for the spatial development of Ireland that will promote a better quality of life for all, with sustainable economic growth and an environment of the highest quality as key underlying principles.
	National Marine Planning Framework	The NMPF will be a single plan covering all marine activities which reflects the need for a coherent strategic vision for marine planning in Ireland. The draft planning framework is a long-term strategy for the next 20 years which will set the groundwork for the development of the marine waters surrounding Ireland. The starting point for the strategy is to lay the groundwork for a better quality of life for all and a basis for sustainable economic growth. It is intended that the draft NMPF will both provide a strong focus to guide and inform integrated investment decisions. The NMPF will address both opportunities and challenges to deliver policy directions across a broad spectrum.
	Capital Investment Plan 2016-2021 (DPER, 2015)	On 29 September 2015 the Government announced its capital spending plan which is a high level budgetary and finance document worth an estimated €27 billion in direct investment by the Exchequer over 6 years. This amounts to an average of €4.5 billion per year and is expected to create in the region of 45,000 jobs during the construction phase. Following public consultation, a review of the plan is expected to be published in 2017 and a new ten year plan to be published before end of 2017.
	Planning and Development Act (as amended) and the Planning and Development Regulations (S.I. 600/2001)	Revised and consolidated the law relating to planning and development by repealing and re-enacting with amendments the Local Government (Planning and Development) Acts, 1963 to 1999; to provide, in the interests of the common good, for proper planning and sustainable development including the provision of housing; to provide for the licensing of events and control of funfairs; to amend the Environmental Protection Agency Act 1992, the Roads Act 1993, the Waste Management Act 1996 (as amended), and certain other enactments.
	Planning and Development (Strategic Infrastructure) Act 2006	An act to provide for the making directly to An Bord Pleanála of applications for planning permission in respect of developments of strategic importance to the State.
	Rural Development Programme 2014-2020 (DAFM, 2015)	The Rural Development Programme (RDP) is part of the Common Agricultural Policy (CAP), a common set of objectives, principles and rules through which the European Union (EU) co-ordinates support for European agriculture. The CAP framework is comprised of two complementary pillars; Pillar 1 deals with direct payments to farmers and market measures while Pillar 2 covers multi-annual rural development measures which include those that are beneficial for the environment and climate change.

Topic	Title	Summary of Objectives: National
	The Planning System and Flood Risk Management Guidelines (DHPCLG, 2009)	The flood risk guidelines were issued under Section 28 of the Planning and Development Act 2000 (as amended), and sets out that development plans and local area plans, must establish the flood risk assessment requirements for their functional area. Flood risk assessment is required by planning authorities to be an integral and leading element of their development planning functions. The guidelines are specifically aimed at linking planning and development with flood protection and flood risk assessment and recommend a clear and transparent assessment of flood risk at all stages in the planning process. It is a requirement of the guidelines that Plans and all future planning decisions have regard to the guidelines.
	Environmental Protection Agency Act 1992	An Act to make further and better provision for the protection of the environment and the control of pollution, to establish an Environmental Protection Agency, for these and other purposes to increase certain existing monetary penalties and to provide for other matters connected with the matters aforesaid.
Sustainable Development	The Protection of the Environment Act 2003	Act implementing Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control and certain other Acts adopted by the institutions of the European Communities. Amends the Environmental Protection Agency Act 1992, Waste Management Act 1996, and Litter Pollution Act 1997.
	Environmental Liability Regulations, S.I. 547/2008	These Regulations (SI 547 of 2008) transpose EU Directive 2004/35/CE on environmental liability with regard to the prevention and remedying of environmental damage.
	Green Procurement Guidance for the Public Sector (EPA, 2014)	The EPA produced guidance to help inform public bodies by giving a practical overview across eight priority sectors of green procurement issues. It includes best practice and examples, along with the key environmental impacts to be considered in procurement and how the guidance criteria can address these.
	State of the Environment Report (EPA, 2020)	This report is the latest in the EPA State of the Environment series, which is published every 4 years. The report outlines at a strategic level the current state of Ireland's environment. It provides an update on environmental challenges that we face both nationally and globally. The report adds to the range of thematic and research reports available from the EPA that cover many of the issues reported on in further detail. To complement this report the EPA has developed the 'Ireland's Environment' section on the EPA website which provides up-to-date online information that includes environmental indicator data.
	National Sustainable Development Policy	Under the terms of 'Towards 2016', the current Social Partnership Agreement, the Government is committed to publishing a renewed National Sustainable Development Strategy in 2007. The Sustainable Development Unit is co-ordinating the preparation of this Strategy. The renewed Strategy will replace the first National Sustainable Development Strategy, 'Sustainable Development – A Strategy for Ireland', published in 1997, and 'Making Ireland's Development Sustainable', published in 2002.
	Agri-Food Strategy to 2030 (DAFM) *[in Draft]*	This strategy is currently in preparation and will be the successor to Food Wise 2025. The draft plan is being published for public consultation in 2021.
	Food Wise 2025	Food Wise is sets out the strategic plan for the development of the Irish agri-food sector over the next decade. Growth projections include increasing the value added in the agri-food, fisheries and wood products sector by 70% to in excess of €13 billion. Sustainable production at its core setting out a range of specific recommendations aimed at managing the projected growth in a sustainable way. There is a strong commitment to the measurement and monitoring of the sustainability credentials of the sector as the strategy rolls out.

Topic	Title	Summary of Objectives: National
	Forest Policy Review - Forests, products and people - Ireland's forest policy (a renewed vision) (DAFM)	The forerunner to this document was G*rowing for the Future* (1996). Substantial changes in the forest sector have occurred since then leading to a revision and the publication of a 'Renewed Vision'. The strategic goal of this vision is stated as: '*To develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society and which accords with the Forest Europe definition of sustainable forest management*'. The document sets out a summary of recommended policies and actions.
	Forestry Programme 2014-2020 (DAFM, 2015)	The document sets out the state aid funding programme for forestry for the period 2014-2020. Four needs were identified in preparing the proposal, namely: to increase forest cover in Ireland in order to capture carbon, produce wood and help mitigation; to increase in a sustainable way enough biomass to help in meeting renewable energy targets; support to forest holders in the management of their plantations; and to optimise the benefits, environmental and social, of forest. A number of schemes and measures are proposed in order to meet these needs, such as the Neighbour Wood Scheme and Native Woodland Conservation. The total cost of the programme is estimated at €666m for the period 2015 – 2020 (2014 is covered under the previous programme).
	Afforestation Grant and Premium Scheme 2014-2020 (DAFM)	The Afforestation Grant and Premium Scheme aims to increase the area under forest in Ireland. This will be undertaken in a sustainable manner contributing towards the EU's priority for 'Restoring, preserving and enhancing ecosystems related to agriculture and forestry'.
	European Communities (Environmental Assessment of Certain Plans and Programmes Regulations 2004, (S.I. 435 of 2004) as amended by S.I. 200 of 2011	These regulations transpose the SEA Directive into Irish law, covering 'Other Plans and Programmes.'
	Environmental Impact Assessment Regulations (S.I. 349/1989) (as amended)	The Regulations modify the provisions of the Local Government (Planning and Development) Acts, 1963 to 1983 so as to provide a framework for the application of Environmental Impact Assessment (EIA) to the planning control procedures under those Acts, and for the application of EIA to relevant development by local authorities. They also modify development consent procedures under 9 other enactments in light of the Directive's requirements, and they establish an EIA procedure for relevant development by State authorities. The Regulations specify, in the First and Second Schedules respectively, the development for which EIA will be required and the information which must be furnished in an environmental impact statement prepared in connection with proposed development
Transport	National Investment Framework for Transport in Ireland (NIFTI)	The NIFTI is the Department's high-level strategic framework for prioritising future investment in the land transport network, and establishes high-level investment priorities to address key transport challenges. The public consultation commenced in March 2021 and concluded in May 2021. It represents the department's contribution to Project Ireland 2040 and has been developed to ensure that sectoral transport strategy is underpinned by and supports the achievement of the objectives set out in the National Planning Framework.
	National Transport Authority Integrated Implementation Plan 2013-2018	In accordance with Section 13 (1) of the Dublin Transport Authority Act 2008, an Integrated Implementation Plan has been prepared for the Greater Dublin Area. The Plan sets out the NTA's programme of investment and development in the Greater Dublin Area for the period 2013-2018. The Plan provides the framework for a capital and operational investment amounting to almost €900 million and is comprised of: an infrastructure investment programme;

Topic	Title	Summary of Objectives: National
		identification of the key objectives and outputs to be pursued by the NTA; relevant actions to be taken to ensure effective integration of public transport; and an integrated services plan.
	Smarter Travel – A Sustainable Transport Future, '*A New Transport Policy for Ireland*' 2009-2020	Smarter Travel aims to encourage consideration of travel choices and sets out the strategic vision of achieving sustainable travel and transport system. The Smarter Travel programme also provides funding to provide information and improve facilities for cyclists, p and public transport users. As an Action Plan developed by the Government, it has been designed to show how we can reverse current unsustainable transport and travel patterns and reduce the health and environmental impacts of current trends and improve our quality of life. It sets out five key goals: to reduce overall travel demand; to maximise the efficiency of the transport network; to reduce reliance on fossil fuels; to reduce transport emissions; and to improve accessibility to transport. In order to achieve these goals the policy establishes targets, outlines the forty nine actions to be undertaken and details the funding which must be secured. It will be the role of the Framework to secure the funding necessary to continue to implement key remaining actions.
	Investing in our Transport Future: A Strategic Framework for Integrated Land Transport	Investing in our Transport Future is an integrated, evidence-based framework which establishes the overall principles guiding expenditure decisions in transport. It outlines the business case for investment in transport infrastructure including road, heavy and light rail, pedestrian and cycle facilities. This land transport funding framework is required for delivering projects based on policy in the context of exchequer funds. The Framework will guide key land transport investment decisions based on a number of identified priorities however it does not set out a list or identify specific projects to be prioritised.
Water/ Wastewater	River Basin Management Plan (RBMP)	A key development in meeting the requirements of the Water Framework Directive has been the publication of River Basin Management Plans. The plans implement the objectives of the Water Framework Directive. The aim is to achieve good water quality status in all waterbodies by 2015, through the implementation of a programme of Measures (POM). The Minister for the Environment, Community and Local Government has put in place new governance structures and administrative arrangements for the implementation of a second cycle of River Basin Management Plans and this will change the context for future reporting on water quality in Ireland. The existing seven River Basin Districts are to be reconfigured into three RBDs. The second cycle of RBM plans cover the period 2017-2021. The third cycle plan is in development and will cover the period to 2027.
	Irish Water Capital Investment Programme 2017-2021	Irish Water has published its Investment Programme covering the period 2017-2021. The estimate is that €13 billion is required to address known deficits. Investment priorities are set out for where improvements are needed urgently, and cover drinking water quality, leaks, water and wastewater compliance and availability and customer service. Irish Water's priorities as set out in the plan include the following: • Eliminating Boil Water Notices in place for more than 200 days; • Reducing the number of schemes on the Remedial Action List to zero; • Compliance with lead in drinking water; • Reducing the volume of network leakage; • Rationalisation of water treatment works; • Improving compliance with the UWWTD; and Eliminating raw sewage discharges from agglomerations.

Topic	Title	Summary of Objectives: National
	Water Services Policy Statement 2018–2025 (Irish Water, 2018)	The statement clarifies the government's expectations for the delivery and development of water and wastewater services for the coming years, and will also inform decisions on rural water services. It represents the first Policy Statement prepared under the Water Services Act 2017. It outlines four principles: • A single, publicly-owned, national water services authority; • Fair and efficient delivery with a customer focus; • Priority health and environmental quality outcomes across the sector; and • Ways of working to support partnership and excellent stakeholder engagement. It also sets out three themes of high-level objectives comprising: • Quality; • Conservation; and Future-proofing.
	Irish Water Strategic Funding Plan (2019–2024)	Under the Water Services Act 2017, Irish Water must prepare a Strategic Funding Plan (SFP) to the Minister within three months of the publication of the WSPS. This SFP covers the principles, themes and policy objectives identified in the WSPS and the strategic objectives outlined in the Water Services Strategic Plan. It outlines the operational and capital costs associated with the arrangements that Irish Water proposes to make and measures that it intends to take to implement the objectives of the WSSP. The strategic funding requirement is €11bn to 2024, comprised of a €6.1bn investment in infrastructure and assets and €4.9bn in operating costs. The funding model for Irish Water is set in context of the WFD, and the Water Services Policy Statement (WSPS) provides the framework within which the utility's funding and investment plans will be agreed.
	Water Services Strategic Plan (Irish Water 2015)	Irish Water has prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and WFD requirements. The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3).
	Irish Water Lead in Drinking Water Mitigation Plan (2015)	Irish Water has developed and implemented a Lead Strategy which aims to reduce the potential for dissolved lead from pipework to enter drinking water to and to replace public lead water mains over a ten year period. This will involve dosing public water supplies with orthophosphate. Orthophosphate works as a corrosion inhibitor by converting some of the lead carbonate to lead phosphate, forming a protective coating inside lead pipes, reducing corrosion which is a contributor of lead to the water supply.
	National Wastewater Sludge Management Plan (Irish Water, 2016)	The National Wastewater Sludge Management Plan (NWSMP) is a national plan for the management of sludges arising primarily from facilities under the control of Irish Water. As such the assessment is focussed at a national strategic level.

Topic	Title	Summary of Objectives: National
	Waste Water Discharge (Authorisation) Regulations (S.I. 684/2007), as amended	This has been derived from the Dangerous Substances Directive 2006/11/EC, to address pollution caused by certain toxic substances that are discharged to the aquatic environment and to establish a framework for Community action in the field of water policy.
	Urban Wastewater Treatment Regulations (S.I. 254/2001), as amended	The Urban Wastewater Treatment Directive was transposed into Irish law by the Urban Wastewater Treatment Regulations (S.I. 254/2001).
	Assessment and Management of Flood Risks Regulations (S.I. 122/2010)	The directive was transposed into Irish law by the European Communities (Assessment and Management of Flood Risks) Regulations (S.I. 122/2010). The Regulations set out the responsibilities of the OPW and other public bodies in the implementation of the Directive. With trends such as climate change and increased domestic and economic development in flood risk zones, this poses a threat of flooding in coastal and river basin areas.
	Ireland's Nitrates Action Programme (NAP)	Ireland's first Nitrates Action Programme (NAP) came into operation in 2006 and gave effect to the Nitrates Directive. The NAP was given effect through a series of regulations, most recently the European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2014 (S.I. No. 31 of 2014), known as the Nitrates Regulations. The aim of the NAP is to prevent pollution of surface waters and groundwater from agricultural sources and to protect and improve water quality. In accordance with the Nitrates Directive and Article 28 of the Good Agricultural Practice Regulations, the Minister for Housing, Planning and Local Government, in consultation with the Minister for Agriculture, Food and the Marine reviewed the NAP for the first time in 2010. Article 28 of the Nitrates Regulations, in line with the Nitrates Directive, requires a review of the NAP every four years. Ireland's fourth NAP will run until the end of 2021. The Fifth NAP is currently in preparation.
	(Good Agricultural Practice for Protection of Waters Regulations 2014 (S.I. 31/2014), as amended	These Regulations give effect to Ireland's Nitrates Action Programme, provide statutory support for good agricultural practice to protect waters against pollution from agricultural sources and include measures such as- • Periods when land application of fertilisers is prohibited; • Limits on the land application of fertilisers; • Storage requirements for livestock manure; and • Monitoring of the effectiveness of the measures in terms of agricultural practice and impact on water quality. The Regulations give further effect to several EU Directives including Directives in relation to protection of waters against pollution from agricultural sources ('the Nitrates Directive'), dangerous substances in water, waste management, protection of groundwater, public participation in policy development and water policy (the Water Framework Directive).
	Drinking Water Regulations (S.I. 122/2014), as amended	The Drinking Water Regulations S.I. 122/2014 provides the EPA with supervisory powers for public water supplies.
	Water Policy Regulations (S.I. 350/2014)	These Regulations provide for the establishment and composition of a Water Policy Advisory Committee and related procedural and ancillary matters. The Regulations also transfer certain local authority responsibilities provided for in the European Communities (Water Policy) Regulations 2003 to the Environmental Protection Agency and to the Minister for the Environment, Community and Local Government.

Topic	Title	Summary of Objectives: National
	The Water Policy Regulations (S.I. 722/2003), Environmental Objectives (Surface Water) Regulations (S.I. 272/2009) and Groundwater Regulations (S.I. 9/ 2010)	The Water Policy Regulations (S.I. 722/2003), Environmental Objectives (Surface Water) Regulations (S.I. 272/2009) and Groundwater Regulations (S.I. 9/ 2010) govern the shape of the WFD characterisation, monitoring and status assessment programmes in terms of assigning responsibilities for the monitoring of different water categories, determining the quality elements and undertaking the characterisation and classification assessments. The Surface Water Regulations institute a wide-ranging set of environmental standards for Irish surface waters. The Groundwater Regulations establish environmental objectives to be achieved in groundwater bodies and include groundwater quality standards and threshold values for the classification of groundwater and the protection of groundwater against pollution and deterioration in groundwater quality.
	Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296/2009), as amended	The Regulations require the EPA, when classifying surface waters in accordance with the ecological objectives approach of the Water Framework Directive, to assign a status of 'less than good ecological status' where Margaritifera is found to be in unfavourable conservation status. This will trigger further actions as waters classified as less than good must be restored to at least good status within a prescribed timeframe.
	Quality of Bathing Waters Regulations 1988 (S.I. 84/1988) as amended	These Regulations prescribe bathing water quality standards and the bathing areas to which they apply, together with the sampling programmes and the methods of analysis and inspection to be used by local authorities to determine compliance with the standards. The Regulations give effect to Council Directive No. 76/160/EEC of 8 December 1975 (O.J. No. L31/1,5 February 1976) concerning the quality of bathing water.
	Quality of Shellfish Waters Regulations 2006 (S.I. 268/2006), as amended	The Shellfish Waters Directive was transposed into legislation in Ireland by the European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. 268/2006), which were subsequently amended by the European Communities (Quality of Shellfish Waters) (Amendment) Regulations 2009 (S.I. 55/2009) and subsequently by the Amendment (No 2) Regulations 2009 (S.I. 464/2009). It is noted that at EU level the Shellfish Directive was repealed with shellfish waters being afforded protection under the WFD. At national level, the Shellfish Regulations specifies which waters are designated as Shellfish Waters.
	Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations 1998 (S.I. 258/1998)	These Regulations provide for specified improvements in water quality conditions in rivers and lakes based on phosphorus concentrations or related water quality classifications. The Regulations also provide for periodic reporting in relation to progress in implementing the requirements of the Regulations. These Regulations give effect to certain requirements arising under Council Directive 76/46/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.
	Marine Strategy Framework Regulations (S.I. 249/2011), as amended	The Marine Strategy Framework Directive (MSFD) was transposed onto Irish law under the Marine Strategy Framework Regulations S.I. 249/2011.
Air	Industrial Emissions Regulations (S.I. 138/2013)	These Regulations primarily amend the Environmental Protection Agency Act 1992 and the Waste Management Act 1996 to transpose Chapters II and VI of Directive 2010/75/EC of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast). The Regulations apply to the industrial emissions directive activities specified in the First Schedule to the Environmental Protection Agency Act 1992, as amended by these Regulations.
	Air Quality Standards Regulations 2011 (S.I. 180/2011), as amended	These Regulations transpose the Directive on ambient air quality and cleaner air for Europe (CAFE) into Irish law. They introduce a limit value to $PM_{2.5}$ in addition to the existing limit values for PM_{10}, nitrogen dioxide and oxides of nitrogen, sulphur dioxide, lead, ozone, carbon monoxide and benzene.

Topic	Title	Summary of Objectives: National
	Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. 58/2009), as amended	The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was published in May 2008. It replaced the Framework Directive and the first, second and third Daughter Directives. The fourth Daughter Directive (2004/107/EC) will be included in CAFE at a later stage. The limit and target values for both Directives are outlined below. The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. 180/2011). It replaces the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. 53/2004) and S.I. 33/1999. The fourth Daughter Directive was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. 58/2009).
	National Clean Air Strategy (DECC) *[in prep.]*	With improvement in the scientific knowledge of the threats posed to people's health and the environment by air pollutants, it is now clear that air pollution causes more damage than previously understood. DECC are therefore currently developing a national Clean Air Strategy. Establishing a National Strategy will provide a policy framework by which Ireland can develop the necessary policies and measures to comply with new and emerging EU legislation, as well helping to tackle climate change. The Strategy will also necessarily consider a wider range of national policies that are relevant to clean air policy such as transport, energy, home heating and agriculture. In any discussion relating to clean air policy, the issue of people's health is paramount and this will be a strong theme of the Strategy.
	Persistent Organic Pollutant Regulations 2010 (S.I. 235/2010)	These Regulations give statutory effect in Ireland to Regulation (EC) No. 850/2004 of 29 April 2004 as amended on persistent organic pollutants. The EC Regulation is intended to ensure coherent and effective implementation of the European Community's obligations under the 2001 Stockholm Convention on Persistent Organic Pollutants and the 1998 Protocol on Persistent Organic Pollutants to the 1979 UNECE Convention on Long-Range Transboundary Air Pollution.
Landscape	National Landscape Strategy 2015-2025	Objectives are to provide a cross-sector approach at government level to plan and manage the landscape (rural and urban) alongside communities and stakeholders. An implementation programme is included in the Landscape Strategy and will take place over the duration of the strategy period. The key objectives of the strategy are: • To recognise landscapes in law; • The provision of a policy framework to put measures in place for the management and protection of landscape; • To develop a National Landscape Character Assessment through data-gathering and an evidence-based description of character assessment; • To develop landscape policies; • To increase awareness of the landscape and public consultation; and • To identify education and training needs.
Cultural Heritage	Heritage 2030 (DHLGH) [in prep]	Heritage Ireland 2030 is to be Ireland's new national heritage plan. It will be a coherent, comprehensive and inspiring framework of values, principles, strategic priorities and actions to guide and inform the heritage sector over the next decade.
	Culture 2025	Culture 2025 is a Framework Policy to 2025 which sets the vision for the future of culture and the arts in Ireland and prioritises actions. It recognises the diverse and multi-faceted nature of culture in Ireland and the contribution of 'culture' to sense of self, national identity and the arts.

Topic	Title	Summary of Objectives: National
	Government Policy on Architecture 2009-2015	This paper addresses issues that have arisen in the years since the publication of the first policy on architecture by setting out a number of goals: emphasising sustainable development of the environment and urban design; the encouragement and support of high quality modern architecture; the incorporation of architectural heritage in a more holistic and integrated manner; and developing actions which respond to and promote awareness in these areas. This Policy in tandem with the government's policy 'Building Ireland's Smart Economy: A Framework for Sustainable Economic Renewal' sets out a number of priorities and actions that the Government will be taking in the short and medium term. Key elements include investment in research and development, a focus on co-ordinated 'forward planning' and investment in renewable energy together with the promotion of the green enterprise sector and the creation of jobs. This policy document is currently under review and is the subject of public consultation.
	Framework and Principles for the Protection of Archaeological Heritage (1999)	The document sets out the basic principles of national policy regarding the protection of archaeological heritage. The document focuses particularly on the principles which should apply in respect of development and archaeological heritage.
	The National Monuments Acts (1930 to 2004)	Objectives seek to protect monuments of national importance by virtue of the historical, architectural, traditional, artistic or archaeological interest attaching to them and includes the site of the monument, the means of access to it and any land required to preserve the monument from injury or to preserve its amenities.
	The Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999	Provides for the establishment of a National Inventory of Architectural Heritage (NIAH). The objective of the NIAH is to aid in the protection and conservation of the built heritage, especially by advising planning authorities on the inclusion of particular structures in the Record of Protected Structures (RPS).
	Guidelines for Planning Authorities: Architectural Heritage Protection, 2004	The Planning and Development Act 2000 required additional development objectives relating to the protection of structures which are deemed to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest and to preserve the character of architectural conservation areas.
	The Planning and Development Act 2000	Under this Act the County Councils are required to compile and maintain a Record of Protected Structures (RPS) in their Development Plans. Sites included in the RPS are awarded automatic protection and may not be demolished or materially altered without grant of permission under the Planning Acts.
Material Assets	National Ports Policy (DTTAS, 2013)	The national Ports Policy outlines the organisational and ownership structure of ports in Ireland. This policy document covers: the Trans European Network – Transport (TEN-T), Ports of National Significance (Tier 1 and Tier 2) and Ports of Regional Significance; corporate governance; how ports policy relates to the planning and development system; and environmental and foreshore issues. The policy document also sets out key actions and timelines up to 2018.
	A National Aviation Policy for Ireland (DTTAS, 2015	This policy document sets out the international context for aviation policy in Ireland. The document covers: safety, security and sustainability; connectivity and aviation services; airports; regulation and governance; aircraft leasing, financing and MRO; general aviation, education and training.

Review of Regional Level Plans, Programmes and Policies

Topic	Title	Summary of Objectives: Regional
Waste	Regional Waste Management Plans 2015-2021	Ireland is divided into 3 regions for the purposes of waste management – Eastern-Midlands, Southern and Connacht-Ulster Regions. The plans set out the framework for the management of waste in a sustainable way, with overall targets to reduce the quantity of household waste generated per capita per year on year, to eliminate the disposal of residual waste to landfill and to aim for a reuse and recycle target of 50% of municipal waste by 2020. For the 2021-2027 period, the three RWMPs are being consolidated into one national plan, the National Waste Management Plan for a Circular Economy, with implementation continuing to be supported at regional level.
Planning	Regional Spatial and Economic Strategies	Regional Spatial and Economic Strategies (RSES) are intended to replace the current Regional Planning Guidelines. The RSESs are expected to cover the period 2016-2022. Regional structures and functions are currently being revised and strengthened; the existing eight regional authorities and two assemblies are being replaced by three new Regional Assemblies to perform an updated range of strategic functions. In addition to formulating RSESs, the main functions of the new Regional Assemblies will also include strategic functions under relevant legislation, functions that relate to EU funding programmes as well as oversight of local authority performance and the implementation of national policy.
	Northern Ireland Regional Development Strategy 2025	The Regional Development Strategy (RDS) is a document published in 2010 by the Department of Regional Development. This document provides an overarching strategic planning framework influencing spatial development for Northern Ireland up to 2035, aimed at guiding both the public and private sectors. It complements the policy document *Strategic Planning Policy Statement (Department of the Environment, 2015): the Sustainable Development Strategy* and informs the spatial aspects of the strategies of all Government Departments. Key objectives of the RDS are: • Support strong, sustainable growth for the benefit of all parts of Northern Ireland; • Strengthen Belfast as the regional economic driver and Londonderry as the principal city of the North West; • Support towns, villages and rural communities to maximise their potential; • Promote development which improves the health and wellbeing of communities; • Improve connectivity to enhance the movement of people, goods, energy and information between places; • Protect and enhance the environment for its own sake; • Take action to reduce carbon footprint and facilitate adaptation to climate change; and • Strengthen links between north and south, east and west, with Europe and the rest of the world.
	Strategic Planning Policy Statement (NI Department of the Environment, 2015)	This policy document represents a statement of the Department of the Environment's policy on important planning matters, reflecting the Environment Ministers expectations for delivery of the planning system. Its key aims are: • Delivering sustainable planning policies and plans; • Integrating and balancing social, economic and environmental factors when plan-making and decision-taking; and • Helping to mitigate and adapt to climate change and the reduction of greenhouse gases.

Topic	Title	Summary of Objectives: Regional
	County Development Plans	This Development Plan is the county's principle strategic planning policy document. Detailed land-use zoning maps for the main settlements of the county are contained in the Electoral Area Local Area Plans and the Special Local Area Plans. It is a six year development plan for the County that attempts to set out, as concisely as possible the County Council's current thinking on planning policy. The plan also sets out the overall planning and sustainable development strategy for the county which must be consistent with the National Spatial Strategy 2002-2020 and the Regional Planning Guidelines 2010-2022.
	Local Development Plans in Northern Ireland sharing a border with the Republic of Ireland	These include: Fermanagh and Omagh, Newry, Mourne and Down, Derry City and Strabane, Armagh, Banbridge and Craigavon District Council and Mid-Ulster District Council.
Transport	Draft Transport Strategy for the Greater Dublin Area 2016 – 2035 (NTA)	This strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It also provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities.
	Cork Metropolitan Area Transport Strategy (CMATS) 2040 (NTA)	The CMATS 2040 has been developed by the NTA with TII, Cork City and Cork County Council. It comes on foot of the NPF which predicts Cork will be one of the fastest growing areas in terms of population with up to 60% growth expected by 2040. These growth projections and targets will require increased demands on travel options. A key aim is the reduction in private car dependency and supporting sustainable modes and other supporting measures.
	Limerick Shannon Metropolitan Area Transport Strategy (LSMATS) 2040 (NTA)	The strategy has been developed by the NTA in collaboration with local councils in Limerick and Clare. One of its main aims is the improvement of infrastructure in the Limerick Shannon region for cyclists and walkers up to 2040. A key objective is therefore to transform the cycling environment so that anyone of any age will feel safe and confident enough to cycle to work, school, college and other activities. The aim is that this will lead to an increase in the numbers of people cycling within Limerick City and suburbs, Shannon and other towns and villages.
	Waterford Metropolitan Area Transport Strategy (WMATS) *[in prep.]*	It is an objective of the Southern RSES "*To, in combination with Waterford City and County Council, the NTA, TII and other stakeholders, undertake a Metropolitan Area Transport Strategy in accordance with Waterford MASP Objectives 6(a) and 6(b), covering the Waterford MASP area of County Kilkenny and to implement the adopted strategy to guide investment priorities in accordance with Waterford MASP Objectives 3*." The WMATS is current in preparation for Waterford.
Water and Wastewater	Catchment Flood Risk and Management Studies (CFRAMS)	The Office of Public Works (OPW) is responsible for the implementation of the Floods Directive 2007/60/EC which is being carried out through a Catchment-based Flood Risk Assessment and Management (CFRAM) Programme. As part of the directive Ireland is required to undertake a Preliminary Flood Risk Assessment (PFRA), to identify areas of existing or potentially significant future flood risk and to prepare flood hazard and risk maps for these areas. Following this, Flood Risk Management Plans (FRMPs) are developed for these areas setting objectives for managing the flood risk and setting out a prioritised set of measures to achieve the objectives. The CFRAM programme is currently being rolled out and Draft FRMPs have been prepared.
	Groundwater Protection Schemes	Groundwater protection schemes are undertaken jointly between the Geological Survey of Ireland and the local authorities. The objectives of such schemes are to preserve groundwater quality, in particular having regard to extraction for drinking water purposes. The schemes do not have any statutory authority but do set out a framework

Topic	Title	Summary of Objectives: Regional
		to help inform decision-making and provide guidelines for the local authorities in carrying out their functions. The Plan should have regard to any such groundwater protection schemes.
	Shellfish Pollution Reduction Programmes	The aim of the Shellfish Waters Directive is to protect or improve shellfish waters (see Shellfish Waters Directive, 2006/113/EC). The Directive requires Member States to designate waters that need protection in order to support shellfish life and growth. The Directive also provides for the establishment of pollution reduction programmes for the designated waters, of which there are 63 nationally.
	Freshwater Pearl Mussel Sub-basin Management Plans (Draft)	The draft Sub-basin Management Plans identify issues relevant to mussel conservation and propose realistic solutions.
	Freshwater Pearl Mussel Catchment Management Plans (DAFM, in preparation)	As the consenting authority for key forestry activities, the Department of Agriculture, Food & the Marine (DAFM), through the Forest Service (FS-DAFM), has direct responsibilities under the Habitats Directive in relation to the protection of Freshwater Pearl Mussel (FPM) and its habitat. These responsibilities provide the underlying basis for the These responsibilities provide the underlying basis for the development of procedures to ensure that forestry activity undertaken with in all 27 FWPM catchments (including the Priority 8 catchments) are compatible with the conservation of the species.
	Water Quality Management Plans	Water Quality Management Plans are a requirement under The Water Pollution Acts, 1977 and 1990 and regulations made thereunder. The aim of the plans is to manage and protect water at catchment-based level.