Eastern & Midland
Regional Assembly

Draft Regional Spatial & Economic Strategy

Natura Impact Report

Tionscadal Éireann
Project Ireland
2040

Tionól Reigiúnach Oirthir agus Lár-Tíre
Eastern and Midland Regional Assembly

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 SCOPE OF THE NATURA IMPACT REPORT 1

1.2 APPROACH TO NATURA IMPACT REPORT PREPARATION 2

1.3 LEGISLATIVE CONTEXT FOR APPROPRIATE ASSESSMENT 2

2 ASSESSMENT METHODOLOGY 4

2.1 GUIDANCE DOCUMENTS ON AA 4

2.2 GUIDING PRINCIPLES AND CASE LAW 5

2.3 PURPOSE OF THE AA PROCESS 5

2.4 STAGES OF APPROPRIATE ASSESSMENT 6

2.5 INFORMATION SOURCES CONSULTED 7

2.6 IMPACT PREDICTION 8

2.7 CONSULTATION 9

3 EASTERN AND MIDLAND RSES 10

3.1 INTRODUCTION 10

3.2 STRATEGIC VISION FOR THE EASTERN AND MIDLAND REGION 10

3.3 KEY ASPECTS OF THE DRAFT EM RSES 11

4 OVERVIEW OF THE RECEIVING ENVIRONMENT 13

4.1 IDENTIFICATION OF EUROPEAN SITES 13

4.2 CONSERVATION OBJECTIVES 18

4.3 CONSERVATION STATUS OF EU PROTECTED HABITATS AND SPECIES 19

4.4 EXISTING THREATS AND PRESSURES TO EU PROTECTED HABITATS AND SPECIES 20

5 STAGE 1 SCREENING FOR AA 22

5.1 POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS 22

5.2 SCREENING FOR APPROPRIATE ASSESSMENT CONCLUSION 22

6 STAGE 2 APPROPRIATE ASSESSMENT OF THE DRAFT RSES 23

6.1 INTRODUCTION 23

6.2 ASPECTS OF THE PLAN TO BE ASSESSED 23

6.3 APPROACH TO ASSESSMENT 24

6.4 IMPACT PREDICTION 24

7 ASSESSMENT OF EFFECTS OF DRAFT RSES 30

7.1 INTRODUCTION 30

7.2 STRATEGIC VISION (CHAPTER 2 OF RSES) 33

7.3 GROWTH AND SETTLEMENT STRATEGY (CHAPTER 3 AND 4 OF RSES) 36

7.4 Dublin Metropolitan Area Strategic Plan (Chapter 5 of RSES) 75
7.5 Economy and Employment (Chapter 6 of RSES) 88
7.6 Environment (Chapter 7 of RSES) 91
7.7 Connectivity (Chapter 8 of RSES) 95
7.8 Quality of Life (Chapter 9 of RSES) 118
7.9 Infrastructure (Chapter 10 of RSES) 121
7.10 All Island Cohesion (Chapter 11 of RSES) 127
7.11 Implementation and Monitoring (Chapter 12 of RSES) 129
7.12 Assessment of In Combination Effects with Other Plans or Projects 130
7.13 Changes made to Draft RSES by Councillor Motion 145
8 MITIGATION MEASURES / RECOMMENDATIONS 148
8.1 Overall Mitigation Strategy 148
9 NEXT STEPS 163
10 REFERENCES 164

APPENDICES

Appendix A Summary of Statutory Consultation Responses (Prior to Draft RSES)
Appendix B Special Areas of Conservation (SACs) Eastern & Midland Region
Appendix C Special Protection Areas (SPAs) Eastern & Midland Region
Appendix D Special Areas of Conservation (SACs) Northern Ireland
Appendix E Special Protection Areas (SPAs) Northern Ireland
Appendix F Screening for Appropriate Assessment
Appendix G EU Condition Assessment
Appendix H Threats and Pressures Considered Relevant to the RSES

LIST OF FIGURES

Figure 3-1 – Regional Assemblies and the Eastern and Midland Region 10
Figure 4-1 – AA within the Planning Hierarchy of the RSES 15
Figure 4-2 – Euopean Sites in the Eastern and Midlands Region 16
Figure 4-3 – Euopean Sites and Hydrological Connectivity in the Eastern and Midlands Region 17
Figure 7-1 – European Sites and Ecological Resources in the Eastern & Midland Region 35
Figure 8-1 – Hierarchy of Preferred Mitigation Options 148

LIST OF TABLES

Table 4.1 – European Sites within the Zone of Influence of the RSES 15
Table 6.1 – Potential Ecological Effects Associated with the Policy Objectives Outlined in the RSES.. 26
Table 7.1 – Protective Policy Relevant to European Sites and / or Natura 2000 Network..... 30
Table 7.2 – In-Combination Impacts with Other Plans and Strategies 131
Table 8.1 – How Mitigation Measures/Recommendations have been Addressed in the Draft RSES 149

1 INTRODUCTION

The Eastern and Midland Regional Assembly (EMRA) is currently preparing the Eastern and Midland Regional, Spatial and Economic Strategy (RSES). The main statutory purpose of the RSES is to support the implementation of *Project Ireland 2040 – the National Planning Framework* (hereafter referred to as the NPF), and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the region. The Eastern and Midland RSES is a strategic plan which identifies regional assets, opportunities and pressures and will provide appropriate policy, objective and target responses. It will put in place policies and recommendations that will better manage regional planning and economic development throughout the region.

1.1 SCOPE OF THE NATURA IMPACT REPORT

RPS, on behalf of the EMRA, as the competent Authority for the Eastern and Midlands RSES, prepared Screening for Appropriate Assessment (AA) Report in accordance with the requirements of Part XAB of the Planning and Development Act 2000, to assess in view of best scientific knowledge, whether the Eastern and Midlands RSES, individually or in combination with other plans and projects, is likely to have a significant effect on a European site. The determination by EMRA on the Screening for AA is as follows;

'*It cannot be excluded, on the basis of objective scientific information and in view of best scientific knowledge, that the EM RSES, individually or in combination with another plan and project, will have a likely significant effect on a European site. As such, it has been determined that AA will move to Stage 2 AA and a Natura Impact Report (NIR) will be prepared.'*

Therefore, the project is subject to an AA in accordance with Article 6(3) of the EU Habitats Directive, the Planning and Development Act 2000-2015, and the European Communities (Birds and Natural Habitats) Regulations, S.I. No. 477 of 2011 (as amended). The responsibility for carrying out the AA lies with the EMRA.

This NIR has been prepared in support of the AA process having regard for the legislative requirements of EU and national law. A NIR as described in under 177T of the Planning and Development Act 2000-2015, as follows:

177T.— (1) In this Part—

(a) A Natura impact report means a statement for the purposes of Article 6 of the Habitats Directive, of the implications of a Land use plan, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.

The NIR comprises an examination, analysis, evaluation, findings, conclusions and will inform the AA determination to be made by EMRA prior to finalising and adopting the the RSES as to whether or not the RSES would adversely affect the integrity of a European site. The AA determination will be published alongside the adopted RSES.

1.2 APPROACH TO NATURA IMPACT REPORT PREPARATION

In preparing this NIR, a two stage approach is being taken. The purpose of this two stage approach is to align the AA with the requirements of the Strategic Environmental Assessment (SEA) Directive [2001/42/EC as transposed into Irish law]. Art. 3.2(b) of the SEA Directive expressly links to Appropriate Assessment. The SEA process requires that an environmental report is prepared to accompany a draft plan (or in this case strategy) for public consultation.

The purpose of the SEA is to evaluate at an early stage, the range of environmental consequences that may occur as a result of implementing the RSES and to give interested parties an opportunity to comment upon the perceived or actual environmental impacts of the proposal. The preparation of the SEA and AA reporting comprises an integrated approach such as sharing of baseline data and mapping of European Sites, sharing of potential ecological effects of the RSES on European Sites and clarification on more technical aspects of the RSES. These processes together have informed and shaped the development of the RSES.

Only after public consultation is a plan finalised, having had regard to the environmental report prepared and the submissions and observations of the public. To facilitate an informed assessment under both processes, it is necessary to consider both the draft and final versions of the RSES.

As such, a NIR is being prepared in relation to the draft RSES in the first instance. This will be published, alongside a SEA Environmental Report and the draft RSES and will be subject to public consultation.

Following the consultation period, submissions and observations which are received on all material will be considered and where appropriate, EMRA will modify the draft RSES. These proposed modifications will then be assessed to determine whether the modifications individually or in combination with other plans and projects, are likely to have a significant effect on a European site and whether or not they would adversely affect the integrity of a European site(s), where necessary, additional information and assessment material will be prepared.

1.3 LEGISLATIVE CONTEXT FOR APPROPRIATE ASSESSMENT

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community Interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 Network. In Ireland, the Natura 2000 network of European sites comprise Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC) as codified by Directive 2009/147/EC (hereafter referred to as the Birds Directive).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European Sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

> *Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its*

> *implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

Article 6(4) states:

> *If, in spite of a negative assessment of the implications for the [European] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

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 RSES, the governing legislation is principally Part XAB of the Planning and Development Act 2000, as amended. Regulation 27 of the Birds and Natural Habitats Regulations 2011, as amended also has relevance as which sets out the general duties of public authorities in relation to the nature directives and nature conservation.

2 ASSESSMENT METHODOLOGY

2.1 GUIDANCE DOCUMENTS ON AA

The AA requirements of Article 6 of the Habitats Directive follow a sequential approach as outlined in the following legislation, guidance documents and Departmental Circulars, namely:

European and National Legislation:

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (also known as the 'Habitats Directive');
- Council Directive 2009/147/EC on the conservation of wild birds, codified version, (also known as the 'Birds Directive');
- European Communities (Birds and Natural Habitats) Regulations 2011 to 2015; and
- Planning and Development Act 2000 to 2015.

Guidance:

- Article 6 of the Habitats Directive – Rulings of the European Court of Justice. Final Draft September 2014;
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG (2009, revised 10/02/10);
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission (2002);
- EC Natura 2000 and Spatial Planning. European Commission (2017).
- EC study on evaluating and improving permitting procedures related to Natura 2000 requirements under Article 6.3 of the Habitats Directive 92/43/EEC. European Commission (2013).
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A working Document. DAHG (2012).
- Wind energy developments and Natura 2000. European Commission (2011)
- The implementation of the Birds and Habitats Directives in estuaries and coastal zones with particular attention to port development and dredging. European Commission (2011).
- Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. European Commission (2007).
- Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission (2001).
- Communication from the Commission on the Precautionary Principle. European Commission (2000b).

- Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC1. European Commission (2000).

Departmental/NPWS Circulars:

- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 and PSSP 2/10.
- Appropriate Assessment of Land Use Plans. Circular Letter SEA 1/08 & NPWS 1/08.
- Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Circular L8/08.
- Guidance on Compliance with Regulation 23 of the Habitats Directive. Circular Letter NPWS 2/07.
- Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Circular Letter PD 2/07 and NPWS 1/07.

2.2 GUIDING PRINCIPLES AND CASE LAW

Over time, legal interpretation has been sought on the practical application of the legislation concerning AA as some terminology has been found to be unclear. European and National case law has clarified a number of issues and some aspects of the published guidance documents have been superseded by case law. Some relevant publications include:

- Nature and Biodiversity Cases: Ruling of the European Court of Justice. European Commission (2006)
- Article 6 of the Habitats Directive: Rulings of the European Court of Justice. Ecosystems Ltd (2014).

Case law has been considered in the preparation of both the Screening for AA and this NIR of the RSES for EMR.

2.3 PURPOSE OF THE AA PROCESS

The overall purpose of the AA process is to ensure that the RSES does not result in any adverse effects on the integrity of any European Sites in view of its conservation objectives.

The development of the RSES, SEA and AA process is an iterative one which requires engagement with all parties and consultation with stakeholders. The AA process involves the analysis of the relationship between the proposed elements of the EM RSES and the conservation objectives of European sites. As part of the iterative assessment process RPS were provided with draft policies and objectives of the RSES, which were reviewed and feedback provided. Where there was potential of adverse impacts to occur, recommendations were made to avoid or mitigate potential impacts which were incorporated into the RSES to ensure no adverse effects on European sites.

[1] The Commission has notified its intent to revise this guidance and a draft revised document was published in April 2015. It would appear that this has not been finalised to date, and no revised guidance document is available on the Commissions official website as of September 2016.

2.4 STAGES OF APPROPRIATE ASSESSMENT

The Department of the Environment Heritage and Local Government guidelines (DOELHG, 2009) outlines the European Commission's methodological guidance (EC, 2002) promote a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The four stages are as follows:

- Stage 1 – Screening of the proposed plan or project for AA;
- Stage 2 – An AA of the proposed plan or project;
- Stage 3 – Assessment of alternative solutions; and
- Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI)/ Derogation.

Stage 1: Screening for AA

The aim of screening is to assess firstly if the plan or project is directly connected with or necessary to the management of European Site(s); or in view of best scientific knowledge, if the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on a European site. This is done by examining the proposed plan or project and the conservation objectives of any European Sites that might potentially be affected. If screening determines that there is potential for significant effects or there is uncertainty regarding the significance of effects then it will be recommended that the plan is brought forward to the next stage of the AA process. Screening of the draft RSES was undertaken in May 2018 and it was determined by the EMRA in June 2018 that AA is required and an Natura Impact Report is required.

Stage 2: Appropriate Assessment

The aim of Stage 2 of the AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European Sites. As part of the assessment, a key consideration is 'in combination' effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project should then be amended accordingly, thereby avoiding the need to progress to Stage 3.

As part of this stage, an NIR is prepared to support decision making and this document is the NIR for the RSES. An NIR is described in Section 177T (2) of the Planning and Development Act 2000-2015,

> *(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one [European site] in view of the conservation objectives of the site or sites.*

An AA determination will be made by the competent authority prior to finalising and adopting the plan. It is noted that this NIR relates to a plan rather than a project, and as such a two stage approach is being taken, in line with best practice. The first stage of the NIR relates to the draft EM RSES and is subject to consultation alongside the draft RSES and SEA environmental report. Following stakeholder feedback and updates to the draft RSES, all changes are assessed and consideration is given to incorporation of mitigation measures and recommendations in the final

strategy. An AA determination will be made by the competent authority prior to finalising and adopting the RSES.

Stage 3: Alternative Solutions

If it is not possible during Stage 2 of the AA process to conclude that there will be no adverse effects on site integrity, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. Explicitly, this means alternative solutions that do not have adverse impacts on the integrity of a European Site.

It should also be noted that EU guidance on this stage of the process states that, '*other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria'* (EC, 2001). In other words, if alternative solutions exist that do not have adverse impacts on European Sites; they should be adopted regardless of economic considerations. This stage of the AA process should result in the identification of the least damaging options for the plan or project.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

This stage of the AA process is undertaken when it has been determined that a plan or project will have adverse effects on the integrity of a European Site, but that no alternatives exist. At this stage of the AA process, it is the characteristics of the plan or project itself that will determine whether or not the competent authority can allow it to progress. This is the determination of 'over-riding public interest'.

It is important to note that in the case of European Sites that include in their qualifying features 'priority' habitats or species, as defined in Annex I and II of the Directive, the demonstration of 'over-riding public interest' is not sufficient and it must be demonstrated that the plan or project is necessary for 'human health or public safety considerations'. Where plans or projects meet these criteria, they can be allowed, provided adequate compensatory measures are proposed. Stage 4 of the process defines and describes these compensation measures. The Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable, and they must be approved by the Minister of Housing, Planning and Local Government.

2.5 INFORMATION SOURCES CONSULTED

The following general sources of information have been consulted for background environmental information:

- Information provided by EMRA on the RSES;
- Department of Housing, Planning, Community and Local Government – online land use mapping www.myplan.ie/en/index.html;
- GeoHive online mapping http://map.geohive.ie/mapviewer.html;
- Ordnance Survey of Ireland – online mapping and aerial photography www.osi.ie;
- National Parks and Wildlife Service – online European Site information www.npws.ie;
- Northern Ireland Environment Agency – online European Site information www.daera-ni.gov.uk;

- National Parks and Wildlife Service – information on the status of EU protected habitats in Ireland (NPWS, 2013a, 2013b and 2013c);
- Ireland's Article 12 submission to the EU Commission on the *Status and Trends of Bird Species (2008-2012)*;
- Information on the Conservation Status of Birds in Ireland (Colhoun & Cummins, 2013);
- Environmental Protection Agency (EPA) – ENVision maps www.epa.ie;
- CORINE (Co-ORdinated INformation on the Environment) data series was established by the European Community (EC) http://www.epa.ie/soilandbiodiversity/soils/land/corine/
- Information on River Basin Districts – www.wfdireland.ie;
- Geological Survey of Ireland (GSI) – geology, soils and hydrogeology www.gsi.ie;
- Forest Cover Datasets https://www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/foreststatisticsandmapping/forestcoverdatasets/
- *Format for a Prioritised Action Framework (PAF) for Natura 2000* (DAHG, 2014) www.npws.ie/sites/default/files/general/PAF-IE-2014.pdf;
- Birdwatch Ireland Species Action Plans;
- National Biodiversity Action Plan 2017-2021 (DCHG, 2017);
- Article 17 Overview Report Volume 1 (NPWS, 2013a);
- Article 17 Habitat Conservation Assessments Volume 2 (NPWS, 2013b);
- Article 17 Species Conservation Assessment Volume 3 (NPWS, 2013c); and
- River Basin Management Plan for Ireland 2018 - 2021 - www.housing.gov.ie.

2.6 IMPACT PREDICTION

The methodology for the assessment of impacts is derived from the *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites* (EC, 2001). When describing changes/activities and impacts on ecosystem structure and function, the types of impacts that are commonly presented include:

- Direct and indirect effects;
- Short and long-term effects;
- Construction, operational and decommissioning effects; and
- Isolated, interactive and cumulative effects.

Impacts that could potentially occur through the implementation of the RSES can be categorised under a number of impact categories as outlined in the EC 2001 document as follows:

- Loss/Reduction of habitat area,
- Disturbance to key species,
- Habitat or species fragmentation,
- Reduction in species density, and
- Changes in key indicators of conservation value such as decrease in water quality and quantity.

A “source –pathway-receptor” approach has been applied for this assessment. The ***source*** relates to the policy measures outlined in the RSES which have the potential to adversely impact European Sites e.g. infrastructural developments such as new Waste Water Treatment Plants. The ***pathways*** by which RSES policy measures can impact European Sites include changes in land use, habitat loss/fragmentation, emissions to air and via hydrological connections. The ***receptor*** in this instance will be the European sites, potentially including those transboundary sites with Northern Ireland for which there is a pathway of connectivity as a result of the implementation of the RSES.

2.7 CONSULTATION

2.7.1 SEA Scoping Stage

Scoping was carried out in a coordinated manner for all three RSES’s between December 2017 and February 2018. In line with the SEA Directive (2001/42/EC), specific environmental authorities (statutory consultees) were consulted on the scope and level of detail of the information to be included in the Environmental Report. This included the Department of Culture, Heritage and the Gaeltacht (DCHG), Environmental Protection Agency (EPA) and Inland Fisheries Ireland (IFI).

In recognition of the potential for transboundary effects with Northern Ireland, as the Eastern and Midland Region borders Northern Ireland, the Northern Ireland Environment Agency (NIEA), part of the Department of Agriculture, Environment and Rural Affairs (DAERA), was also consulted on the scope. A summary of the issues raised in the scoping submissions from these consultees are included in **Appendix A**.

2.7.2 Screening for AA Stage

In parallel with scoping, information in support of AA screening was compiled to inform decision making in relation to the need for full AA. This screening information was sent to the Development Applications Unit of the Department of Culture, Heritage and the Gaeltacht (DCHG) for comment. A response was received and this is also included in **Appendix A**.

These consultation feedback responses have been used to inform the AA Screening and the preparation of this NIS.

3 EASTERN AND MIDLAND RSES

3.1 INTRODUCTION

One of the principle functions of the Eastern and Midland RSES will be to practically support and advance the delivery of the national policy objectives contained in the NPF. The EMRA will bring forward the NPF in a manner which best reflects the challenges and opportunities of the region. It has been anticipated by the NPF that each of the three regional assemblies will begin to fill out the national policy objectives, in some cases giving them geographic or temporal context and in other cases elaborating on project concepts. The Eastern and Midland RSES will support the delivery of the NPF removing the top-down perception and replacing it with a shared responsibility and understanding.

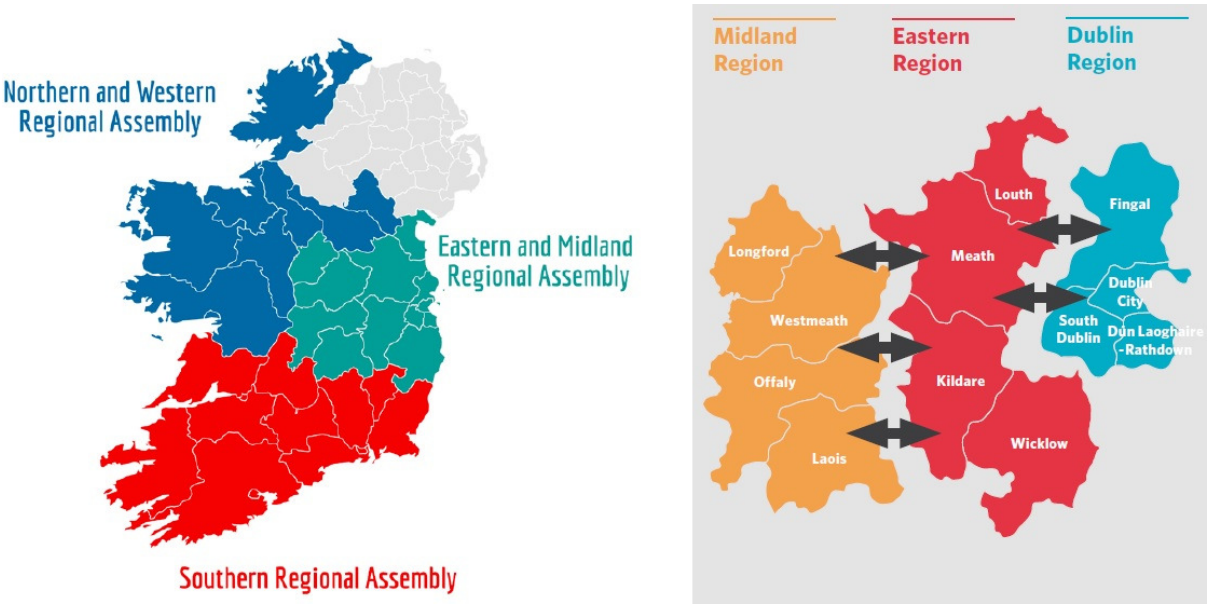


Figure 3-1 – Regional Assemblies and the Eastern and Midland Region[2]

3.2 STRATEGIC VISION FOR THE EASTERN AND MIDLAND REGION

The vision statement for the Eastern and Midlands RSES is:

> "To *create a sustainable and competitive region that supports the health and wellbeing of our people and places, from urban to rural, and ensures access to affordable housing, travel and employment opportunities for all*."

The place or environment in which people live or work has a profound impact on the health of people. The region contains some of the fastest growing communities in the country and the long-term trend is for residential development moving further outwards from Dublin, with significant growth in many of the small towns and villages in the peri-urban area surrounding the city leading to an increase in car-based long-distance commuting. At the same time an overall lack of adequate housing supply to meet a growing population has resulted in affordability issues and increasing homelessness, with a resulting negative impact on quality of life and regional competitiveness.

[2] EMRA (November 2017) Consultation Issues Paper

One of the key challenges facing the region is the need for better alignment between population growth, location of residential development and employment to create healthy and attractive places, and this is reflected in the Vision Statement, which was developed in collaboration with elected member and regional stakeholders.

The Eastern and Midlands RSES is underpinned by key cross-cutting principles that broadly reflect sustainability and are expressed in a manner which best reflects the challenges and opportunities of the region through three key principles:

1. **Healthy Place making**

To promote people's quality of life through the creation of healthy and attractive places to live, work, visit and study in.

2. **Climate Action**

The need to enhance our natural capital and climate resilience and to accelerate a transition to a low carbon economy

3. **Economic Opportunity**

To create the right conditions and opportunities for the region to realise sustained economic growth and employment that ensures good living standards for all

3.3 KEY ASPECTS OF THE DRAFT EM RSES

The Eastern and Midland RSES seeks to determine at regional scale how best to achieve the shared goals set out in the National Strategic Outcomes (NSOs) of the NPF. To this end, the draft Strategy sets out 16 Regional Strategic Outcomes (RSOs), which are aligned with international, EU and national policy and which in turn set the framework for City and County Development Plans. The RSES can assist Local Authorities in aligning with EU priorities to leverage funding and partnership opportunities. The 16 RSO are:

The 16 RSO's are also cross referenced and aligned with the key cross-cutting principles of the RSES and have been developed in iteration with the SEA:

1. **Sustainable Settlement Patterns:** Better manage the sustainable and compact growth of Dublin as a city of international scale and develop Athlone, Dundalk-Drogheda and a number of key complementary growth settlements of sufficient scale to be drivers of regional growth.
2. **Compact Growth And Urban Regeneration:** Promote the regeneration of our cities, towns and villages by making better use of under-used land and buildings within the existing built-up urban footprint and to drive the delivery of quality housing and employment choice for the region's citizens.
3. **Rural Communities:** Support sustainable rural development by managing urban generated growth in areas under strong urban influence and by encouraging sustainable growth in areas that have experienced decline or stagnation.
4. **Healthy Communitiee:** Support the provision of quality healthcare and services that support human health, including the protection of the natural environment to ensure clean air and water for all.

5. **Creative Places:** Enhance, integrate and protect our arts, culture and heritage assets to promote creative places and heritage led regeneration.
6. **Integrated Transport and Land Use:** Promote best use of Transport Infrastructure, existing and planned and promote sustainable and active modes of travel to ensure the proper integration of transportation and land use planning.
7. **Sustainable Management of Water, Waste and Other Environmental Resources:** Conserve and enhance our water resources to ensure clean water supply, adequate waste water treatment and greater resource efficiency to realise the benefits of the circular economy.
8. **Build Climate Resilience:** Ensure the long-term management of flood risk and build resilience to increased risks of extreme weather events, changes in sea level and patterns of coastal erosion to protect property, critical infrastructure and food security in the region.
9. **Support the Transition to Low Carbon and Clean Energy:** Support national policy targets for climate mitigation and harness the potential for a more distributed renewables-focussed energy system to support the transition to a low carbon economy by 2050.
10. **Enhanced Green Infrastructure:** Identify, protect and enhance Green Infrastructure and ecosystem services in the region and promote the sustainable management of strategic natural assets such as our farmlands, peatlands, woodlands and wetlands.
11. **Biodiversity and Natural Heritage:** Promote co-ordinated spatial planning to conserve and enhance the biodiversity of our protected habitats and species including landscape and heritage protection.
12. **A Strong Economy supported by Enterprise and Innovation:** To build a resilient economic base and promote innovation and entrepreneurship ecosystems that support smart specialisation, cluster development and sustained economic growth.
13. **Improve Education Skills and Social Inclusion:** To improve education and develop the right skills to attract employers and retain talent and promote social inclusion to ensure opportunities for quality jobs across the region.
14. **Gateway Region:** Promote Dublin as a global city region and protect and enhance international connectivity, including ports and airports and promote the region as a gateway to Ireland.
15. **Enhanced Regional Connectivity**: Develop and enhance regional accessibility between key regional growth centres to build economic resilience and support strengthened rural communities and economies including the blue-green economy and tourism.
16. **Collaboration Platform:** Provide a regional framework for collaboration and partnerships and to support local and regional bodies in leveraging funding and partnership opportunities.

The RSO are supported by a clear regional policy objective base covering the following key areas:

- Growth Strategy;
- Settlement Strategy;
- Dublin Metropolitan Area;
- Economy and Employment;
- Place Making;
- Transport;
- Environment;
- Infrastructure and Climate; and
- Implementation and Monitoring

4 OVERVIEW OF THE RECEIVING ENVIRONMENT

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 developed a Biodiversity Plan (DCHG, 2017) to address issues and halt the loss of biodiversity, in line with international commitments. The overall vision in the National Biodiversity Plan is that "*biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally."* The NBP includes seven headline objectives cross referenced as appropriate to both the relevant Aichi Biodiversity targets and also the UN sustainability goals. Objective 6 specifically addresses the Natura 2000 network. It states: *Expand and improve management of protected areas and species.* The three related sub-objectives are:

- Natura 2000 network designated and under effective conservation management by 2020;
- Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020; and
- No protected species in worsening status by 2020; majority species in, or moving towards, favourable status by 2020.

4.1 IDENTIFICATION OF EUROPEAN SITES

The DEHLG (2009 rev. 2010) guidance on the zone of influence (ZoI) to be considered during the AA process states the following: *"A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects".*

The RSES includes a broad policy base which not detail geographic specificity for the implementation of the RSES measures, so it must be assumed that these measures could be implemented anywhere within the Eastern and Midlands Region. The ZoI of the RSES is therefore considered to include all European Sites within the Eastern and Midlands Region and considers transboundary impacts to SACs and SPAs with direct connectivity e.g. rivers flowing into or out of the EMR. This is primarily due to the need to consider all hydrological and hydrogeologically connected European Sites due to the potential for significant impacts on water quality. Therefore, the ZoI for this project includes all of the hydrologically connected surface water subcatchments and groundwater bodies.

The Natura 2000 Network of sites is designated owing to its ecological importance in a European context. Sites within the Natura 2000 Network are referred to as European Sites and comprise SACs and SPAs. SACs are concerned with the protection of specific QIs and SCIs and the legal basis for their designation is the EU Habitats Directive. In the Republic of Ireland, 430 SACs (includes 7 offshore sites) have been designated covering 58 habitat types recognised in Annex I of the Directive, with 16 habitats designated as "priority" habitats owing to their ecological vulnerability. In addition, the same Directive recognises 26 Annex II species. Of the 58 habitats, 44 are considered to be water dependent habitats, and 22 species are considered to be water dependent. The habitats covered extend across the country and cover a range of ecological features from coastal to grassland to woodland. Priority habitats include active bogs, turloughs and fixed dunes.

Annex II species include Lesser Horseshoe bats, Otter (*Lutra lutra*), Freshwater pearl mussel (*Margaritifera margaritifera*), among others. There are 82 SACs within the EMR.

Through the Birds Directive, SPAs designated for the protection of endangered species of wild birds including listed rare and vulnerable species, regularly occurring migratory species as well as wetland habitats that support such species. Currently there are 165 SPAs designated within the Republic of Ireland. There are 38 SPAs within the EMR[3].

It is acknowledged that Qualifying Interest (QIs)/ Special Conservation Interests (SCIs) of European Sites have different sensitivities and therefore a set distance of 15km is not appropriate to assess the potential effects on all QIs/ SCIs that may be impacted by the objectives of the RSES. There may be scientifically appropriate reasons for extending the ZoI further depending on pathways for potential impacts. For example QI fish species could be affected by changes to water quality at more than 15km distance, SCI bird species might be most significantly affected by disturbance within 1km of their habitat.

Therefore, the impact assessment considers the sensitivities to European Sites in light of their generic Conservation Objectives (COs, which encompass the spirit of the site specific COs in the context of maintaining and restoring favourable conservation condition) and how they may be connected to and subsequently impacted by the RSES through abiotic and biotic vectors. To this end, the ZoI extends to European Sites to include ecological receptors connected to the RSES through overlap / intersection, proximity and connectivity through features such as surface water and groundwater interactions. As the objectives give rise to more concrete plans and projects down through the planning hierarchy, the site specific conservation objectives (SSCO) will be more appropriate to present.

Figure 4-1 outlines the role of AA through the planning hierarchy as it relates to plans and projects informed by the RSES.

[3]All SAC and SPA numbers are downloaded from NPWS datasets as of August 2018.

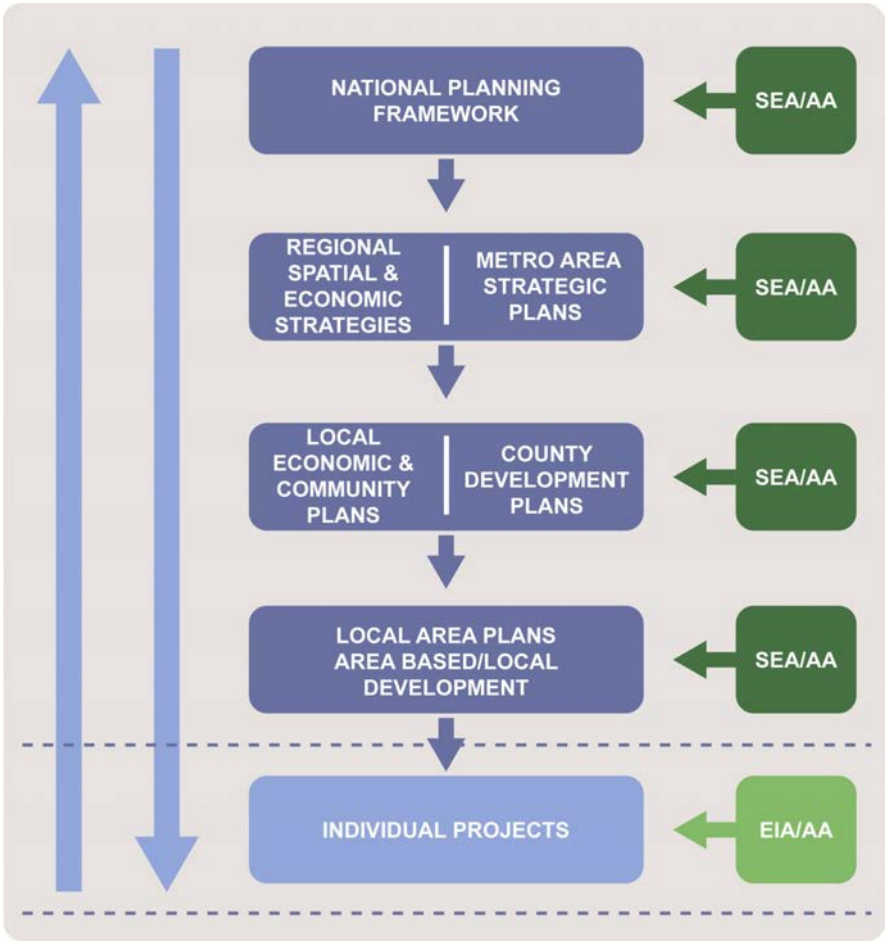


Figure 4-1 – AA within the Planning Hierarchy of the RSES

A breakdown of the European Sites within the EMR is presented in **Table 4.1**. In addition the Eurpoean sites within the other regional authoritiy areas which border the EMR and Northern Ireland are summarised. **Figure 4-2** shows the distribution of the SACs and SPAs within the EMR. A full listing of the European Sites are included in **Appendix B** and **Appendix C**. It is acknowledged that the number of European Sites designated, and their boundaries, are subject to change over time and must therefore be verified on an ongoing basis.

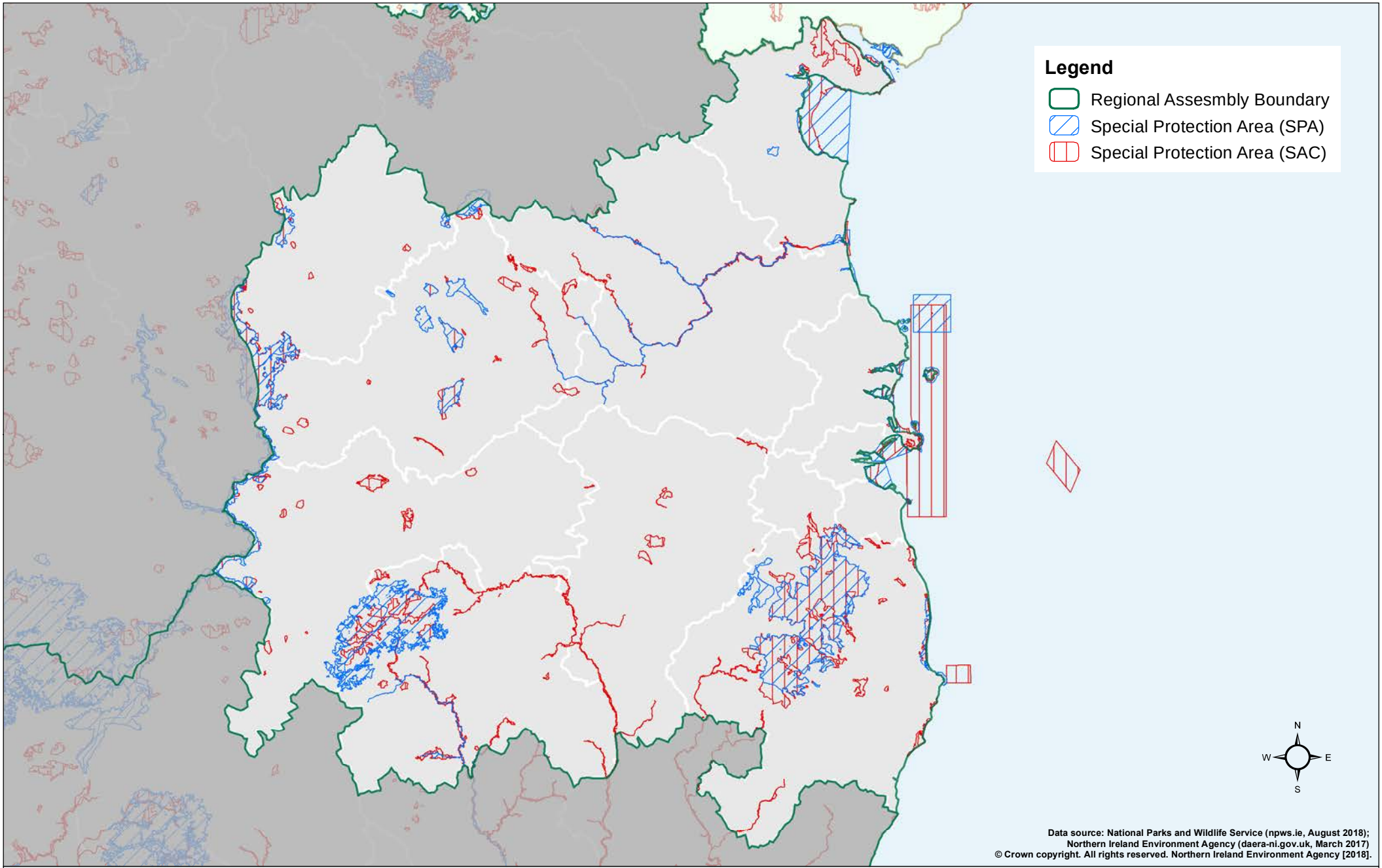
Table 4.1 – European Sites within the Zone of Influence of the RSES

European Sites*	Eastern and Midland	Southern	Northern and Western	Northern Ireland**
SAC	86	144	217	59
SPA	39	55	80	18

** NPWS data revision as of August 2018.*

*** NIEA/JNCC data revision as of January 2018 (includes newly proposed/ candidate sites).*

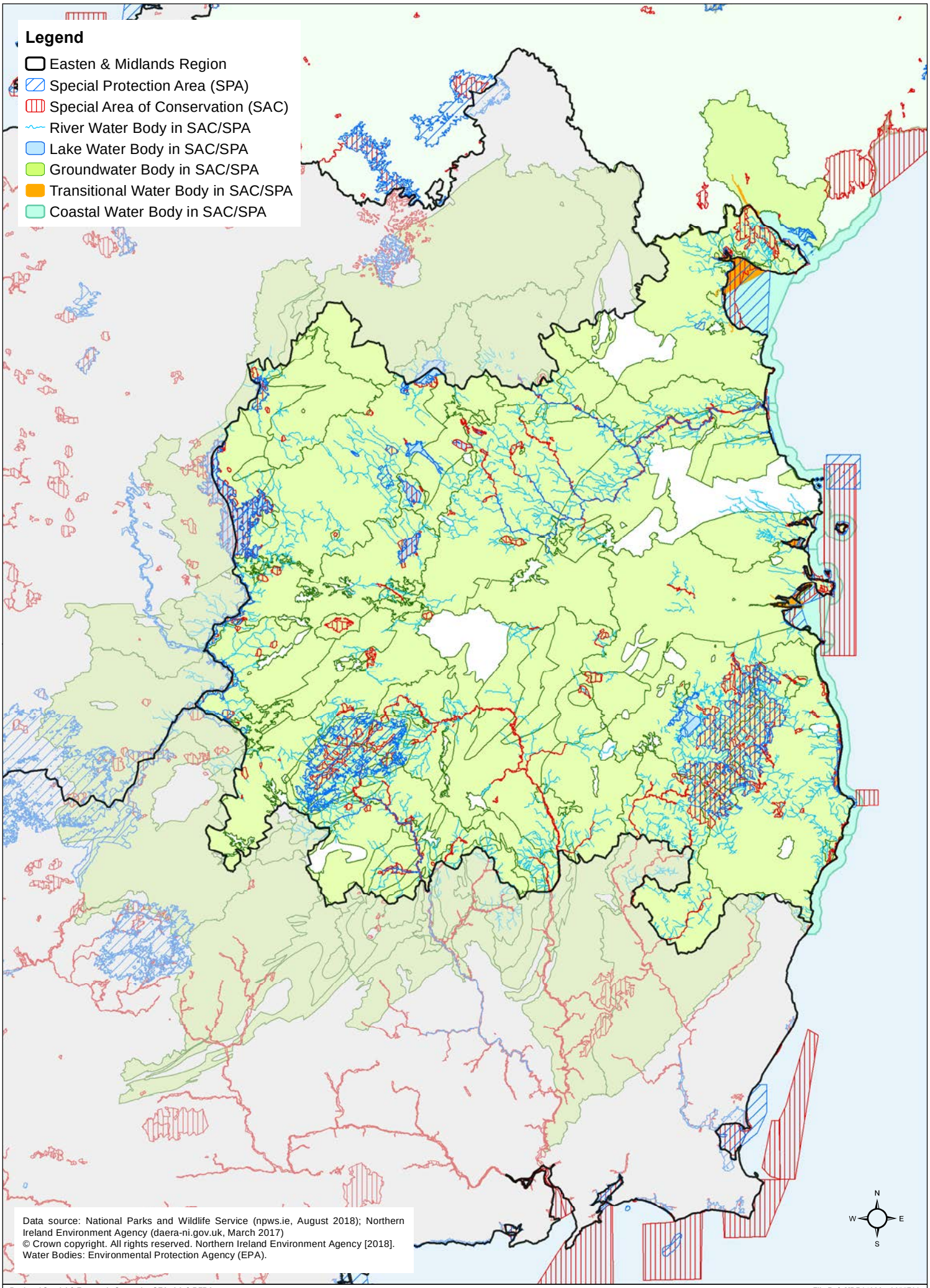
It is acknowledged that European sites which are within or partially within EMRA may originate in one of the other regions, especially where there may be surface or groundwater connectivity upstream. To consider this further, **Figure 4-3** shows the water connectivity between the three regions. This will be considered during the assessment process for all three regions.



Data source: National Parks and Wildlife Service (npws.ie, August 2018);
Northern Ireland Environment Agency (daera-ni.gov.uk, March 2017)

Figure 4-2 – European Sites in the Eastern and Midland Region

RPS



Data source: National Parks and Wildlife Service (npws.ie, August 2018); Northern Ireland Environment Agency (daera-ni.gov.uk, March 2017)

Water Bodies: Environmental Protection Agency (EPA).

Figure 4-3 – European Sites and Hydrological Connectivity

RPS

4.2 CONSERVATION OBJECTIVES

The Habitats Directive requires an Appropriate Assessment Is carried out in *view of the site's* ***conservation objectives***. The Conservation Objectives (COs)[4] for European Sites are set out to ensure that the Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) for which an SAC or SPA has been designated are maintained or restored to a favourable conservation condition. Maintenance of favourable conservation condition of habitats and species at a site level in turn contributes to maintaining or restoring favourable conservation status of habitats and species at a national level and ultimately at the Natura 2000 Network level.

In Ireland 'generic' COs have been prepared for all European Sites, while 'site specific' COs have been prepared for a number of individual Sites to take account of the specific QIs/ SCIs of that Site. Both the generic and site specific COs aim to define favourable conservation condition for habitats and species at the site level.

Generic COs which have been developed by NPWS encompass the spirit of site specific COs in the context of maintaining and restoring favourable conservation condition as follows:

For SACs:

- '*To maintain or restore the favourable conservation condition of the Annex I habitats and/or Annex II species for which the SAC has been selected'.*

For SPAs:

- '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA*'.

Favourable Conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing;
- The specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is "favourable".

Favourable Conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis.

[4] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/

At an individual site level, SSCOs specify whether the objective is to maintain or to restore favourable conservation condition of the habitat or species, and they set out attributes and targets that define the objectives. It is the aim of the DCHG to produce SSCOs for all European sites in due course. A full listing of the COs and QIs/ SCIs for each European Site, as well as the attributes and targets to maintain or restore the QIs/ SCIs to a favourable conservation condition, are available from the NPWS website www.npws.ie.

It is noted that the existing conservation condition of some habitats and species is unfavourable at present for various reasons, including because of exceedance in environmental quality parameters. This is discussed further in the next section.

4.3 CONSERVATION STATUS OF EU PROTECTED HABITATS AND SPECIES

In 2007 and again in 2013, NPWS published a report detailing the conservation status in Ireland of habitats and species listed in the EU Habitats Directive (92/43/EEC), referred to as the Article 17 Report[5]. 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. **Appendix G** sets out a summary of the conservation status of each habitat and species from both 2007 and 2013.

For the 2013 submission, Ireland's Article 17 Report recorded 9% of habitats were assessed as "*favourable*", 50% as "*inadequate*" and 41% as "*bad*". Among the key findings were:

- Many Irish habitats are in unfavourable status and many are still declining albeit with some positive actions underway;
- 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;
- 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 of our woodlands are rated as "*bad*" because they are patchy and fragmented, improvements have been noted due to afforestation and the planting of native species, removal of alien species and control of overgrazing; and
- 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.

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

From the 2013 report, 52% of species were assessed as "*favourable*", 20% as "*inadequate*", 12% as "*bad*" and 16% as "*unknown*" or considered to be vagrant species. Among the key findings are:

- Otter has also been assessed as "*favourable*" with evidence of an expanding range;
- Salmon (*Salmo salar*) is showing signs of improvement and the Killarney shad (*Alosa killarnensis*) is assessed as "*favourable*", but some other fish remain at "*bad*" status; and
- 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)*[6] 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 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. **Appendix G** sets out a summary of the conservation status of each bird species from both 2007 and 2013.

4.4 EXISTING THREATS AND PRESSURES TO EU PROTECTED HABITATS AND SPECIES

Under Article 17 of the Habitats Directive, member states are obliged to identify threats and pressures to QIs/SCIs using a standard set of criteria. A threat is defined as an "Activity expected to have an impact on a species/habitat type in the future", and a pressure is defined as an "Activity impacting a species/habitat type during the reporting cycle"[7].

Threats and pressures considered to be most relevant and linked either directly or indirectly to the RSES were extracted from the full list of threats and pressures[8]. The headline categories considered relevant to the RSES are presented below, with a more detailed breakdown of the threats and pressures under each headline category presented in **Appendix H.**

- Agriculture;
- Forestry;
- Mining, quarrying and energy production;
- Biological resource other than agriculture & forestry;
- Transportation and service infrastructure;
- Urbanisation, residential and commercial development;
- Disturbance due to human activities;
- Pollution;
- Invasive and introduced species;

[6] http://ec.europa.eu/environment/nature/knowledge/rep_birds/index_en.htm (Accessed September 2016)
[7] Reference Portal for reporting under the Article 17 of the Habitats Directive *Explanatory Notes & Guidelines for the period 2007-2012* http://bd.eionet.europa.eu/activities/Reporting/Article_17/reference_portal
[8] Accessed on the Reference Portal for reporting under the Article 17 of the Habitats Directive http://bd.eionet.europa.eu/activities/Reporting/Article_17/reference_portal

- Modification of natural conditions; and
- Climate change.

A general lack of environmental awareness, especially regarding ecosystem services was cited by the EPA in the 2012 State of the Environment Report as a pressure on national biodiversity. In their updated 2016 report[9], the future challenges for biodiversity were cited as:

- Land use changes and the planned intensification of agriculture may lead to further habitat loss;
- Climate change is intensifying and the current underlying issues will persist;
- The mainstreaming of biodiversity into economic and development decisions would be of benefit to nature protection;
- There is room for improved co-ordination on nature issues across linked directives and regulatory bodies;
- Robust baseline monitoring systems and comprehensive services mapping systems are needed to highlight and protect nature in Ireland, and
- Increased public awareness is vital.

[9] http://www.epa.ie/media/Chapter4_Nature.pdf

5 STAGE 1 SCREENING FOR AA

In order to comply with the requirements of Article 6(3) of the EU Habitats Directive, the process of Screening for AA was undertaken at an early stage in the drafting of the RSES. The Screening for AA assessed in view of best scientific knowledge whether the Draft RSES, individually or in combination with other plans and projects, is likely to have a significant effect on any European Site.

5.1 POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

The Screening for AA was undertaken before the detailed policy objectives were developed and therefore the potential likely significant effects were largely unknown, therefore the Screening for AA was undertaken in a strategic manner with cognisance of the precautionary principle. Given the strategic nature of the plan, the current stage of preparation; the range of potential policy objectives that could have been utilised in the RSES once drafted, e.g. potentially including construction of infrastructure, land use changes or behavioural changes, potential for impact pathway; and uncertainties relating to the implementation and zone of influence of the plan going forward, it was concluded that the potential for likely significant effects could not be ruled out given the uncertainty as to what the policy objectives might include.

5.2 SCREENING FOR APPROPRIATE ASSESSMENT CONCLUSION

On completion of the Screening AA, the following was determined by EMRA in June 2018:

'*It could not be excluded, on the basis of objective scientific information, that the EM RSES, individually or in combination with other plans and projects will have a significant effect on a European site. As such, it is recommended that an Appropriate Assessment is required and a Natura Impact Report should be prepared.'*

The Screening for AA Report is provided in **Appendix F**.

6 STAGE 2 APPROPRIATE ASSESSMENT OF THE DRAFT RSES

6.1 INTRODUCTION

The NIR to inform the AA considers the potential impacts of the draft EM RSES and whether they would adversely affect the integrity of a European site. EC guidance (MN2000) states that the integrity of a site involves its ecological functions and the decision as to whether it is adversely affected should focus on, and be limited to, the site's conservation objectives.

This section considers and sets out the elements of the draft EM RSES that have potential to adversely affect European sites. The potential effects have been assessed in the absence of any mitigation measures, and taking account of the precautionary principle. It is noted that the development of the draft EM RSES has benefited from an integration of SEA/ AA expertise to highlight and address concerns on an ongoing basis as the framework has evolved. This is in line with the Habitats Directive which promotes a hierarchy beginning with avoidance before considering mitigation and compensatory measures. Through iterative discussion during the preparation of the draft EM RSES, avoidance of impacts as a result of implementing the draft EM RSES has therefore been to the forefront of discussions with EMRA.

It is noted that the draft EM RSES is a strategic framework document which will be supported by a robust tiering of regional and local level plans within the overall proposed hierarchy. As detail is developed down through the hierarchy, further opportunity for focussed assessment will be required to inform decision making at a granularity which cannot be undertaken at the regional scale.

6.2 ASPECTS OF THE PLAN TO BE ASSESSED

Aspects of the EM RSES setting out proposals for growth, settlement, transport, infrastructure, employment and economy were considered in this assessment. Table 6.1 sets out the aspects of the EM RSES and identifies those to be assessed as part of this assessment, and why.

Element of RSES	Assessed in NIR
1. Introduction	▪ No - Factual information which sets out the role of the regional assemblies and the EMRA.
2. Strategic Vision	▪ No - sets out overall vision for the region. No formal assessment however qualitative commentary on integration of Natura 2000 network and objectives into vision for EMR.
3. Growth Strategy	▪ Yes - Regional growth centres and key growth settlements analysed in the context of European site sensitivities generally in the absence of specific spatial proposals.
4. People and Place	▪ Yes - Regional growth centres and key growth settlements analysed in the context of European site sensitivities generally in the absence of specific spatial proposals.
5. Dublin MASP	▪ Yes - Settlement strategy and enablers assessed
6. Economy and Employment	▪ Yes – policy base assessed
7. Environment	▪ Yes – policy base assessed

Element of RSES	Assessed in NIR
8. Connectivity	▪ Yes – policy base assessed
9. Quality of Life	▪ Yes – policy base assessed
10. Infrastructure	▪ Yes – policy base assessed
11. All Island Approach	▪ Yes – policy base assessed
12. Implementation and Monitoring	▪ Yes – policy base assessed

6.3 APPROACH TO ASSESSMENT

In line with the relevant guidance and case law, this stage of the Appropriate Assessment consists of three main steps:

- **Impact Prediction** – identify the aspects of the Draft RSES likely to affect the conservation objectives of European sites, the types of impacts include direct and indirect effects; short and long-term effects; construction, operational and decommissioning effects; and isolated, interactive and cumulative effects. A source-pathway-receptor model has been used to assess potential for impact;
- **Assessment of Effects** - where the effects of the Draft RSES are assessed as to whether they have any adverse effects on the integrity of European Sites as defined by conservation objectives; and
- **Mitigation Measures** - where mitigation measures are identified to ameliorate any adverse effects on the integrity of any European Site.

6.4 IMPACT PREDICTION

As discussed in **Chapter 3**, in considering the potential for impacts from implementation of the Draft RSES, a "source –pathway-receptor" approach has been applied.

A description of the main potential ecological impacts that could arise from the implementation of the draft RSES are presented below with reference to those categories outlined in the EC 2001 *Methodological Guidance on the Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites*:

- Reduction of habitat area:
- Disturbance to key species;
- Habitat or species fragmentation;
- Reduction in species density;
- Changes in key indicators of conservation value (water quality etc.);
- Climate change.

Further discussion on the types of impacts anticipated from iplemntation of the RSES is presented below:

Permanent and/or temporary habitat loss or fragmentation: Habitat loss or destruction is caused where there is complete removal of a habitat type, for example arising from the development of new infrastructure or via change of land use which alters the existing habitat. Habitat fragmentation

results from the incremental loss of small patches of habitat within a larger landscape. Fragmentation can also result from impediments to the natural movements of species. This is relevant where important corridors for movement or migration are disrupted. Habitat degradation results in the diminishment of habitat quality and a loss of important habitat functions. It can arise from the introduction of invasive species, toxic contamination from spillages or physical alteration (e.g. arising from poor management during construction and subsequent operation of new infrastructure). Increases in population in th region whether focussed at metropolitan areas, large or small towns, all has the potential for habitat loss or fragmentation. While the RSES has a specific focus on infill and brownfield development there is nonetheless potential for greenfield development to ensure the population increases proposed can be accommodated. There is also the potential for increased disturbance from new populations or increased densities in sensitive locations.

Disturbance or damage to breeding, roosting, feeding areas: Disturbance to habitats or species is likely to increase where there is an increase in activity or noise levels from developments in proximity to sensitive areas such as ports. It is particularly important that known sensitive areas, such as those supporting breeding birds, otter, salmonids and others are taken into consideration during the design stage of any development prior to approval. As the RSES deals with strategic infrastructure including roads, rail, airports and ports this is an important consideration. Species mortality can result from direct mortality of species, for example as a result of collision. Species mortality can also occur via direct alteration to breeding/resting habitat during construction leading to changes to species distribution and/or changes that affect productivity or breeding success. In addition, species mortality can occur when conditions/habitat underpinning survival of the species are altered e.g. water quality, ecological corridors removed, and these are discussed under the other relevant headings in this section.

Changes to ecosystem services: The loss of key ecosystem services such as pollination, water attenuation flood mitigation, climate change mitigation and adaptation e.g. carbon storage can have direct and indirect impacts on European sites.

Changes to water quality and/or water movement: This is relevant where there could be an impact on the hydrological/hydrogeological connection to a European Site or on water quality. This could be via point source or diffuse pollution from developments or via developments that alter surface or subsurface water flow. In terms of potential for alteration of water quality, the impact(s) may be in-situ or ex-situ (i.e. downstream and outside the immediate area) and can include the release of suspended solids, increased nutrient run-off from land such as forestry or agricultural land, increased acidification/eutrophication and spillages during construction activities. Alterations to surface or subsurface flow can result in impact to surface and groundwater dependent habitats such as petrifying springs and fens. Introduction or expansion of barriers and changes to natural sedimentation / erosion processes can also impact on life cycles for important species such as salmon and freshwater pearl mussel.

Alterations to air quality: Burning of fossil fuels, whether for transport or energy generation, results in emissions to air. The key effects on European Sites associated with fuel combustion are; nitrogen/sulphur deposition leading to acidification and eutrophication of soils/water, deposition of particulate matter leading to vegetation damage and increased atmospheric CO and CO2 accelerating climate change.

Introduction or spread of invasive species: Invasive species can have serious negative consequences on their environment and cause damage to native ecosystem functions and service e.g. by outcompeting native species. This would be of particular concern for any works within European

Sites, but also any works with connectivity to a European Site e.g. hydrological connectivity. Machinery and personnel can act as vectors to inadvertently cause the introduction or spread of invasive species, in particular invasive plant species. Importation of materials e.g. soil contaminated with invasive species can also result in the introduction/spread of invasive species. In addition, climate change could result in range expansion for some invasive species, which could potentially be further facilitated through the range contraction of native species.

In-combination impacts: A series of individually modest impacts may, 'in-combination' produce a significant impact. The underlying intention of this in-combination provision is to take account of combined impacts, and these will often only occur over time. In that context, one must consider plans or projects which are completed; in preparation; or approved but uncompleted. Where there is a series of small, but potentially adverse impacts occurring within or adjacent to a European Site, consideration should be made as to their combined impacts.

6.4.1 Impact Prediction

It is acknowledged that the RSES is a regional strategy and as such prediction of effects at individual European sites is not always practical as the strategy lacks spatial detail in some cases to give context to the extent or significance of any potential effects. As such the potential for such effects is raised within the confines of the RSES with a view to appropriately informing lower levels of planning where the necessary spatial detail is available and identifying the mitigation measures that must be in place for lower tier plans and projects to ensure the protection of the Natura 2000 network.'

Table 6.1 – Potential Ecological Effects Associated with the Policy Objectives Outlined in the RSES

Impact Source	Impact Identification	Impact Prediction
Strategic Vision	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Cumulative Impacts where proposed objectives influence developments that could contribute to cumulative or in-combination effects with other developments.
Growth Strategy	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive	▪ Potential direct Impacts where developments (residential, infrastructure, commercial etc.) overlap or intersect with European Sites; ▪ Indirect impacts where developments (residential, infrastructure, commercial etc.) adjoin, are proximal to or support connectivity with European Sites; ▪ Cumulative Impacts where proposed objectives influence developments that could contribute to cumulative or in-combination effects with other developments.

Impact Source	Impact Identification	Impact Prediction
	species.	
Settlement Strategy	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct Impacts where developments (residential, infrastructure, commercial etc.) overlap or intersect with European Sites; ▪ Indirect impacts where developments (residential, infrastructure, commercial etc.) adjoin, are proximal to or support connectivity with European Sites; ▪ Cumulative Impacts where proposed objectives influence developments that could contribute to cumulative or in-combination effects with other developments.
Dublin MASP	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct Impacts where developments (residential, infrastructure, commercial etc.) overlap or intersect with European Sites; ▪ Indirect impacts where developments (residential, infrastructure, commercial etc.) adjoin, are proximal to or support connectivity with European Sites; ▪ Cumulative Impacts where proposed objectives influence developments that could contribute to cumulative or in-combination effects with other developments.
Employment and Economy	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct Impacts where developments (residential, infrastructure, commercial etc.) overlap or intersect with European Sites; ▪ Indirect impacts where developments (residential, infrastructure, commercial etc.) adjoin, are proximal to or support connectivity with European Sites; ▪ Potential direct and indirect impacts associated with multi-sectoral growth to enable EMRA achieve objectives under this discipline. ▪ Potential impacts could be associated with objectives that afford greater tourist access to areas designated as or supporting connectivity with European Sites. Development of the Agri-Food, Bio-Economy and Marine Economy sector which may comprise direct and indirect impacts, depending on the development scale, size, location, duration etc.
Environment	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species;	▪ Potential direct and indirect impacts associated with citing and development such as Greenways, Blueways, interpretive signage and access associated with areas of scenic, historic and cultural beauty – where these areas

Impact Source	Impact Identification	Impact Prediction
	▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	overlap adjoin, are proximal to or support connectivity with European Sites.
Connectivity	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct and indirect impacts associated with the development of infrastructural projects such as roads, railways, greenways, blueways etc. where these developments overlap adjoin, are proximal to or support connectivity with European Sites.
Quality of Life	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct and indirect impacts associated with citing and development of Natural Networks, such as Greenways, Blueways, interpretive signage and access associated with areas of scenic, historic and cultural beauty – where these areas overlap adjoin, are proximal to or support connectivity with European Sites.
Infrastructure	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	▪ Potential direct and indirect impacts associated with the development of infrastructural projects such as, water, wastewater, energy and technology where these developments overlap adjoin, are proximal to or support connectivity with European Sites.
Implementation and Monitoring	▪ Habitat loss or destruction; ▪ Loss of key supporting ;habitats and ecosystem complexes; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality;	▪ Potential direct and indirect impacts associated with implementation of the above policy base,

Impact Source	Impact Identification	Impact Prediction
	▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; ▪ Alternations due to climate change; and ▪ Introduction or spread of invasive species.	

7 ASSESSMENT OF EFFECTS OF DRAFT RSES

7.1 INTRODUCTION

Article 6 of the Habitats Directive states that:

> *Any plan or project not directly connected with or necessary to the management of the 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 of its implications of the site in view of the site's conservation objectives.*

The impact prediction and assessment of potential effects of the mitigation measures outlined in the RSES on the Natura 2000 Network has considered the potential to impact on the achievement of the COs of the European Sites and is presented in the following sections.

The purpose of the RSES is to provide a focal point for spatial plans throughout the planning hierarchy. The RSES will co-ordinate the strategic planning of urban and rural areas in a regional development context to secure overall proper planning and development as well as co-ordination of the RSES's and city/county development plans in addition to local economic and community plans as well as local area plans and local development.

The assessment of the RSES has been developed in the context of the full policy base contained within the EM RSES which includes environmental protection policies, introduced as a result of iterative feedback on early draft material to identify issues and as far as possible avoid adverse effects in the first instance, in line with recognised mitigation heirarchy. Of specific relevance to the potential of individual chapters for impact on European sites, the following environmental commitments and objectives which are contained within the EM RSES are considered within the assessment.

Table 7.1 – Protective Policy Relevant to European Sites and / or Natura 2000 Network

Protective Policy Relevant to European sites and / or Natura 2000 Network	
Chapter 2 Vision	***7. Sustainable Management of Water, Waste and other environmental resources.*** *Conserve and enhance our water resources to ensure clean water supply, adequate waste water treatment and greater resource efficiency to realise the benefits of the circular economy.* ***10. Enhanced Green Infrastructure*** *Identify, protect and enhance Green Infrastructure and ecosystem services in the Region and promote the sustainable management of strategic natural assets such as our coastlines, farmlands, peatlands, uplands woodlands and wetlands* ***11. Biodiversity and Natural Heritage*** *Promote co-ordinated spatial planning to conserve and enhance the biodiversity of our protected habitats and species including landscape and heritage protection.*
Chapter 3 Growth Strategy	*Feasibility studies will be carried out to support decision making in relation to policy base for this RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*

	At the project level, all applications for development consents for projects emanating from any policies that may give rise to likely significant effects on the environment will need to be accompanied by one or more of the following, as relevant: ▪ *An Ecological Impact Assessment Report (EcIA);* ▪ *Environmental Report (ER);* ▪ *An Environmental Impact Assessment Report (EIAR) if deemed necessary under the relevant legislation (statutory document);* ▪ *Natura Impact Statement if deemed necessary (NIS) under the relevant legislation (statutory document).* ***RPO:** Ensure that all plans, projects and activities requiring consent arising from the Regional Spatial and Economic Strategy are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate* ***RPO:** Identification of suitable employment and residential lands and suitable sites for infrastructure should be supported by a quality site selection process that addresses environmental concerns such as landscape, cultural heritage, ensuring the protection of water quality, flood risks and biodiversity as a minimum.*
Chapter 4 People and Place	***RPO:** Support the proposed Drogheda Flood Relief Scheme, subject to the outcome of the planning process and appropriate environmental assessment.* ***RPO:** Support the proposed Dundalk Flood Relief Scheme, subject to the outcome of the planning process and appropriate environmental assessment.* ***RPO:** Support the extension of the Boyne Greenway to include Navan to promote sustainable transport choices and as a recreation asset for the town, subject to the outcome of the planning process and environmental assessments.* ***RPO:** Support the proposed Longford Flood Relief Scheme subject to the outcome of appropriate environmental assessment and the planning process.*
Chapter 5 MASP	***RPO:** Future residential development in the Dublin Metropolitan Area shall follow a clear sequential approach, with a primary focus on the consolidation of Dublin and suburbs, supported by the development of Key Metropolitan Towns in a sequential manner as set out in the Metropolitan Area Strategic Plan (MASP) and in line with the overall Settlement Strategy for the RSES. Identification of suitable residential development sites shall be supported by a quality site selection process that addresses environmental concerns.*
Chapter 6 Economy and Employment	***RPO** - Local Authorities shall have regard to environmental and sustainability considerations for meeting sustainable development targets and climate action commitments, in accordance with the National Adaptation Framework. In order to recognise the potential for impacts on the environment, Local Authorities shall address the proper site/route selection of any new development and examine environmental constraints including but not limited to biodiversity, flooding, landscape, cultural heritage, material assets, including the capacity of services to serve any new development.*
Chapter 7 Environment	*Local authority Development Plan and Local Area Plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species.* ***RPO:** Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and*

	Habitats Directives and Local Authority Development Plans. ***RPO:*** *EMRA shall, in conjunction with local authorities in the Region, identify Strategic Energy Zones as areas suitable for larger energy generating projects, the role of community and micro energy production in urban and rural settings and the potential for renewable energy within industrial areas.* *The Strategic Energy Zones for the region will ensure all environmental constraints are addressed in the analysis. A regional landscape strategy should be developed to support delivery of projects within the Strategic Energy Zones.*
Chapter 8 Connectivity	*EMRA supports the undertaking of feasibility studies to determine the carrying capacity of ports in relation to potential for likely significant effects on associated European sites including SPAs and SACs.* *Investment priorities for cycleways Feasibility and route selection studies for cycleways shall identify and subsequently avoid high sensitivity feeding or nesting points for birds and other sensitive fauna.* *Proposals for infrastructure investment should clearly demonstrate their consistency with spatial planning objectives, at regional and national level. Such proposals will be subject to environmental assessment and feasibility where assessment has not already taken place.* ***RPO:*** *The RSES supports delivery of the rail projects set out in Table 8.2, subject to the outcome of appropriate environmental assessment and the planning process;* ***RPO:*** *The RSES supports delivery of the bus projects set out in Table 8.3 subject to the outcome of appropriate environmental assessment and the planning process.* ***RPO*** *- The RSES supports appraisal and or delivery of the road projects set out in Table 8.4 subject to the outcome of appropriate environmental assessment and the planning process.* ***RPO****: The draft RSES supports delivery of the strategic park and ride projects set out in Table 8.5 subject to the outcome of appropriate environmental assessment and the outcome of the planning process.*
Chapter 10 Infrastructure	***RPO:*** *EMRA supports the delivery of the strategic water services projects set out in Table 10.1, subject to appropriate environmental assessment and the planning process.* ***RPO:*** *EMRA supports the delivery of the waste water infrastructure set out in Table 10.2, subject to appropriate environmental assessment and the planning process.* ***RPO:*** *Local Authorities shall take opportunities to enhance biodiversity and amenities and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management* *The following guiding principles shall be incorporated into Development plans and LAPs: take opportunities to enhance biodiversity and amenity and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned. Plans and projects that have the potential to negatively impact on* *Natura 2000 sites should be subject to the requirements of the Habitats Directive.* *Local Authority Development Plans shall facilitate the provision of energy networks in principle based on the following guiding principles and considerations: the design is such that it will achieve least environmental impact;* ***RPO:*** *Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy including the delivery of the*

	necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner subject to appropriate environmental assessment and the planning process. ***RPO:** Support EirGrid's Implementation Plan 2017 – 2022 and Transmission Development Plan (TDP) 2016 and any subsequent plans prepared during the lifetime of the RSES that facilitate the timely delivery of major investment projects subject to appropriate environmental assessment and the outcome of the planning process*
Chapter 11 **All Island Cohesion**	*In the context of ongoing North-South cooperation across a wide range of policy areas, there are three key areas of practical co-operation between relevant Departments and local authorities in Ireland and* *Northern Ireland that will both support and be supported by the implementation of both the NPF and the RSES. These relate to economic development, investment in infrastructure and environmental management.*

7.2 STRATEGIC VISION (CHAPTER 2 OF RSES)

The draft RSES sets out 16 Regional Strategic Outcomes (RSOs), which underpin the vision for the region and are intended to align with international, EU and national policy and set the framework for City and County Development Plans.

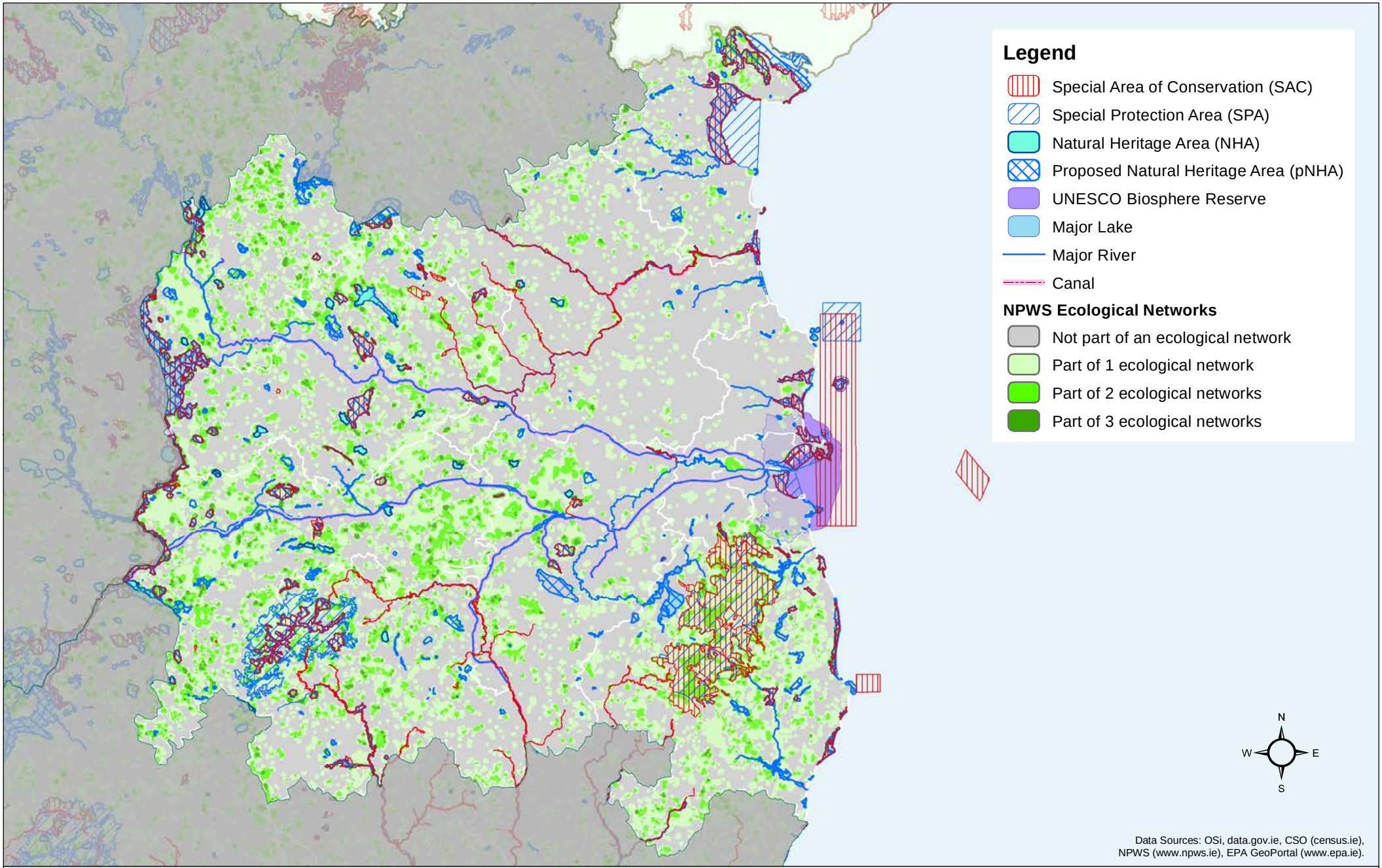
Regional Strategic Outcomes

The 16 Regional Strategic Outcomes (RSO), as presented in the Eastern and Midlands RSES have been developed to align, to a degree with the National Strategic Outcomes (NSO) from the recently published NPF (May 2018). Broadly speaking the RSO's point to a prioritisation of compact growth with a view to developing healthy attractive places for communities; climate action grounded in sustainable development and the circular economy; and economic opportunity which enhances both inter-national and intra-national connectivity. The RSO are broadly focussed on sustainable development however it is acknowledged that the expression of these proposed outcomes will be through the regional policy objectives in Chapters 3-11 of the RSES.

Biodiversity has been integrated directly through RSO_10 and RSO_11. RSO_10 references natural assets such as bogs, peatlands and wetland and the role they can play in ecosystem services in the region. RSO_11 promotes the conservation and enhancement of our protected habitats and species in the broad sense but does not address the Natura 2000 sites within and connected to the region which could be impacted by increased population growth pressure from recreation, water and waste water, transport links etc. and economic growth pressures from land use change, construction, emissions to air and water etc.. A specific RSO to avoid adverse effects on the integrity of European sites / Natura 2000 network and contribute positively to achieving their conservation objectives should be included in the RSO's. Furthermore, recognition of the importance of regional and local biodiversity which may not be protected but plays a supporting role in the overall wellbeing of the natural environment should be recognised. Article 10 of the Habitats Directive refers to features of the landscape outside designated sites which are of importance for wild flora and fauna, as follows:

> *Member States shall endeavour, where they consider it necessary, in their land-use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild fauna and flora.*
>
> *Such features are those which , by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration,*

Regional Strategic Outcomes
dispersal and genetic exchange of wild species. **Figure 7-1** below presents the Natura 2000 sites within the EMR overlaid with the ecological resources map from NPWS to better illustrate the potential for enhancement of linkages across the region. This could act as a blue print for the region to build up a "live" ecological resource map of the region.
Mitigation Measures and Recommendations: ▪ An explicit RSO should be included to protect and manage the Natura 2000 network. ▪ The requirements of Article 10 of the Habitats Directive are not specifically considered under the AA process (except in so far as they support a qualifying feature) but it is recommended that the EMRA includes a specific RSO which addresses the ensures that ecological connectivity within the Plan area is maintained or improved, which will in turn improve the coherence of the Natura 2000 network. ▪ Develop an ecological resource map for the region.



Regional Spatial & Economic Strategies SEA, AA & RFRA

File Ref: MDR1402Arc0008F01

Figure 7-1 - Biodiversity & Natural Heritage Resources - Eastern & Midland Region

RPS

7.3 GROWTH AND SETTLEMENT STRATEGY (CHAPTER 3 AND 4 OF RSES)

The growth and settlement strategy for the EMR includes two tiers in addition to the Dublin Metropolitan Area. The first tier includes 3 Regional Growth Centres; the second tier includes 12 Key Growth Settlements. The settlements chosen as part of the Growth Strategy comprise the following:

- **Dublin City and Suburbs**
- **Regional Growth Centres:** Athlone, Drogheda and Dundalk;
- **Key Growth Settlements:** Swords, Maynooth, Bray [Metropolitan Area]; Navan, Naas, Wicklow/ Rathnew [Hinterland Area]; and Longford, Mullingar, Tullamore, Portlaoise, Carlow (Graiguecullen) [Outer Region].

7.3.1 Land Use Planning and Biodiversity

A view of European Sites as static features which require protection from development first and foremost has historically led to conflicts between developers and nature conservationists with the stand-off resulting in *wins and losses* for both sides. Effective spatial planning can instead act as a first line of defence for maintaining the integrity of the Natura 2000 network in Ireland and as a consequence protect biodiversity.

A spatial planning view that sees nature as part of a wider landscape and seeks to integrate and enhance biodiversity is likely to result in better outcomes for all stakeholders. Examples of spatial planning led initiatives which seek to integrate biodiversity are evident in Ireland and provide evidence base and lessons learned for a more national approach. Some local authorities, for example, have developed Green Infrastructure networks to support, integrate and enhance significant European Sites with development areas. This includes strategies for integration of networks of natural habitat/biodiversity locations, parkland for low intensity recreational uses, heritage features, green routes, surface water and flood risk management with development areas. The approach does not pit one sector against another but instead sees the interconnectedness between different elements of a spatial plan. By recognising this early in the plan making process, strategies can be developed which plan for integration rather than react to conflict.

A further challenge for spatial planners is to understand and plan for a future with climate change, where adaptation and mitigation will be required to provide resilience not only for citizens but also for habitats and species. Global warming and climate change are recognised threats to biodiversity, and hence to European Sites and pose complex problems for planning and particularly nature conservation policy and practice. In 2007, the EPA published a study investigating the impacts of climate change on the nature conservation resources of Ireland, through the use of ecological modelling (Coll *et al*., 2012). The results of this study suggested that the habitats most vulnerable to the impacts of climate change in Ireland are:

- Upland habitats (siliceous and calcareous scree, siliceous and calcareous rocky slopes, alpine and subalpine heath);
- Peatlands (raised bog, blanket bog); and
- Coastal habitats (fixed dunes, etc.).

The report concluded that:

It is projected that many species in Ireland will experience significant changes to their ranges under future climate scenarios. Species with disjunct and narrow distributions are projected to experience the largest range changes, contracting and expanding, respectively.

The key messages from the research indicate that we are already seeing changes in natural systems in Ireland and these are likely to continue, accelerating in scope and scale into the future. This scope and scale will continue into the future if greenhouse gas emissions continue unabated or increase. GHG emissions in Ireland originate from many sources but transport is one of the highest emitting sectors. The future transport needs for Ireland must therefore align with national climate adaptation and mitigation objectives and to do this smarter travel policies must be fully supported by smarter land use planning objectives which connect public transport with higher density housing in cities while also maximising opportunities to develop more public transport options for larger and smaller towns around Ireland.

In 2017, the European Commission published a study into Natura 2000 and spatial planning. The study acknowledged the challenges associated with incorporating Natura 2000 in spatial planning but also acknowledged the important role it has in protecting and managing Natura 2000 areas. Box 1 reproduces the elements which were reported in the study as being required at the Member State level.

BOX 1: Towards an Integrated Spatial-planning Approach for Natura 2000 [From EC Report on Natura 2000 and Spatial Planning, 2017].

- Natura 2000 needs to be an integral part of long-term strategies for spatial planning and territorial development. These strategies should address the relationship between sectoral developments and the need for improving and maintaining the functional connectivity of Natura 2000 areas;
- The spatial-planning systems of the Member States need to be further enhanced with regard to the implementation of the Nature Directives. Natura 2000 provisions should be more explicitly embedded as a priority objective within long-term spatial plans (e.g. 5-10 years) at regional and local level;
- The preparation of spatial plans and projects for specific sectoral developments needs to be based on ecological principles and knowledge. These plans should therefore ideally be developed by interdisciplinary teams of experts;
- SEA, EIA and appropriate assessment instruments are key instruments for ensuring knowledge-based prevention, mitigation and compensation of sector-specific impacts on Natura 2000 areas. These instruments need to be further enhanced with specific ecological knowledge and assessment criteria, for specific sectoral developments (e.g. sectoral guidelines);
- Early stakeholder participation and consultation in the spatial-planning process is a key factor for ensuring the quality and legitimacy of, and public support for spatial plans;
- The use of expert-based tools such as new GIS technologies can be effective in integrating Natura 2000 issues in the spatial planning process.

7.3.2 Dublin City and Suburb

An outline Metropolitan Area Strategic Plan (MASP) has been developed covering Dublin City and suburbs. See MASP assessment in **Section 7.4**. [Note, this includes the Key Growth Centres of Swords, Maynooth and Bray however they are dealt with here].

7.3.3 Regional Growth Centres

Athlone

Key Constraints:

- Special Area of Conservation (SAC): Lough Ree; Crosswood Bog SAC; Cairn Bog SAC
- Special Protection Area (SPA): Lough Ree; Middle Shannon Callows
- Natural Heritage Area (NHA): Carrickynaghtan Bog; Clonydonnin Bog
- Proposed Natural Heritage Area (pNHA): River Shannon Callows; Lough Ree; Crosswood Bog; Waterstown Lake; Castlesampson Esker
- Long-established Woodland (not ancient): Meehan Wood; Carnpark Woods
- Annex I Habitats: multiple present outside/adjacent to CSO boundary (not assessed by NPWS)
- Birdwatch Sensitivity: Highest
- Contribution to potential ecological networks
- Terrestrial biodiversity: medium-high
- Woodland Habitat: Alluvial forest - Wet willow-alder-ash woodland
- 4 x Discharge licenses
- Quarry & pits: multiple including: Rooskagh; Athlone; Cornafulla; Eskerbeg
- 3 x landfill sites
- Licensed waste facility: Ballydonagh Landfill
- Aquifer vulnerability: Moderate-High
- Wetlands: inland marshes
- Landscape Character Areas: overlapping Roscommon side of Athlone, High Sensitivity (Lower Lough Ree and Athlone Environs)
- Water Framework Directive (WFD) Lake 2010-2015 Ecological Status and Risk: Lough Ree – Moderate Status, At Risk
- WFD River 2010-2015 Ecological Status and Risk: River Shannon – Poor Status, At Risk,
- Wastewater Treatment Plant (WWTP): Athlone; Plant Compliance: Pass; Design Capacity: 30,000 population equivalents [PE] (2016 EPA), 36,000 (by 2021, Irish Water); Agglomeration Served: 23,274 PE (2016, EPA), 23,422 (2017, Irish Water); Priority Urban Area for Wastewater Improvements (Failing EU Standards)[10]
- WWTP: Monksland; Plant Compliance: Pass; Design Capacity: 14,381 PE; Agglomeration Served: 9,894 PE (2016, EPA), 10,381 (2017, Irish Water); Priority Urban Area for Wastewater Improvements (Failing EU Standards)

Flood Risk Summary:

The spatial growth of Athlone is dominated by the River Shannon and Lough Ree to the north of the

[10] Note: Urban wastewater figures are stated with reference to the current publically-available datasets available from the live EPA Web Mapping Service: https://gis.epa.ie/EPAMaps/SewageTreatment. The latest WWTP compliance year is for 2014 (EPA).
Further, Irish Water have provided EMRA with more recent figures for current and future capacity to 2021 and PE load figures for 2017; this data is also referenced where available.

Athlone

town. The lands to the south of the town are dramatically impacted by extreme flooding from the River Shannon. This influences the town to grown spatially to the east and west which is already prevalent from an aerial view of the town. The principal of avoidance is particularly important along the banks of the Shannon as inappropriate development could potentially put more lives at risk of flooding. Design of the Athlone flood relief scheme is underway with construction of the scheme set to take place in the next two to three years.

The areas within lands zoned future residential and commercial developments identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test applies to applications for future residential and commercial development. Existing residential and mixed use developments at Athlone Town Centre zoned for future regeneration are located within the predicted Flood Zone A. Applications for major development within these areas required a site specific flood risk assessment to ensure no increase in flood risk to the development and surrounding areas. The Justification Test applies to application for major development in areas of flood risk. The CFRAM MRFS flood extents show an increase in predicted flood extents within the town. Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines.

Assessment:

In consideration of the above, the development of Athlone as a regional growth center has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss, destruction and / or disturbance as a result of the growth ambition;
- Species disturbance;
- Decreased water quality as a result of the growth ambition. It is noted that while both wastewater treatment plants are serving agglomeration within their design capacity, both are noted as being on the EPA's list of Priority Urban Areas. The River Shannon passing through Athlone receives the primary discharge from the Athlone plant and the river is currently at poor ecological status. Priority Urban Areas for wastewater treatment require improvements to the plant and/or network in order to resolve environmental priorities;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The promotion of enterprise expansion through enabling employment opportunities and expanding the economic base has potential for AESI as a result of loss of greenfield to development, loss of/disturbance to habitats and species, potential loss of floodplain, alterations to landscape character or disturbance to supporting features. Supporting the regeneration of sites is broadly positive where regeneration sites provides the opportunity to manage uncontrolled run-off and/ or contamination issues and generally improve the quality of the receiving environment. There are potential negative where regeneration or infill development results in emissions to water or the generation of contaminated material from brownfield sites or gives rise to spread of IAS..

RPOs which promote Athlone as an amenity and tourist destination will have both positive and negative impacts for European sites. Some tourism activities, particularly those that promote water-based activities, may give rise to indirect long-term negative impacts particularly in the context of the QI for Lough Ree and the Shannon. For instance, increasing the amenity potential of the River Shannon and Lough Ree waterways may cause and increase pollution emissions to these waters from boating. Invasive alien species have been recorded in the Lough Ree e.g. the zebra mussel, which can be spread by human activities. IAS are a significant threat to the health of the European site.

The provision of cycleways is generally positive in reducing potential air pollution and curbing GHG emissions, however the Lough Ree SPA and Middle Shannon Callows SPA are located directly

Athlone
adjacent to the north and south of Athlone town boundary, and there are potential negative impacts from disturbance to birds in these European sites as a result of increased visitor pressure and prvision of supporting amenities and infrastrcuture. Population growth within Athlone will result in increased demand on water supply and therefore there is potential for Increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes. There is also potential for in-combination impacts with other regional or key growth settlements, in the form of multiple pressure points on interrelated European Sites.
Mitigation Measures: The Joint Area Action Plans should explicitly consider potential for impact pathways in relation to European sites and the potential for ex-situ impacts. Action plans will ensure no adverse effects on the integrity of any European site as a key objective. Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Drogheda
Key Constraints: ▪ SAC – River Boyne & River Blackwater, Boyne Coast and Estuary ▪ SPA – Boyne Estuary ▪ pNHA – Boyne Coast and Estuary ▪ Ancient woodland ▪ Annex 1 habitats: Tidal mudflats, estuaries, residual alluvial forests ▪ Coastal habitats – saltmarshes ▪ Contributions to ecological networks ▪ Forestry ▪ Terrestrial biodiversity: medium - high ▪ Nutrient Sensitive Area: Boyne Estuary ▪ UNESCO World Heritage Site (Brú na Bóinne) – eastern part of buffer zone directly adjacent to M1 ▪ Riparian woodland

Drogheda

- 5 x Quarries & pits
- Aquifer vulnerability: generally low; some areas high-extreme
- Landscape Character Areas: High (Boyne & Mattock Valley) to Medium (Coastal Plains) Sensitivity
- WFD River 2010-2015 Ecological Status and Risk: River Tullyeskar and Stagrennan – Unassigned Status, At Review
- WWTP: Drogheda; Plant Compliance: Pass; Design Capacity: 101,600; Agglomeration Served: 68,260 (2016 EPA), 70,283 (2017 Irish Water); Priority Urban Area for Wastewater Improvements (Failing EU Standards)
- WWTP: Tullyallen Sewerage Scheme; Plant Compliance: Fail; Design Capacity: 1,800 PE; Agglomeration Served: 1,593 PE (Note: not a Priority Area)

Flood Risk Summary:

Drogheda sits at the mouth of the River Boyne discharging into the Irish Sea. There is partial flooding to the north and south of the town and the principle of avoidance should be implemented to avoid flood risk. Fluvial and tidal flooding from the banks of the River Boyne affects the quays of the town as well as partially propagating inland in areas between St. Marys Bridge and St. Dominick's Bridge for higher return periods. Development in this area should follow the sequential approach and appropriate land use types adopted.

The areas within lands zoned for future residential and employment hubs identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test will apply to applications within these areas.

Existing residential and mixed use developments at Drogheda Town Centre zoned for future regeneration located within the predicted Flood Zone A & B require flood risk management to ensure flood risk is mitigated and does not have an adverse impact elsewhere. Applications for major development within these areas required a site specific flood risk assessment to ensure no increase in flood risk to the development and surrounding areas. The Justification Test applies to application for major development in areas of flood risk.

Applications for minor development to these existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Drogheda as a regional growth center has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and or disturbance as a result of the growth ambition.
- Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats;
- Habitat fragmentation, the River Boyne and Blackwater SAC flows through Drogheda whilst downstream the Boyne Estuary SPA and Boyne Coasta and Estuary SAC discharge into the Irish Sea;
- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and

Drogheda

- In-combination impacts with other key growth settlements.

Drogheda is the largest town in Louth, with its functional area extending into County Meath. It is idenitifed as the fastest growing town in the state and is a strategically important commuter town along the Dublin-Belfast Corridor, owing to its location adjent to the border with Norhtern Ireland. There is a healthy equilibrium between resident works and jobs, particularly in respect of the "Louth Pharma Hub".

In summary, the RPO's seek to prioritise compact regeneration of existing town centre in brown field sites along with compact and providing sustainable development. The RPO's also seek to promote cross border interactions and growth potential of Drogheda, Dundalk Newry whilst enhancing Drogheda as a strategic employment zone. Key namd projects with potential to impact upon European sites and their qualifying features include the regeneration of Dundalk Port/Harbour and the proposed Flood relief Scheme.

The River Boyne and River Blackwater SAC, SPA and pNHA traverse through the centre of Drogheda, connecting the Boyne Coast and Estuary SAC, SPA and pNHA to the Irish Sea directly to the east of the settlement. These areas support a rich coastal biodiversity with several Annex I habitats, including the estuary, mudflats and variety of dune systems. As such, the region as a high number of legally protected habitats and species and is within several ecological corridor networks, in addition to designated shellfish areas located at the coast to the north-east and south-east. Terrestrial biodiversity potential is medium to high across the area, associated with ancient woodland located to the east and west of Drogheda, and scattered small forest holdings throughout the area. The Tullyeskar River and Stagrennan River which flows through Drogheda from the north and south respectively has unassigned ecological status; however the River Boyne has been classified as good status and Not at Risk under the current cycle of the WFD. Both flow into the River Boyne and River Blackwater SAC/SPA as it transitions into the Boyne estuary which surrounded by wetlands before meeting the Irish Sea. The Boyne Estuary is at Moderate Ecological Status and is At Risk. The Northwestern Irish Sea coastal water body is at Good status. Flood risk is generally well contained within the settlement boundaries, this extends across flood plains located immediately east of Drogheda.

Wastewater is treated in the Drogheda waste water facility currently catering for 68,620 PE, it is within plant design capacity of 101,600 and has passed compliance standards. However, it is noted that the Boyne Estuary, into which both plants' effluent is discharged, is at Moderate WFD status and is At Risk of failing ot achieve WFD objectives. The Boyne Estuary is also a designated Nutrient Sensitive Area and as such is sensitive to further nutrient inputs. Given the sensitivity of the receiving environment, the Drogheda plant is listed by the EPA as a Priority Urban Area for Wastewater Improvements for failing EU standards. The plant is noted to be non-compliant with more stringent treatment requirements i.e. the discharged effluent met effluent quality standards however, as the treatment provided is at secondary level only (biological treatment), this does not meet the Urban Wastewater Treatment Directive's requirement for a plant of this size.

Improvements in access and relocation opportunities at the economically important Drogheda Port could adversely affect the integrity of European sites at the mouth of the Boyne River and the estuary through development and dredging etc. A masterplan for the port is currently being prepared for 2020-2050 which is noted to be at the Issues Paper/ consultation phase. There are also potential negative impacts due to increased noise and air emissions due to expansion and relocation activities. There are potentially negative impacts as increased port activities and expansion may effect change to coastal processes and also QI habitats and QI/SCI species. Port growth may result in increased shipping and the need for dredging. Dredging can alter sediment regimes and also result in release of contamonation. Increased port activities and increased shipping volumes may have negative impacts for seabird and mammal populations along the east coast and offshore, as well as in-situ seafloor habitats. The River Boyne and River Blackwater Estuary SAC and SPA pass through the town, and there are a number of designated sites downstream at the coast with direct hydrological connectivity i.e. Boyne Coast and Estuary SAC, and Boyne Estuary SPA. Water quality

Drogheda

has the potential to be negatively impacted by discharges/emissions from port activities to the water column and marine sediments. There is potential for short- to long-term negative impacts from contamination issues or disturbance to potentially contaminated soils and marine sediments associated with construction and dredging activities. The expansion of or relocation of activities associated with ports and marinas such as identified for Drogheda will require a feasibility study to be undertaken in the first instance and recognition that in the absence of coastal zone management that there is potential negative impacts to European sites in terms of landuse changes and resultant environmental effects in terms loss or degradation of habitat, species disturbance and impacts to soils, water or air including any legacy of contaminated soils.

Fluvial and tidal flooding from the banks of the River Boyne affects the quays of the town as well as partially propagating inland in areas between St. Marys Bridge and St. Dominick's Bridge for higher return periods. Further develpoemnt or regeneration in these low-lying areas could result in impacts to or contamination of the River Boyne as well as potential disturbance to or degradation of habitat for qualifiying birds and mammals such as Otter as well as downstream Annex I habitats.

Drogheda is integrally associated with the Dublin Belfast Corridor as well as being proximal to Dundalk. There is potential for in-combination impacts with other MASP in the form of multiple pressure points such as delivery of transport infrastructure and housing development on interrelated European sites.

Mitigation:

Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures).

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Dundalk

Key Constraints:

- SAC & SPA: Dundalk Bay; Carlingford Shore SAC;
- RAMSAR site – Dundalk Bay
- pNHA: Dundalk Bay; Drumcah, Toprass & Cortial Loughs; Carlingford Mountain
- Ancient Woodland: Tipping hill
- Annex I habitats: Estuaries; Large shallow inlets & bays; Transition mires
- Birdwatch sensitivity: Low
- Coastal habitats: saltmarshes
- Contribution to ecological networks – low; med-high NE of town

Dundalk

- Forestry: mixed
- Terrestrial biodiversity: medium
- Quarries: Loughanmore Pit
- Wind farm: Dundalk IT Wind Turbine
- 3 x Discharge licenses
- 4 x IPPC licenses
- 2 x licensed waste facility
- Port: commercial port
- Landscape Character Area: Lower Faughart, Castletown & Flurry River Basins (Low Sensitivity – north of Castletown Road); Muirhevna Plain (Medium Sensitivity – south of Castletown Road)
- Aquifer vulnerability: Moderate-High
- Wetland: intertidal flats
- WFD River 2010-2015 Ecological Status and Risk: Castletown River – Moderate Status, At Risk; Ramparts River – Unassigned Status, at Review; Raskeagh – Unassigned Status, at Review; Haggardstown – Unassigned Status, Not at Risk; Fane – Unassigned Status, at Review
- WFD Coastal & transitional water bodies status: mod-good
- WFD Coastal & transitional water bodies at risk: Castletown Estuary, Inner Dundalk Bay – At Risk; Ballymascanlan Estuary – at Review; Outer Dundalk Bay Coastal Water Body – at Review
- Nutrient Sensitive Area: lower reaches of the Castletown River; Castletown Estuary; Inner Dundalk Bay coastal water body
- WWTP: Dundalk; Plant Compliance: Pass (secondary treatment only); Design Capacity: 179,107 PE (EPA), 120,000 PE by 2021 (Irish Water); Agglomeration Served: 77,838 PE (2016 EPA), 93,261 PE (2017 Irish Water); Priority Urban Area for Wastewater Improvements (Failing more stringent EU Standards; primary pressure on a river/lake)
- WWTP: Blackrock; Plant Compliance: Pass (secondary treatment only); Design Capacity: 6,000 PE; Agglomeration served: 7,262 PE (operating over capacity); Priority Urban Area for Wastewater Improvements (primary pressure on a river/lake)

Flood Risk Summary:

The Mourne Mountains to the north of the Dundalk and hilly terrain to the west with the Irish Sea to the east has seen most development in Dundalk grow southwards towards the village of Blackrock. The M1 circumnavigates the town which will consolidate growth of the development to the south of the town centre.

The town centre is susceptible to fluvial flooding along the Castletown River but also from tidal flooding propagating inland from the Irish Sea via Dundalk Estuary. The extent of the CFRAM mapping would indicate that the growth of Dundalk will largely be comprised of infill development between the boundary of the existing town and the M1. The areas within lands zoned future residential and employment hubs identified within the predicted Flood Zone A & B require site specific flood risk assessments to no ensure no adverse flood risk impacts. The Justification Test applies to applications within these areas.

Existing residential and mixed use developments at Dundalk Town Centre zoned for future regeneration located within the predicted Flood Zone A & B require flood risk management to ensure flood risk is mitigated and does not have an adverse impact elsewhere. Applications for major development within these areas required a site specific flood risk assessment to ensure no increase in flood risk to the development and surrounding areas. The Justification Test applies to

Dundalk

application for major development in areas of flood risk.

Dundalk has been identified as being particularly susceptible to flooding from climate change scenarios. Future land zone planning for the town should incorporate this into their FRA and development policies.

Assessment:

In consideration of the above, the development of Dundalk as a regional growth centre has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and or disturbance as a result of the proposed growth ambition, particularly around the Harbour and Port area and recreational activities that might arise.
- Species disturbance and/or displacement from development proposal.
- Decreased water quality as a result of the growth ambition. It is noted that the town's wastewater treatment plant is operating within its design capacity, however, it is listed as being on the EPA's list of Priority Urban Areas. Priority urban areas for wastewater treatment require improvements to the plant and/or network in order to resolve environmental priorities.
- Increased demand on water supply; and
- In-combination impacts with other coastal key growth settlements.

The development of Dundalk and its port have been influenced largely owing to its proximity to the Castletown River which flows into Dundalk estuary. As such a number of the RPO's are focused on the regeneration within the town centre, urban expansion within the Mount Avenue master plan lands and repurposing the Port areas as a water-based urban quarter. Regeneration is generally considered positive as it reduces greenfield loss and potential impacts on species that might use this habitat. However, there are potential negative impacts associated with regeneration or infill development results, particularly in respect of in emissions to water including uncontrolled runoff or the generation of contaminated material from brownfield sites or which gives rise to the spread of IAS.

Waterbodies draining the Inner Dundalk Bay are all nutrient sensitive and are at risk of not meeting their WFD objectives. There are vulnerabilities in respect of flooding along th Castletown River, notably in close proximity to the railway line, and in Toberona and Saltown. Waste water is treated in the Dundalk waste water facility currently catering for 77,838 PE in 2016 and 93,723 as of 2017, which is within its design capacity of 179,107 PE, or 120,000 PE as reported by Irish Water. While the effluent has passed compliance and appears to have sufficient headroom for the coming years, given the sensitivity of the receiving environment the Dundalk plant is listed by the EPA as a Priority Urban Area for failing more stringent EU standards and for being listed as a primary pressure on a receiving water body (Castletown Estuary is at Moderate WFD status) i.e. while the discharged effluent met effluent quality standards, as the treatment provided is at secondary level only (biological treatment), this does not meet the Urban Wastewater Treatment Directive's requirement for a plant of this size. The Blackrock agglomeration is noted to be directly south of and adjacent to the Dundalk settlement boundary. The plant here is operating over its design capacity, despite receiving a Pass for compliance, but is listed by the EPA as a Priority Urban Area for being the primary pressure on a water body. The Fane Estuary has Unassigned status but is considered to be Not at Risk; the Inner Dundalk Bay coastal water body however is directly downstream of the effluent emission point and is at Moderate status and At Risk of not meeting WFD objectives. The growth ambition for Dundalk will therefore have negative short to long-term impacts as a result of the sensitivity of the receiving environment to wastewater discharges.

Another RPO is concerned with Enhancing the potential for economic regeneration at Dundalk Port/Harbour Area. The ecological sensitivities of the Port must be considered as it is adjacent to overlapping designated sites. Negative Impacts such as construction noise and vibration as well as. As a result of the redevelopment and/or expansion of the port along with operational impacts

Dundalk
leading to increased activity and the potential need for dredging which could mobilise hazardous or contaminated material, there is potential for Likely Significant Effect and adversely affect upon the integrity of the European sites in terms of changes to coastal processes including loss of floodplain and QI habitats and SCI species as well as the spread of IAS. Any such enhancement will be subject to feasibility study and appropriate coastal zone management. In the absence of national ICZM, what is defined as appropriate. The promotion of cross-border interactions to realise growth potential and enhance the towns strategic employment role within the Dublin-Belfast Economic corridor although economically positive, nonetheless has the potential to adversely affect upon the integrity of the European sites as result of greenfield loss, loss and/or disturbance to habitats and species, alterations to landscape character, increase on traffic volumes and disturbance to supporting features. The cross border interactions include the connectivity to the wider European sites. A final RPO is aimed at promoting Dundalk IT as a centre of excellence for education. No likely significant effect is anticipated as it seeks merely to support an established facility.
Mitigation Measures: The Dundalk wastewater treatment plant is operating within its design capacity and is considered to have sufficient headroom. The plant, however, is listed as a Priority Urban Area and is failing more stringent treatment standards. As such, population growth needs to be phased alongside improvements to wastewater treatment. The expansion of activities associated with ports and marinas such as identified for Dundalk will require a feasibility study to be undertaken in the first instance and recognition that in the absence of coastal zone management, there is potential negative impacts to European sites. An Urban Area Action Plan, which is cognisant of transboundary Local Government Authorities in Northern Ireland (Newry, Mourne and Down) should explicitly consider potential for impact pathways in relation to European sites and the potential *ex-situ* impacts. Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. The areas within lands zoned future residential and employment hubs identified within the predicted Flood Zone A & B require site specific flood risk assessments to no ensure no adverse flood risk impacts. The Justification Test applies to applications within these areas. A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

7.3.4 Key Growth Towns

7.3.4.1 Metropolitan Area

Swords

Key Constraints:

- SAC: Malahide Estuary
- SPA: Broadmeadow/Swords Estuary
- RAMSAR: Broadmeadow Estuary
- pNHA: Feltrim Hill; Malahide Estuary
- Annex I habitats: estuaries; tidal mudflats and sandflats; salt meadows; white dunes; grey dunes
- Coastal habitats: saltmarshes
- Contribution to ecological networks: low
- Forestry
- Landscape Character Area: Airport & Swords; Rolling Hills with Tree Belts; Low-Lying Agricultural (Medium Sensitivity); Estuary (High Sensitivity)
- Terrestrial biodiversity: medium - high
- Aquifer vulnerability: moderate to high
- Nutrient Sensitive Area: Broadmeadow Estuary
- WFD River & Coastal Status: R. Ward, R. Broadmeadow – Poor; Broadmeadow Estuary, Malahide Bay - Moderate
- WFD Water Body Risk: All At Risk
- WWTP: Swords; Plant Compliance: Pass; Design Capacity: 60,000 PE (EPA), 90,000 by 2021 (Irish Water); Agglomeration Served: 54,937 PE (2016 EPA), 56,920 PE (2017 EPA)

Flood Risk Summary:

Greenfield lands at Lissenhall were identified as areas for a future strategic study to promote the development of a planned sustainable mixed-use urban development area. The flood extents generated for Lissenhall as part of the FEMFRAM study show flooding in parts of these lands. A further detailed FRA during the development of a LAP for Lissenhall lands is required by the Fingal CDP to assign an appropriate land uses.

The Balheary area in the north of Swords town is already heavily industrialised with development and lies within a significant flood extent for Flood Zone A and B. This area was also identified as being subject to increased flood extent under climate change scenarios due to its proximity to the confluence of the Ward and Broadmeadow Rivers. Any future expansion of the industrial/ commercial development lands must be reviewed in terms of flood risk and an appropriately detailed FRA submitted with any planning application. Highly vulnerable development should be avoided in the Flood Zones A and B with less vulnerable development subject to a detailed FRA in Flood Zone A.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. The worst affected area is the confluence of the Ward and Broadmeadow Rivers with for the MRFS and HEFS respectively.

FRAs should address the site layout with respect to vulnerability of the proposed development type,

finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Swords as a key town has potential for adverse effects on European sites along a number of pathways which include:

- Habitat loss and or disturbance as a result of the growth ambition;
- Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats such as the watercourses that flow through Swords and connect it to European sites of Broadmeadow/Swords estuary;
- Habitat fragmentation, the Ward and Broadmeadow watercourses are directly linked to the proximally linked European sites;
- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements and developments associated with the wider MASP area.

Swords is the county town for Fingal and is a town located near to and north of Dublin City, and is the closet town to Dublin Airport. As one of the fastest growing towns in the state, Swords is considered socially and economically important to the wider MASP area including the Dublin airport and the logistics associated with its operation. The town is situated around two watercourses, the Ward and Broadmeadow, both of which provide direct connectivity to the proximal Malahide Estuary SAC and Broadmeadow Estuary SPA. There is a risk of flooding in some areas, some of them in significant flood areas.

There are large residential and commercial developments in and around Swords, and the proposed expansion at a number of key land banks, a number of which are adjacent to the European sites. There is connectivity from all landbanks with European sites via the network of watercourses. The delivery of greenfield development, some of which are within flood plains will limit some development.

Despite the urbanisation of Swords whose Landscape Character assessment is ranked as being of medium sensitivity, the ecological potential of the area is considered moderate to high, particularly owing to its proximity and hydrological connectivity to coastal European sites are Malahide estuary/Broadmeadow Swords estuary. A mosaic of habitats are known from around Swords and the occurrence of important watercourses along which linear greenbelts have been developed as well as old demesne woodland adds to the habitat diversity. Proposed developments will place further pressures on species corridors and could lead to coastal squeeze, particularly as increased recreational pressures from increased residents are considered.

The continued population and economic growth in the Swords area will result in increased demand on water supply. In terms of waste water, the Broadmeadow Estuary is designated as a Nutrient Sensitive Area and as such is sensitive to further nutrient inputs and has little to no assimilative capacity. It is noted that the Swords wastewater treatment plant caters for an agglomeration of 60,000 PE (as of 2016, EPA) with capacity of 90,000 PE currently/by 2021. As the load in 2017 was 56,920 PE (Irish Water), the plant is therefore operating well within capacity. Given the sensitivity of the receiving environment future growth could put pressure on European sites and their qualifying features.

Due to Swords location within the MASP region as well as other key coastal settlement, there is potential for in-combination impacts with key growth settlements as well as the MASP region, in the form of multiple pressure points on coastal European sites.

Mitigation Measures:

Phasing of services and development in terms of growth and settlement is essential to avoid adverse

impacts on the integrity of the Natura 2000 network.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

In considering specific developments for the Swords area, it is important that consideration of the wider MASP objectives, which may not be under the control of the Local Authority the is taken on board, particularly with respect to in-combination impacts.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures).

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Maynooth

Key Constraints:

- SAC: Rye Water Valley/Carton (near the NE settlement boundary)
- pNHA: Royal Canal; Rye Water Valley/Carton (near the NE settlement boundary)
- Contribution to ecological networks – very low/ none
- Forestry: adjacent to NE boundary/ Carton Demesne (long-established, not ancient)
- Terrestrial biodiversity: low
- Landscape Character Area: Northern Lowlands (low sensitivity); South East Lowlands (high sensitivity) – north of the town
- Aquifer vulnerability: moderate to high
- WFD River Status: R. Lyreen, R. Rye Water – both Poor
- WFD River Risk: At Risk
- WWTP: Lower Liffey Valley; Plant Compliance: Pass; Design Capacity: 150,000 PE; Agglomeration Served: 126,000 PE (2016 EPA) 108,248 PE (2017 Irish Water)

Flood Risk Summary:

Flood zones would indicate that Maynooth can expand to the North West and West. It is naturally constrained to the north and south by the motorway and the River Ryewater respectively. Maynooth town centre properties along the banks of the Lyreen river are susceptible to flooding. Zoning in the town centre should take this into consideration and carry out Justification Tests where appropriate.

The areas within lands zoned future residential, educational and commercial developments identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test applies to applications for future residential and commercial development.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. An assessment of climate and catchment changes shows Maynooth to be moderately vulnerable to the increases as modelled in the mid-range future scenario and highly vulnerable to the increases as modelled in the high end future scenarios. Adaptation of the proposed measure would require significant additional length and height (by circa 0.5m) of hard defences to maintain the level of protection as provided by the

proposed measure. Future monitoring, and subsequent implementation of other measures such as Natural Flood Risk Management Measures, may be adopted to assist in identifying and off-setting the impacts of climate change.

Applications for minor development to these existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Maynooth as a Key Town that has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and or disturbance as a result of the growth ambition;
- Species disturbance through increased resident and visiting population in particular in the vicinity of sensitive species and habitats;
- Habitat fragmentation - the Royal Canal pNHA is located to the south of Maynooth alongside the railway line. The Rye Water Valley/Carton SAC is located to the north east of the town;
- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The university town of Maynooth is also a commuter settlement serving the greater Dublin area. Its ecological biodiversity is ranked as low, despite the presence of the Royal canal and two watercourses the Lyreen and Ryewater/Catron, the second of which is a European site supporting ground water dependant habitats and species.

There is reliance of vehicular transport although support for commuter travel has been identified as being important. Support for transport such as the DART expansion is suggested along existing routes, no definitive routings have been finalised. Thus loss or fragmentation of habitats particularly in greenfield sites cannot be ruled out. Through supporting improvements in transport infrastructure, it is intended that it would potentially enable further growth in Maynooth. This could also result in loss of habitat as well as fragmentation to or disturbance of species corridors.

Population growth within Maynooth could also increase demand for water supply and therefore increase abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes should the phasing of services not be aligned with growth and settlement.

Both of the rivers flowing through the town, the Lyreen and Rye Water, are at Poor WFD status and At Risk of not meeting WFD objectives. Wastewater is treated as part of the Lower Liffey Valley Regional Sewerage Scheme, which is currently operating within its design capacity and passing compliance standards. However, as this scheme serves a number of agglomerations, the accumulated growth of several settlements could put pressure on the receiving environment. It is noted that the primary emission point is located in another town, however there is a storm water overflow to the Rye Water, and further population growth in Maynooth, and other towns, could lead to cumulative impacts.

The Rye Water/Carton SAC intersects with the MASP region downstream. There is potential for in-combination impacts with other Key Towns in the form of multiple pressure points on interrelated European sites.

Mitigation Measures:

The primary emission point for the Maynooth wastewater is elsewhere as part of the Lower Liffey Valley Regional Sewerage Scheme. However there is storm water overflow to the Rye water, a river whose WFD status is poor and at risk. Increasing population growth in Maynooth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to cumulative degradation of water quality.

Phasing of services and development in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration in consultation with Irish Water should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures).

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Bray

Key Constraints:

- SAC: Bray Head; Ballyman Glen
- pNHA: Bray Head; Ballyman Glen, Dargle River Valley, Great Sugar Loaf to the W/SW of the town
- Annex I habitats: tidal mudflats; wet heath outside and to SW of the town
- Salmonid River: River Dargle
- Contributes to ecological networks
- Some forestry
- Architectural heritage
- 1 x discharge licence: Starrus EcoHoldings Ltd. in Fassaroe
- Historic mines: Ballycorus (incl. Rathmichael; Barnaderg)
- 3 x IPPC licenses: AO Smith Electric Motors; Alert Packaging; Nypro Ltd.
- 3 x landfill sites: in/near Fassaroe
- Landscape Character Area: Bray Environs Masterplan (Low Sensitivity)
- Aquifer sensitivity: low; some med-high in centre, SE and SW of Bray
- WFD River status: R. Dargle – Poor at M1 crossing/entering Bray; improves to Good downstream and to coast; Dargle Estuary – Unassigned; Killiney Bay coastal water body – High status
- WFD River risk: R. Dargle – At Risk entering Bray, improves to Not at Risk downstream; Dargle Estuary – Review; Killiney Bay – Not at Risk
- WWTP: Shanganagh; Plant Compliance: Not Available (EPA); Design Capacity: 186,000 PE;

Agglomeration Served: 129,011 PE (2017 Irish Water)

Flood Risk Summary:

Flood Zones from the SFRA Bray Development Plan were reviewed as part of the RFRA. Flood extents for Bray are only partially included on floodinfo.ie website due to the ongoing flood defence works. The remaining flood extents for Bray along the river Dargle are currently being updated and will be added to the website when completed. Bray historically has experienced both coastal and fluvial flooding. Beach nourishment in the early 2000s has been extremely effective to protect the seafront area and there is only limited predicted flooding in the MRFS scenario. The main source of fluvial flooding is the River Dargle with some low probability flooding along the Newcourt Stream. Wicklow County Council has already undertaken a comprehensive SFRA and recognises the risk of flooding in low lying areas of the River Dargle valley. Zonings and Justification Tests have been carried out where appropriate. The SFRA should be reviewed following completion of the flood zone mapping recognising the residual to zonings that are defended from the 1% AEP event. Development in Bray town will largely be confined to infill development as it is already well developed and constrained geographically by the hills surrounding it. The main focus of future development will be in the Fassaroe area which is situated on a hill side and is free from any fluvial flooding.

Identification of strategic sites for regeneration to ensure Bray achieves growth targets should be carried out in accordance with the Guidelines specifically circular PL02/2014 (August 2014). The circular specifically addresses regeneration areas and flood risk management of their development. The town centre areas are not at risk from fluvial flooding but an assessment of pluvial flooding should still be undertaken. Any urban regeneration in the defended area of the River Dargle (e.g. Golf Course and Harbour area) should still set minimum finished floor levels above the 1% and 0.1% AEP levels depending on the type of property and its flood risk category.

The areas within lands zoned future residential and commercial developments identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test applies to applications for future residential and commercial development.

Existing residential and mixed use developments adjacent to the River Dargle are zoned within the predicted Flood Zones A and B. The flood relief has been completed but a residual risk of flooding should still be considered for FRAs and planning in this area. Hydraulic modelling for the final flood zones are still being undertaken. Future SFRAs and developments should be take into account the flood zones when completed.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines.

Applications for minor development to these existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the continued development of Bray as a Key Town that has potential for adverse effects on European sites along a number of pathways including:

- Habitat loss and or disturbance as a result of the growth ambition;
- Species disturbance through increased resident, and visiting population, in particular in the vicinity of sensitive species and habitats;
- Habitat fragmentation – Bray head SAC – visitor pressure on upland habitat, alteration to water regime resulting in decrease to ground water dependant habitats at Ballyman Glen SAC to the North East of the town; Changes to mature deciduous wooded areas in

proposed development areas;

- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

Bray is a coastal town in north east Wicklow. The River Dargle effectively separates parts of Bray under the control of Wicklow County Council and Dun Laoghaire-Rathdown County Council. For the most part, Bray is located within the administrative boundary of Wicklow. Given its proximity to Dublin city it is a commuter town and is included within the MASP.

Population growth and development in Bray has largely been constrained, namely in relation to geography of the town as well as a lack of investment in public transport and congestion on the M/N11. The RPO calls aims to enhance the town centre functions and increasing employment opportunities coupled with a westward extension of the town to include improvements to public transport links.

The landscape around Bray is characterised as being of low sensitivity. The terrestrial biodiversity is also considered low to moderate but does contribute to the wider ecological network. However, a number of sites of conservation importance surround the town namely Bray Head SAC upland site overlooking the town and Ballyman Glen SAC (and Knocksink wood further afield) with their groundwater-dependant habitats.

The River Dargle, an important salmonid watercourse is the main river flowing through the town and is currently at Poor status where it flows through Bray and partway through the town, improving to Good status at its downstream section as it flows to the estuary. Parts of Bray are subject to flooding although ongoing flood relief works along the lower main channel of the Dargle River is expected to alleviate much of this problem.

Wastewater for the wider area is currently treated at the Shanganagh plant and is operating well within capacity. Development in the towncentre will largely be confined to infill development as it is already well developed. The main focus of future development will be in the Fassaroe area which is situated on a hill side and is free from any fluvial flooding. The proposed westward extension of the town, linked to the delivery of key infrastructure including Bray-Fassaroe public transport links could negatively impact upon European sites. Given the sensitivity of the receiving environment however, in particular in respect of Ballyman Glen SAC, future growth and development could put pressure on the integrity of its groundwater dependant habitats. Furthermore, the supply of water for proposed LAP lands in close proximity to Bray area e.g. Old Conna and Woodbrook could be reliant on infrastructural improvements to the Vartry reservoir pipeline which would be routed through through Bray area and a new reservoir at Ballyman currently at planning stage.

Bray is integrally associated with the MASP region. There is potential for in-combination impacts with other MASP in the form of multiple pressure points such as delivery of transport infrastructure and housing development on interrelated European sites.

Mitigation Measures:

Phasing of services and development in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration in consultation with Irish Water should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures).

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

7.3.4.2 Hinterland Area

Navan

Key Constraints:

- SAC & SPA: River Boyne and River Blackwater
- NHA: Jamestown Bog
- pNHA: Boyne Woods
- Salmonid River: River Boyne
- Nutrient Sensitive Area: River Boyne (for a distance of 6.5km downstream of the Navan WWTP outfall)
- Contribution to ecological networks
- Forestry
- Terrestrial Biodiversity: Medium-High
- Quarry: Faughan Hill; Slane; Cruicerath; Deerpark
- Windfarm: Burtonstown
- 4 x discharge licenses (Tara Mines; Irish Country Meats; Xratherm Ltd; Adv Environ Services Ltd
- 2 x IPPC Licenses
- 3 x landfill sites
- Aquifer vulnerability: Moderate – high
- WFD River Risk: Blackwater & Boyne – at Risk
- WFD River Status: moderate
- WWTP: Navan; Plant Compliance: Pass; Design Capacity: 50,000 PE; Agglomeration Served: 36,337 PE (2016 EPA), 37,286 PE (2017 Irish Water)

Flood Risk Summary:

Navan town is built on the banks if the River Boyne. The flood risk from the Boyne affects low lying properties within Flood Zones A and B along the Dublin Road. The flood plains of the River Boyne have been zoned as green space and this should be maintained to provide natural flood management for the area. There is additional flood risk in Navan along minor tributaries of the Boyne including the Robinrath, Windtown and Ferganstown streams. These streams have some existing residential and proposed zonings within Flood Zones A and B. Navan can expand to the west and north with limited risk of fluvial flooding. Navan is built on hilly terrain so FRAs should consider potential overland flow as a potential sauce of flooding.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. An assessment of climate and catchment changes shows Navan to be highly vulnerable to the increases as modelled in the mid-range and high end future scenarios. Adaptation of the proposed measure would require significant additional lengths and heights (circa 1m) of hard defences to maintain the level of protection as

Navan
provided by the proposed measure. Future monitoring, and subsequent implementation of other measures such as Natural Flood Risk Management Measures, may be adopted to assist in identifying and off-setting the impacts of climate change. FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.
Assessment: In consideration of the above, the development of Navan as a Key Town has potential for adverse effects on European sites along a number of pathways. These pathways include: ▪ Habitat loss and or disturbance as a result of the growth ambition. ▪ Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats; ▪ Habitat fragmentation, the River Boyne and Blackwater SAC/SPA flows through Navan; ▪ Decreased water quality as a result of the growth ambition; ▪ Increased demand on water supply; ▪ Introduction or spread of invasive species as a result new build and increased activity; and ▪ In-combination impacts with other key growth settlements. The River Boyne and River Blackwater SAC and SPA flows through the middle of Navan and the two rivers combine in Navan. Boyne Wood pNHA is also located immediately downstream of Navan town. These areas support a rich aquatic and terrestrial biodiversity and the River Boyne is also designated a salmonid river. Water quality in these rivers is largely moderate as per WFD classifications and the Blackwater is classified At Risk in Navan while a section of the Boyne is Not At Risk flowing through Navan but At Risk immediately downstream. The Boyne is also considered with nutrient sensitive. Biological assessments indicate these areas are slightly polluted. Navan wastewater treatment plant has passed compliance standards and is currently operating under capacity, with capacity by 2021 remaining at 50,000. There are also 2 IPPC Licenses within the catchment and several discharge licenses registered nearby. Several storm water overflows are noted to discharge to the River Boyne in sections which are Not at Risk of meeting WFD objectives. This section of the Boyne is also a designated Nutrient Sensitive Area under the EPA's Register of Protected Areas, for a distance of 6.5km downstream of the primary discharge outfall of the Navan WWTP. However the primary discharge point is noted to discharge to an At Risk section of the river as it is at Moderate WFD ecological status. Increasing population growth should remain cognisant of the sensitivity of the receiving environment and to ensure that proper planning means that increased wastewater discharges do not contribute to degradation of water quality within the SAC/SPA and pNHA. Construction of linear road infrastructure such as the distributor road located in the vicinity of the River Boyne, has the potential for short to long term direct and indirect negative effects for all environmental receptors as a result of emissions, habitat loss and disturbance of species, deterioration in air quality and noise disturbance. Robust feasibility studies and site/ route selection are the most effective manner to reduce impacts on the environment from such enhancements and the RSES should require these stages are fully delivered before decisions are made. Policy supporting natural amenities and recreational activities such as the Boyne Greenway along the canal can be positive, however by its their linear nature, the river acts as important link and stepping stone for biodiversity and act as habitat refuge for species from urbanised areas.. Species disturbance through increased visitor pressure in particular in the vicinity of sensitive species and habitats such as the Boyne SAC, SPA , pNHA may disturb wildlife such as otter, feeding and nesting

Navan

birds or aid the spread of invasive species. Increased activity within the waterway can potentially lead to water pollution.

Supporting the Navan 2030 Plan and Navan's role as an employment centre are positive, as well as the development of the regional hospital. As with any development there are also potential negative effects where source impact pathways may exist to connected European Sites e.g. emission of pollutants to water, or the generation of contaminated material may give rise to spread of IAS resulting in loss of/ disturbance to species and habitats.

Population growth within Navan could also increase demand for water supply and therefore increase abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes should the phasing of services not be aligned with growth and settlement.

The River Boyne intersects another regional growth centre identified within the RSES i.e. Drogheda. There is potential for in-combination impacts with other growth settlements in the form of multiple pressure points on interrelated European sites.

Mitigation Measures:

The primary emission point for the Navan wastewater treatment plant is noted to discharge to a section of the River Boyne which is at Moderate WFD status and At Risk of not meeting WFD objectives, and is also a designated Nutrient Sensitive River as a result of the wastewater outfall. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality.

Any development within the River Boyne and Blackwater SAC/SPA and pNHA as part of the Boyne Greenway should consider all likely significant effects. It is noted that the RPO for the extension of the Boyne Greenway state that this is subject to the outcome of the planning process and environmental assessments.

Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Naas

Key Constraints:

- Proposed Natural Heritage Area (pNHA) – Grand Canal
- Contribution to ecological networks

Naas

- Forestry
- terrestrial biodiversity: med-high
- 2 x discharge licenses: Green Isle Foods Ltd; Arrow Group
- 3 x IPPC Licenses
- 2 x Landfill sites (Nephin; Sallins)
- Licensed waste facility (Kerdiffstown)
- Aquifer vulnerability – High
- WFD River Status & Risk: Moderate – Review (Liffey), and Good - Not at risk (Liffey)
- WWTP: Upper Liffey Valley Sewerage Scheme/Oberstown; Plant Compliance: Pass; Design Capacity: 80,000 PE (2016 EPA), 130,000 PE (by 2021, Irish Water); Agglomeration Served: 87,728 PE (EPA 2016), 90,856 PE (2017 Irish Water); EPA Priority Urban Area: non-compliant wastewater collection system, non-compliant with secondary treatment requirements, non-compliant with more stringent treatment requirements under EU UWWT Directive.

Flood Risk Summary:

The flood zones and constraints of the M7 motorway indicate that Naas can expand predominantly to the south west. Flood Zones indicate that areas of the town centre and existing residential areas adjacent the Blessington and Dublin Road are at risk from flooding. Industrial zone areas on the outskirts of the town also fall within Flood Zones A and B. A revised Naas LAP is currently ongoing which is assessing the appropriateness of these zones. It should be noted that as acknowledged in the FRMP there is high uncertainty regarding the flood risk in relation to Naas due to poor availability of model calibration events and possible interconnection between fluvial and surface water drainage and canal systems. Prior to the development of this model a cautionary approach should be taken with regards to flood risk and zoning in Naas.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. An assessment of climate and catchment changes shows Naas to be highly vulnerable to the increases as modelled in the mid-range and high end future scenarios. Adaptation of the proposed measure would require additional lengths and heights of hard defences and the height of the storage structure would need to be increased (by over 1.5m in some parts) to maintain the level of protection as provided by the proposed measure. Future monitoring, and subsequent implementation of other measures such as Natural Flood Risk Management Measures, may be adopted to assist in identifying and off-setting the impacts of climate change.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Naas as a Key Town has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and or disturbance as a result of the growth ambition;
- Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats such as the Grand Canal pNHA;
- Habitat fragmentation, the Grand Canal intersects Naas and is a pNHA;

Naas

- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The Grand Canal is a man-made waterway flowing through Naas and links to the River Liffey and comprises of a canal channel and banks on either side. It is a pNHA supporting a diverse range of species including Annex II species such as otter and white-clawed crayfish as well as diverse range of flora and fauna. Policy supporting the canal as an amenity feature can be positive, however such sites as the canal can, by their linear nature, act as important links and stepping stones for biodiversity and act as habitat refuge for species threatened by farming as it crosses agricultural lands Species disturbance through increased visitor pressure in particular in the vicinity of sensitive species and habitats such as the Grand Canal pNHA were the improvements to transport networks such as provision of cycling and walking corridors may disturb wildlife such as otter or feeding and nesting birds.

Small areas of scattered broadleaved and conifer woodland are present in the surrounding areas, as such contribute to ecological networks and have medium to high terrestrial biodiversity. The provisional of cycle and walking corridors may have the potential to fragment these habitats and in particular any footbridges /cycle bridges proposed to facilitate transport networks can potentially fragment the linear habitat of the Grand Canal.

The River Liffey flows northwards through the centre of Naas, and is classified as Good WFD status with no current risk. Another section of the River Liffey flows to the west of the town to which the main wastewater treatment plant discharges; this is the Upper Liffey Valley Sewerage Scheme/Oberstown treatment plant just west of the town. It is currently operating over-capacity with the plant designed for 80,000 PE, however current load is 90,856 PE (as of 2017) and has connection issues. Despite overcapacity, waste water is passing standards, however the collection system failed to meet the UWWT Directive's requirements meaning that some of the wastewater is not conveyed to the plant for treatment. As all the wastewater is not treated, the area is deemed to fail the Directive's secondary treatment requirements and, where applicable, the more stringent treatment requirements. Future growth of the town is therefore likely to put significant pressure on the plant and the network. Irish water have an upgrade project underway to cater for capacity issues and ensure compliance with environmental standards, with planned capacity of 130,000 PE to be delivered by 2021, but upgrades to facilitate this will be subject to the outcomes of the planning process. Currently the plant serves three large catchment areas in Kildare which includes the towns of Naas, Sallins, Clane, Prosperous, Johnstown, Kill, Newbridge, Kilcullen, Athgarven, Carragh and The Curragh. Development should therefore align with planned and approved upgrades to ensure protection of the environment.

Population growth within Naas could also increase demand for water supply and therefore increase abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes should the phasing of services not be aligned with growth and settlement.

The Grand Canal pNHA intersects another Key Town identified within the RSES i.e. Tullamore. There is potential for in-combination impacts with other Key Towns in the form of multiple pressure points on interrelated European Sites.

Mitigation Measures:

Population growth targets within the catchment areas being served by the Upper Liffey Valley Sewerage Scheme/Oberstown Wastewater Plant, which includes Naas as well as other towns, should have regard to the status and progress of the planned upgrades to the plant and other network elements, which will be subject to the outcomes of the planning process, to ensure the protection of the environment and water quality.

Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

Naas

In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Wicklow-Rathnew

Key Constraints:

- SPA: The Murrough, Wicklow Head
- SAC: The Murrough Wetlands; Wicklow Reef
- pNHA: The Murrough, Wicklow Town Sites
- Wildfowl Sanctuary: The Murrough Wetlands
- Salmonid waters: Vartry River, Broad Lough transitional water body
- Ancient woodland: Cronroe; Vale of Clara; Deputy's Pass; The Devil's Glen
- Annex I Habitats: Residual alluvial forests; Estuaries; Old Oak woodlands
- Birdwatch sensitivity – High
- Coastal habitats: saltmarshes
- Forestry – Broadleaved
- FPM – Current status unknown
- Terrestrial biodiversity: med-high
- Woodland habitat: Wet willow-alder-ash woodland
- IPPC Licence: Veha Radiators Limited, The Murrough (licence status surrendered)
- 2 x Landfill sites: Wicklow Waste Disposal
- Aquifer vulnerability: Moderate –High
- Wetlands: saltmarshes
- WFD Coastal and Transitional Water Bodies Risk: Broad Lough - At Risk; Southwestern Irish Sea - Killiney Bay (HA10) - Not at Risk;
- WFD Coastal and Transitional Water Bodies Status: Broad Lough - Moderate; Southwestern Irish Sea - Killiney Bay (HA10) - High;
- WFD River Risk: Rathnew Stream - Not at Risk, Wicklow - Unassigned
- WFD River Status: Rathnew Stream – Good, Wicklow - Unassigned
- WWTP: Wicklow; Plant Compliance: Pass; Design Capacity: 34,000 PE; Agglomeration Served: 17,249 PE (not a Priority Urban Area)

Flood Risk Summary:

Wicklow town is physically bordered by the Irish Sea and the hills surrounding the town which has

Wicklow-Rathnew

influenced its spatial development north westwards towards Rathnew. The mixed use areas of the town centre adjacent to quays lie within Flood Zones A and B along with an industrial zoning adjacent to the Glebe Stream and the railway line. Rathnew neighbourhood centre has a few properties within Flood Zone A and B along with a low-lying industrial zoning adjacent the Wicklow Road.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. An assessment of climate and catchment changes shows Wicklow, Ashford and Rathnew to be highly vulnerable to the increases as modelled in the mid-range and high end future scenarios. Adaptation to maintain the level of protection as provided by the proposed measure would require increasing the height of the Hard Defence (by circa 1m) and extending their length. It is unlikely that the storage areas can be increased to provide the additional capacity required under the future scenarios. The weir removal proposed to increase channel conveyance would be sufficient for future flows, and the channel would not require further adaptation. Future monitoring, and subsequent implementation of other measures such as Natural Flood Risk Management Measures, may be adopted to assist in identifying and off-setting the impacts of climate change.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Wicklow-Rathnew as a regional growth centre has potential for adverse effects on European Sites along a number of pathways. These pathways include:

- Habitat loss, destruction and/or disturbance as a result of the growth ambition;
- Species disturbance;
- Habitat fragmentation;
- Deterioration in water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The RPO to enhance the role and function of Wicklow-Rathnew as a hub for employment, training and education gives rise to the potential for increased diffuse urban pressure on the rivers that run through each of the towns (e.g. misconnections, surface run-off etc.). There are two river water bodies that intersect the Wicklow-Rathnew key growth settlement. Rathnew Stream, which flows through the town of Rathnew, discharges direcly to both The Murrough Wetlands SAC and The Murrough SPA, while the Wicklow River discharges directly to The Murrough Wetlands SAC and supports indirect hydrological connectivity to The Murrough SPA. Both rivers support indirect hydrological connectivity to Wicklow Reef SAC and Wicklow Head SPA, located in the Southwestern Irish Sea – Killiney Bay (HA10). Any deterioration in water quality as a result of the expansion has the potential to impact hydrologically connected European Sites.

The Murrough Wetlands SAC is of importance as it is the largest coastal wetland complex on the east coast of Ireland and contains a wide range of habitats, six of which are listed on Annex I of the E.U. Habitats Directive, some of which contain threatened plant species. The Murrough SPA is an important site for both wintering and breeding birds, supporting a variety of species listed on Annex I of the E.U. Birds Directive. The SPA is particularly important for and internationally important

Wicklow-Rathnew
wintering population of Light-bellied Brent Goose. In addition, part of The Murrough SPA is a Wildfowl Sanctuary. Wicklow Reef SAC is of high conservation value as it is the only documented example in Ireland of a biogenic reef, supporting a number of uncommon species. Wicklow Head SPA is situated approximately 3 km south of Wicklow town and the occurrence of Peregrine, a species that is listed on Annex I of the E.U. Birds Directive is of note. The RPO which supports the expansion of Wicklow port and harbour has the potential to impact on the integrity of the identified European Sites, through expansion of commercial berthing and pleasure craft capacity. It is noted that this expansion is subject to a feasibility study which will have particular focus on avoiding adverse impacts on the integrity of European Sites. The expansion could result in a number of impacts such as habitat loss, destruction and/or disturbance, species disturbance and deterioration in water quality, whilst being positive in supporting Wicklow-Rathnew as a tourism hub due to improved accessibility. Terrestrial biodiversity is considered to be of medium to high value for Wicklow-Rathnew. There are areas of ancient woodland (Cronroe, Vale of Clara, Deputy's Pass and The Devil's Glen), woodland habitat such as wet willow-alder-ash and areas of broadleaved forestry, all of which are located inland of these coastal towns and have the potential to function as ecological corridors. Deputy's Pass Nature Reserve SAC and Vale of Clara (Rathdrum Wood) SAC are both designated for old oak woodlands and are located approximately 7-9 km west of the towns of Wicklow and Rathnew. However it is acknowledged that expansion of this key settlement will be in a north-westerly direction from Wicklow town towards Rathnew. Increasing both the existing population of Wicklow-Rathnew and its potential as a key tourist destination would result in increased footfall in these amenity sites, which could result in potential for adverse impacts on the qualifying interests of the sites, in this case old sessile oak woodland. It is noted that wastewater is treated near the ports at the Wicklow WWTP which caters for 17,249 PE with a capacity for 34,000 PE and has passed compliance standards. It is not on the EPA's list of Priority Urban Areas. The receiving water body for the agglomeration is Southwestern Irish Sea – Killiney Bay (HA10) which is currently at High status and considered Not at Risk of failing to achieve WFD objectives. Therefore there is capacity within the WWTP to treat additional PE as the population continues to increase in Wicklow-Rathnew as part of the consolidation and regeneration. Population growth within Wicklow-Rathnew will result in increased demand on water supply and therefore there is potential for Increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes. Due to Wicklow-Rathnew's coastal location, there is potential for in-combination impacts with other key growth settlements, in the form of multiple pressure points on interrelated European Sites.
Mitigation Measures:
With regard to the enhancement and expansion of Wicklow port and harbour, to expand commercial berthing and pleasure craft capacity, a study will be undertaken on its feasibility, with particular focus on avoiding adverse impacts on the integrity of adjacent European Sites. Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse

Wicklow-Rathnew
effects on the integrity of any European site. Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

7.3.4.3 Outer Region

Longford
Key Constraints: ▪ SAC: Brown Bog; ; Lough Forbes Complex ; Lough Ree ▪ SPA: Ballykenny-Fisherstown Bog; Lough Ree ▪ NHA: Mount Jessop Bog; Rinn River ▪ pNHA: Brown Bog; Derrymore Bog; Carrickglass Demesne; Royal Canal; Lough Forbes Complex ▪ Ancient Woodland: Carrickglass Demense Woods West; Clonguish Wood (Castle Forbes); Lissagernal (Castle Forbes); Gubroe (Castle Forbes) ▪ Annex I Habitat: Old oak woodlands ▪ Contribution to ecological networks ▪ Mixed forestry ▪ Terrestrial biodiversity – med-high ▪ Woodland habitats: non-annex ▪ Aquifer vulnerability: Moderate – High ▪ Landscape Character Area: Central Corridor (Low Sensitivity) ▪ Wetlands: in land marshes (i.e. NW of Longford town) ▪ WFD River Risk: R. Camlin, western side of town Unassigned to Poor Status and At risk; eastern side of town improves to Good status and Not at Risk ▪ WFD Risk Status: R. Camlin-Bad ▪ WFD RPA Water Dependent Habitats SAC: Old High bog patterns ▪ WWTP: Longford; Plant Compliance: Pass; Design Capacity: 20,000 PE; Agglomeration Served: 18,372 PE (2016 EPA), 14,290 PE (2017 Irish Water)
Flood Risk Summary: Longford town spatially can expand to the south, east and north west. The other areas of the town have large flood floodplains on the outskirts which would limit expansion to the north east and west. The largest flood risk on currently zoned land is located in the south west on lands identified for strategic development including the Ballyminion Neighbourhood centre and industrial development zones. Masterplans are proposed for these areas and should include a SFRA to assess the flood risk. The areas within lands zoned future residential and commercial developments identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test applies to applications for future residential and commercial development. At regional scale no significant climate change impact on the fluvial extents was identified however future development plans and flood risk assessments should still consider the potential of climate change influence on flood extents in accordance with the Guidelines. The height of the walls and embankments of the proposed FRMP measures can be increased to facilitate increases in flood risk

due to climate change. The increase conveyance measures will not be easily adaptable to potential future changes.

Applications for minor development to these existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Longford as a regional growth centre has potential for adverse effects on European Sites along a number of pathways. These pathways include:

- Habitat loss, destruction and/or disturbance as a result of the growth ambition;
- Species disturbance;
- Habitat fragmentation;
- Deterioration in water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The delivery of development on brownfield and infill lands and the densification of Longford town centre give rise to the potential for increased diffuse urban pressure on the river that runs through the town (e.g. misconnections, surface run-off etc.). The River Camlin flows through the town and is Unassigned in terms of WFD status at through this length of the town. The section of the Camlin immediately upstream of the town is at Good WFD status and considered to be not at risk of failing to achieve WFD objectives, while the section immediately downstream of the town is at Poor WFD status and is considered to be at risk of failing to achieve WFD objectives. This indicates that there is likely influence from pressures in the town of Longford.

Mount Jessop Bog SAC is hydrologically connected to the town however is upstream. It is approximately 3 km from the town to the south, which is a direction for expansion that has not been ruled out based on flood risk. Brown Bog SAC is less than 3 km to the west of the town. There are large floodplains to the west which will limit expansion in that direction.

Lough Forbes Complex SAC and Ballykenny-Fishertown Bog SPA overlap downstream of Longford town and are both intersected by the River Camlin before it joins the River Shannon. Lough Forbes SAC is an important site based on its excellent diversity of habitats, including raised bogs which are rare and threatened. With respect to Ballykenny-Fishertown Bog SPA, at the time of designation it was used by Greenland White-fronted Geese; however there have been no records of this species at the site since 1991.

Lough Ree SAC and SPA are located approximately 12 km south-west of Longford. There is a hydrological connection to the sites which are located downstream of the River Camlin, which joins the Shannon (Upper) prior to reaching Lough Ree. Lough Ree and its adjacent habitats are of major ecological significance, with some of the woodlands surrounding the lake being the some of the best examples of the habitat in Ireland. The site is also of high ornithological importance for both wintering and breeding birds. Parts of Lough Ree SPA are Wildfowl Sanctuaries.

Wastewater is currently treated in the Longford WWTP and is operating within its plant design capacity of 20,000 PE. It has passed compliance standards. Effluent emissions are to the River Camlin which has Unassigned WFD status through the town. The section of the River Camlin upstream of the town is at Good WFD status and is not considered to be at risk of not achieving WFD objectives, however immediately downstream of the town the river is at Poor WFD status and is considered to be at risk of not achieving WFD objectives.

Terrestrial biodiversity is considered to be of medium to high value for Longford. There are many

examples of ancient woodland, forestry, wetlands habitats such as inland marshes and bog habitat in the county which contribute to ecological networks.

Population growth within Longford will result in increased demand on water supply and therefore there is potential for increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes.

Due to its central location, there may be potential for in-combination impacts with other key growth settlements, in the form of multiple pressure points on interrelated European Sites.

Mitigation Measures:

Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures).

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Mullingar

Key Constraints:

- SAC: L. Owel; Wooddown Bog; L. Ennell; Scragh Bog;
- SPA: L. Ennell; L. Owel
- NHA: Wooddown Bog; Milltownpass Bog
- pNHA: Grand Canal; L. Ennell; L. Sheever; L. Owel; Walshestown Fen
- Ancient woodland: L. Slevin's Wood; Gaybrook Demense; Cooksborough
- Contributions to ecological networks
- Mixed forestry
- Terrestrial biodiversity – med-high
- Woodland habitat: Alluvial forest - Wet willow-alder-ash; Bog woodland; Non-annex woodland
- Quarries & Pits: Knightswood; Knockmant; Heathstown; Mullingar
- 6 x Discharge Licenses
- 3 x IPPC Licenses: Devon Ln Ltd; Penn Racquet Sports; Brosna Paints Ltd
- 5 x landfill sites
- 3 x Aquifer vulnerability: Moderate – High
- Wetlands
- Nutrient Sensitive Area: Brosna River
- WFD River Risk: at risk (e.g. R. Brosna; Rivertown)

Mullingar

- WFD River Status: generally bad
- WWTP: Mullingar; Plant Compliance: Pass; Design Capacity: 55,000 PE; Agglomeration Served: 26,689 PE (2016 EPA), 27,091 PE (2017 Irish Water)

Flood Risk Summary:

The spatial growth of Mullingar expands predominantly in all directions from the centre of the town. Midlands Regional Hospital is located north-west of the town centre. Open space to the northeast and south of Mullingar and agricultural, sporting recreational and business/technology park lands to the northeast of Mullingar are within the extents of Flood Zones A and B. It is indicated thus far that future residential and commercial growth is continuing around these locations.

The areas within lands zoned for future residential and commercial developments are outside of the predicted Flood Zone A and B extents.

Existing open space, agricultural and sporting recreational zoned lands in Mullingar are located within predicted Flood Zones A and B. Applications for major development within these areas required a site specific flood risk assessment to ensure no increase in flood risk to the development and surrounding areas. The Justification Test applies to application for major development in areas of flood risk.

The CFRAM MRFS food extents show an increase in predicted flood extents within the town centre between Pearse Street and Friars Mill Road. Future development plans and flood risk assessments should consider the potential of climate change on flood extents in accordance with the Guidelines.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Mullingar as a Key Town has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and/or disturbance as a result of the growth ambition;
- Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats;
- Habitat fragmentation, the pNHA Royal Canal intersects Mullingar;
- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The Royal Canal is a man-made waterway flowing through Mullingar and links to the River Liffey at Dublin and the River Shannon near Tarmonbarry. It comprises of a canal channel and banks on either side. The main water supply is from Lough Owel (also an pNHA, SAC and SPA) via a feeder channel into the canal at Mullingar. It is a pNHA supporting a diverse range of species including Annex II species such as otter as well as diverse range of flora and fauna. Lake waterbodies dominate the surrounding landscape including two large lake waterbodies, Lough Owel and Lough Ennell are located to the immediate north-west and south-west of Mullingar and are designated as an SAC, SPA and pNHA a smaller Lough Sheever Fen/Slevin's Lough Complex pNHA to the north-east. Areas of peaty subsoils surround Mullingar and a number of bogs designated within the Natura 2000 network in the immediate vicinity of Mullingar including Wooddown Bog SAC, Scragh Bog SAC , Wooddown Bog NHA; Milltownpass Bog NHA. There is also an area of long established woodland notably around

Mullingar
Lough Sheever Fen/Slevin's Lough Complex pNHA located just to the west of the settlement. As such the area has significant contributions to ecological networks and contains med-to high terrestrial biodiversity. Policy supporting natural amenities and recreational opportunities such as the Galway to Dublin Greenway along the canal at Mullingar can be positive; however sites, such as the canal can, by their linear nature, act as important links and stepping stones for biodiversity and act as habitat refuge for species threatened by farming as it crosses agricultural lands. Some tourism activities, particularly those that promote water-based activities, may give rise to indirect long-term negative impacts particularly in the context of the QI and SCI for Lough Owel and Lough Ennell. For instance, increasing the amenity potential of these lakes may cause increase pollution emissions to these waters from boating. Invasive alien species (IAS) have been recorded in both lakes e.g. the zebra mussel, which can be spread by human activities. IAS are a significant threat to the health of the European Sites. The development and regeneration of publically owned land banks in the town can be broadly positive in preventing urban sprawl pushing towards the neighbouring European Sites and where regeneration provides the opportunity to manage uncontrolled run-off and/ or contamination issues and generally improve the quality of the receiving environment. As with any development there are also potential negative effects where regeneration or infill development results souce impact pathways to connected European Sites e.g. emission of pollutants to water, or the generation of contaminated material may give rise to spread of IAS resulting in loss of/ disturbance to species and habitats. The development and expansion of the Midland Regional Hospital also has the potential for negative effects were impact pathways exist to European Sites. The River Brosna has a current WFD status of Poor and is At Risk. Waste water is treated in the Mullingar wastewater facility currently catering for 27,091 PE in 2017, it is well within plant design capacity of 55,000 and has passed compliance standards. However the Brosna River is designated as a Nutrient Sensitive River for the section downstream of the sewage outfall. The plant is not listed as a Priority Area for wastewater. Population growth within Mullingar could also increase demand for water supply and therefore increase abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes should the phasing of services not be aligned with growth and settlement. The Royal Canal pNHA intersects other Key Towns identified within the RSES i.e Longford and Maynooth. There is potential for in-combination impacts with other Key Towns in the form of multiple pressure points on interrelated European Sites.
Mitigation Measures: Mullingar treatment is noted to be currently operating within capacity. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a

Mullingar

distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Tullamore

Key Constraints:

- Ancient Woodlands: Ballyduff Wood; Hands Wood; Charleville N & S; Clonad Wood
- Annex I Habitats: Residual alluvial forests
- Birdwatch sensitivity: med-low
- Contribution to ecological networks
- Mixed Forestry
- FPM: Catchments with previous records of Margaritifera, but current status unknown
- NHA: Screggan Bog; Hawkswood Bog; Daingean Bog
- pNHA – Kilcormac Esker, Pallas Lough, Charleville Wood, Clonard Wood, Grand Canal, Ballyduff Esker, Ballyduff Wood, Clara Bog
- SAC: Charleville Wood; Clara Bog; Raheenmore Bog; Split Hills And Long Hill Esker
- Terrestrial biodiversity: med-high
- Woodland habitats: non-annex
- Quarries & Pits: Ballykilmurry Pit; Derryarkin Pit; Extractive industry register for Tullamore and Mullingar
- 3 x Wind Farm: Mountlucas (x 2); Leabeg;
- 8 x Discharge licenses
- 3 x IPPC Licenses: Castle Paints; William Grant & Sons Irish Manufacturing Ltd; Bord na Mona Energy Ltd Leabeg
- 3 x landfill sites: Peat Ash Ltd (Shannongbridge); Derryclure; Kilcormac
- Aquifer vulnerability: Moderate – High
- Wetlands
- Nutrient Sensitive Area: River Tullamore (for a distance of 0.5km downstream of Tullamore WWTP outfall)
- WFD River Status: generally bad
- WFD River risk: at risk
- WWTP: Tullamore; Plant Compliance: Pass; Design capacity: 45,000 PE; Agglomeration Served: 19,269 PE (2016 EPA), 21,571 PE (2017 Irish Water); Priority Urban Area for wastewater (wastewater identified as the primary pressure on a river/ lake)

  WWTP: Mucklagh; Plant Compliance: Pass; Design Capacity: 1,100 PE (2016 EPA); Agglomeration

Flood Risk Summary:

The datasets received as part of this assessment did not include Flood Zones for Tullamore therefore the CFRAM flood extents where used for the RFRA. Future development plans for Tullamore should use flood zones to accurately categorise the residual risk to properties in the town centre which were defended as part of the 2008 Tullamore Flood Relief Scheme. The flood extents for Tullamore

Tullamore

are largely confined to the eastern and western parts of the town. The Flood Zone A extents appear to be mostly on existing greenfield sites with some existing commercial and residential properties in Flood Zone B. The areas in Flood Zone A and currently zoned for residential and industrial zonings. These zones should be reviewed as part of the next development plan to be assessed if they are still appropriate. There is lots of other land available to employ the principle of avoidance.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

A review of zonings in Flood Zones A and B in the east and west of the town should be undertaken during the development plan process.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. There are no MRFS or HEFS flood extents available for Tullamore. These should be generated as part any future SFRAs for the town.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Tullamore as a Key Town that has potential for adverse effects on European sites along a number of pathways. These pathways include:

- Habitat loss and or disturbance as a result of the growth ambition;
- Species disturbance through increased resident and or visiting population in particular in the vicinity of sensitive species and habitats;
- Habitat fragmentation, the Grand Canal pNHA intersects Tullamore and Charleville Wood SAC, NHA borders the town;
- Decreased water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

Tullamore is situated amongst several natural landscapes and the area contributes highly to biodiversity. Charleville Wood SAC and pNHA sits immediately the West of Tullamore encompassing annex ancient woodland habitat and further long established woodland is located to the west of Tullamore. Tullamore is bordered by several bog lands, these include Screggan Bog, Hawkswood Bog and Daingean Bog NHAs, and Clara Bog and Raheenmore Bog SACs, in addition to several pNHA esker landscapes remnant of previous glacial activity. As such the area has significant contributions to ecological networks and contains med-to high terrestrial biodiversity.

The Grand Canal is a man-made waterway flowing through Tullamore and links to the River Liffey and comprises of a canal channel and banks on either side. It is a pNHA supporting a diverse range of species including Annex II species such as otter and white-clawed crayfish as well as diverse range of flora and fauna. Policy supporting natural amenities and recreational activities such as the Blueway and Greenway along the canal can be positive, however by its their linear nature, the canal acts as important link and stepping stone for biodiversity and act as habitat refuge for species threatened by farming as it crosses agricultural lands. Species disturbance through increased visitor pressure in particular in the vicinity of sensitive species and habitats such as the Grand Canal pNHA may disturb wildlife such as otter, feeding and nesting birds or aid the spread of invasive species. Increased boating activity within the waterway can potentially lead to water pollution.

The Tullamore River flows west through the town and is a tributary of the Shannon; this section is at

Tullamore

Poor WFD status and therefore At Risk according to WFD classifications. There is significant flood risk along the watercourse in eastern areas of the town i.e. Cloncollog with extension of the floodplain outside the settlement. Wastewater is treated in the Tullamore waste water facility currently catering for 21,571 PE as of 2017. While the plant is operating with its design capacity, the EPA lists it as a Priority Urban Area as the plant is the primary pressure on the Tullamore River. It should also be noted that the plant is a pressure on the Tullamore River for a distance of 0.5km downstream of the outfall, and this section is designated as a Nutrient Sensitive Area. Future growth will therefore put pressure on the assimilative capacity of the receiving water environment. The Mucklagh WWTP is noted to serve the Mucklagh Agglomeration, which is a settlement immediately adjacent to the Tullamore settlement envelope. This plant is current operating within capacity and passed compliance standards.

Population growth within Mullingar could also increase demand for water supply and therefore increase abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes should the phasing of services not be aligned with growth and settlement.

The Grand Canal pNHA intersects another Key Town identified within the RSES i.e Naas. There is potential for in-combination impacts with other Key Towns in the form of multiple pressure points on interrelated European Sites.

Mitigation Measures:

The primary emission point for the Tullamore wastewater treatment plant is noted to discharge to a section of the River Tullamore which is at Poor WFD status and At Risk of not meeting WFD objectives, and is also a designated Nutrient Sensitive River as a result of the wastewater outfall. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality.

Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures.

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Portlaoise

Key Constraints:

- SAC: Ballyprior Grassland; River Barrow and River Nore
- SPA: Slieve Bloom Mountains
- Ancient Woodland: Dunamase Woods; Kilteale Hill; Kylebeg

Portlaoise

- Contribution to ecological networks
- Annex I Habitat: Great Heath
- Mixed forestry
- FPM: Catchments of SAC populations listed in S.I. 296 of 2009 (i.e. highly sensitive); other areas status unknown
- NHA: Clonreher Bog
- pNHA: Ridge of Portlaoise; Dunamase Woods; The Great Heath of Portlaoise; Stradbally Hill; Grand Canal
- Terrestrial biodiversity: med-high
- Woodland habitats: non-annex
- 3 x Discharge licences
- 5 x IPPC licences
- Quarries & Pits: Downs; Lea Beg; Killeaney Quarry; Boley Pit
- Landfill site: Clonsoughy Landfill
- Aquifer vulnerability: Moderate – High
- Nutrient Sensitive Area: River Triogue (downstream of Portlaoise WWTP sewage outfall, to confluence with the River Barrow)
- WFD River Risk: R.Triogue; Tributary Triogue Cush Bridge; R. Blackwater - all At Risk
- WFD River status: generally Bad
- WWTP: Portlaoise; Plant Compliance: Pass; Design Capacity: 39,000 PE (EPA, Irish Water), 28,587 PE (2016 EPA), 29,979 PE (2017 EPA); not a Priority Urban Area.

Flood Risk Summary:

Portlaoise has been developed on the banks of four watercourses the Triogue, Borris, Clonmanin and Togher. They are tributaries of the River Barrow. There areas along the banks of each watercourse that lie within Flood Zones A and B including the National Enterprise Park, commercial and residential properties along the Abbeyleix Road, Summerhill Lane and existing residential areas adjacent to Colliers Lane. The town has space between the four watercourses to carry implemented the regeneration RPO without increasing the flood risk to residents.

Applications for minor development to existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction.

Future development plans and flood risk assessments should consider the potential of climate change influence on flood extents in accordance with the Guidelines. Flood extents for the Mid-Range and High-End Future Climate Change scenarios identified a number of additional properties likely to be impacted. Adaptation of proposed measures would require additional lengths and heights of hard defences and major structural works required for the storage method to maintain the required Standard of Protection. Whilst the proposed measure has poor adaptability other measures including Natural Flood Risk Management Measures may be adopted to monitor and adapt the scheme.

FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Portlaoise as a regional growth centre has

Portlaoise

potential for adverse effects on European Sites along a number of pathways. These pathways include:

- Habitat loss, destruction and/or disturbance as a result of the growth ambition;
- Species disturbance;
- Habitat fragmentation;
- Deterioration in water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The delivery of regeneration and development in Portlaoise gives rise to the potential for increased diffuse urban pressure on the rivers that run through each of the towns (e.g. misconnections, surface run-off etc.). The River Triogue flows through the town and ranges between Poor and Bad WFD status. The river is considered to be at risk of failing to achieve WFD objectives. The river flows north where it Joins the River Barrow, therefore ultimately discharges to the River Barrow and River Nore SAC. Prior to reaching the SAC, there is a designated Nutrient Sensitive Area as a result of a sewage outfall from the WWTP.

In relation to the RPO which supports the transition of Portlaoise to a low carbon town centre through reducing car use and promoting walking and cycling, any potential impacts that could arise are likely to be positive, e.g. improvements in air quality. The promotion of this RPO may also result in the construction of new or improvement of existing paths, cycle routes and walkways.

The River Barrow and River Nore SAC passes through eight counties and many major towns along its length. It is of considerable conservation significance due to the habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. It is also of high conservation value for the populations of bird species that use it. The site also encompasses several Red Data Book plant species and the Nore Freshwater pearl mussel; however the latter is limited to a 10 km stretch of the River Nore. The main threats to the site include high inputs of nutrients to the river system including from, *inter alia*, WWTPs. As the water quality of the site remains vulnerable, it is essential that sewage be adequately treated prior to discharge. Drainage activities in the catchment can also lead to flash flood events, whilst dredging of the system poses additional threats.

Ballyprior Grassland SAC is located approximately 10 km south-east of Portlaoise, separated from the town by the M7 motorway. It is an important example of orchid-rich calcareous grassland, a habitat that is listed on Annex I of the E.U. Habitats Directive. Slieve Bloom Mountains SPA is located just over 6 km north-east of the border of the town. The site is of ornithological importance due to its provision of excellent nesting and foraging habitat for breeding Hen harrier, and is one of the top sites in the country for the species. Expansion of the town could impact on the bog, heath and open canopy forestry which this species requires. Part of the SPA is also a statutory nature reserve.

The primary emission point for the Portlaoise wastewater treatment plant is noted to discharge to a section of the River Triogue which is at Poor WFD status and at risk of failing to achieve WFD objectives; the downstream section of river is also a designated Nutrient Sensitive River as a result of the wastewater outfall. Wastewater is treated in the Portlaoise WWTP currently catering for 29,979 PE as of 2017, and is therefore operating within its design capacity. However it should also be noted that the plant is a pressure on the Triogue River downstream of the sewage outfall as far as it's confluence with the River Barrow, with this section being designated as a Nutrient Sensitive Area. Future growth will therefore put pressure on the assimilative capacity of the receiving water environment. Portlaoise is not considered to be a Priority Urban Area.

Terrestrial biodiversity is considered to be of medium to high value for Portlaoise. Ancient woodland is recorded at Dunamase Woods, Kilteale Hill and Kylebeg. Additional sites of value include the Ridge of Portlaoise pNHA and County Geological Site running through the settlement, The Great Heath of Portlaoise (Annex I habitat) and Dunamase Woods pNHAs to the East, and Clonreher Bog

Portlaoise

NHA to the North-West. Landscape character is classed as high within the town centre and low elsewhere with scattered high character areas outside the immediate settlement. These areas contribute widely to ecological networks and contain extensive peat bog environments.

Population growth within Portlaoise will result in increased demand on water supply and therefore there is potential for increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes.

Due to the location of Portlaoise which is hydrologically linked to the main channel of the River Barrow, there is potential for in-combination impacts with other key growth settlements, in the form of multiple pressure points on interrelated European Sites.

Mitigation Measures:

Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

With regard to the management of wastewater, increasing population growth should therefore be planned on a phased basis in collaboration with Irish Water and the local authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures).

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Carlow (Graiguecullen)

Key Constraints:

- SAC: River Barrow and River Nore
- pNHA: Oakpark, Cloghristick Wood
- Contribution to ecological networks
- Forestry: broadleaved
- FPM – Status unknown
- Terrestrial biodiversity: medium-high
- Woodland habitat: alluvial forest - Wet willow-alder-ash; non-Annex mixed broadleaved
- Wind Farm: Tullow Mushroom Growers Ltd
- Quarries & pits: Clongrennane
- Historic quarry: Rossmore (Old) Leinster Coalfield
- 2 x IPPC Licences: Braun Oral-B; Irish Sugar
- Aquifer vulnerability: Moderate-High

- WFD River Risk: R. Barrow and R. Burren – At Risk
- WFD River Status: R. Barrow – Moderate, R. Burren – Poor
- Nutrient Sensitive Area: River Barrow (downstream of Portarlington sewage outfall, to Graiguenamanagh Bridge)

WWTP: Carlow; Plant Compliance: Pass; Design Capacity: 36,000 PE (EPA, Irish Water); Agglomeration Served: 30,636 PE (2016 EPA), 34,000 PE (2017 Irish Water); not a Priority Urban Area

Flood Risk Summary:

Graiguecullen has no significant residential development lying within Flood Zones. The main flood risk for Carlow town lies within the Carlow County Council administrative area. A SFRA has already been undertaken for the Carlow Town LAP and sites at risk of flooding were assessed and passed Justification Tests where appropriate. Graiguecullen can develop spatially westwards to avoid any fluvial flood risk issues. Any undeveloped sites adjacent to the River Barrow have been zoned for green space and this should be maintained to retain existing floodplain areas. Carlow town centre development will be addressed in the Southern Regional Assembly RSES.

The areas within lands zoned future residential and commercial developments identified within the predicted Flood Zone A & B require site specific flood risk assessments to ensure no adverse flood risk impacts. The Justification Test applies to applications for future residential and commercial development.

At regional scale no significant climate change impact on the fluvial extents was identified however future development plans and flood risk assessments should still consider the potential of climate change influence on flood extents in accordance with the Guidelines. Flood extents for the Mid-Range and High-End Future Climate Change scenarios show a number of additional properties likely to be impacted. Adaptation of proposed FRMP measures would require additional lengths and heights of hard defences to provide the required Standard of Protection. Whilst the proposed measure has moderate adaptability other measures including Natural Flood Risk Management Measures may be adopted to monitor and adapt the scheme.

Applications for minor development to these existing buildings in areas of flood risk such as small extensions and most changes of use must include a flood risk assessment of appropriate detail to demonstrate that they would not have adverse flood risk impacts and employ flood resilient construction FRAs should address the site layout with respect to vulnerability of the proposed development type, finished floor levels should be above the 1% AEP level, flood resilient construction materials and fittings should be considered and the site should not impede existing flow paths or cause flood risk impacts to the surrounding areas.

Assessment:

In consideration of the above, the development of Carlow (Graiguecullen) as a regional growth centre has potential for adverse effects on European Sites along a number of pathways. These pathways include:

- Habitat loss, destruction and/or disturbance as a result of the growth ambition;
- Species disturbance;
- Habitat fragmentation;
- Deterioration in water quality as a result of the growth ambition;
- Increased demand on water supply; and
- In-combination impacts with other key growth settlements.

The RPO is the preparation of a cross-boundary Joint Urban Area Plan (UAP) for Carlow town by Carlow County Council and Laois County Council having regard to its location within the combined functional area of both local authorities. The purpose of the UAP is to provide a coordinated planning framework to identify and deliver strategic sites and regeneration areas for future physical, economic and social development of Carlow. The target is to achieve compact growth of a minimum of 30% and ensure a co-ordinated approach for future growth and development. The UAP will

identify a boundary for the plan area and strategic housing and employment development areas and infrastructure investment requirements.

The delivery of the above development and investment gives rise to the potential for increased diffuse urban pressure on the rivers that run through each of the towns (e.g. misconnections, surface run-off etc.). The River Barrow bisects the towns of Carlow and Graiguecullen and is at Moderate WFD status and considered to be at risk of failing to achieve WFD objectives. At the southern end of Carlow town, the Burren River flows east to west to join the River Barrow. The River Barrow is itself part of the River Barrow and River Nore SAC, while the Burren River discharges directly to the SAC. It is at Poor WFD status and is also considered to be at risk of failing to achieve WFD objectives. Any deterioration in water quality as a result of the expansion has the potential to impact the River Barrow and River Nore SAC.

The River Barrow and River Nore SAC passes through eight counties and many major towns along its length. It is of considerable conservation significance due to the habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. It is also of high conservation value for the populations of bird species that use it. The site also encompasses several Red Data Book plant species and the Nore Freshwater pearl mussel; however the latter is limited to a 10 km stretch of the River Nore. The main threats to the site include high inputs of nutrients to the river system including from, *inter alia*, WWTPs. As the water quality of the site remains vulnerable, it is essential that sewage be adequately treated prior to discharge. Drainage activities in the catchment can also lead to flash flood events, whilst dredging of the system poses additional threats.

The primary emission point for the Carlow wastewater treatment plant is noted to discharge to a section of the River Barrow which is at Moderate WFD status and at risk of failing to achieve WFD objectives; the River Barrow to the north and south of the town is also a designated Nutrient Sensitive River between the Portarlington wastewater outfall to the north as far as Graiguenamanagh to the south. Carlow WWTP has a design capacity of 36,000 PE, with the load as of 2017 at 34,000 PE. Irish Water has indicated that the headroom stands at just 727 PE and that there is a project underway to cater for future growth. Carlow WWTP is not listed as a Priority Urban Area, however there is potential for increased pressure on the receiving water environment due to future growth potential.

Terrestrial biodiversity is considered to be of medium to high value for Carlow (Graiguecullen). Additional areas of natural value include Oakpark pNHA located about 1.5 km to the north-east, and Cloghristick Wood located around 3 km to the south. Scattered woodland is present around the settlement, mostly consisting small areas of broadleaved areas, larger regions of coniferous forests are located further west. Contribution to ecological networks has been identified as a key constraint for Carlow (Graiguecullen).

Population growth within Carlow (Graiguecullen) will result in increased demand on water supply and therefore there is potential for Increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes.

Due to the location of Carlow (Graiguecullen) along the main channel of the River Barrow, there is potential for in-combination impacts with other key growth settlements, in the form of multiple pressure points on interrelated European Sites.

Mitigation Measures:

With respect to the co-ordinated cross-boundary joint UAP by Carlow and Laois County Councils, regard shall be had to the respective housing, retail and other Local Authority strategies that may be in place.

Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

With regard to the management of wastewater, increasing population growth should therefore be planned on a phased basis in collaboration with Irish Water and the local authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased

wastewater discharges from population growth does not contribute to degradation of water quality.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures).

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

7.4 DUBLIN METROPOLITAN AREA STRATEGIC PLAN (CHAPTER 5 OF RSES)

The Dublin MASP provides a first step in outlining the vision for the Dublin Metropolitan Area. The MASP includes a high level vision to: *build on our strengths to become a smart, climate resilient and global city region, expanding access to social and economic opportunities and improved housing choice, travel options and quality of life for people who live, work, study in or visit the metropolitan area. The regional policy objectives are outlined below.*

7.4.1 Assessment of RPO for the Dublin MASP

Enabling Infrastructure	
Regional Policy Objective 5.1	Support continued collaboration between infrastructure providers, state agencies and local authorities in the metropolitan area to inform cross sectoral investment plans and capital spending plans to accelerate the development of strategic development areas and secure the best use of public lands in the Dublin metropolitan area.
Potential Impact on the Integrity of a European Site?	
Water Supply	Both the Water supply project for the Eastern and Midlands Region and the Vartry Water Supply Scheme have direct pathways for impact on European sites including potential negative changes in key indicators of conservation value (water quality etc); and potential disturbance to key habitats and species. The water supply project for the Eastern and Midlands Region includes a proposal to transfer water from one catchment to another. The suitability of this solution will be dependant on the project being able to demonstrate no adverse effects on the integrity of any European site. Indirect pathways are also noted as improvements to water availability will encourage population growth with potential to result in habitat or species fragmentation, reduction in habitat area, disturbance to key species. These projects are in planning and will be subject to project level AA as design detail emerges. An AA determination will be made by the planning authority in due course. It is noted that Chapter 10 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.*
Waste Water Treatment	Both the Greater Dublin Drainage and Ringsend WwTP project have direct pathways for impact on European sites including potential negative changes in key

	indicators of conservation value (water quality etc); potential disturbance to key terrestrial and marine habitats and species; and potential for reduction in habitat area. Both projects have been lodged for planning and are accompanied by project level NIS. An AA determination will be made by the planning authority in due course. It is noted that Chapter 10 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.*
Energy	***No.*** No specific projects noted. See analysis for infrastructure chapter of RSES
Social Infrastructure	***No.*** No specific projects noted. See analysis for quality of life chapter of RSES

Integrated Landuse and Transport	
Regional Policy Objective 5.2	Support the delivery of key sustainable transport projects including Metrolink, DART and LUAS expansion programmes, Bus Connects and the Greater Dublin Metropolitan cycle Network and ensure that future development maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, existing and planned.
Regional Policy Objective 5.3	Future development in the Dublin Metropolitan area shall be planned and designed in a manner that facilitates sustainable travel patterns, with a particular focus on increasing the share of active modes (walking and cycling) and public transport use and creating a safe attractive street environment for pedestrians and cyclists.
Potential Impact on the Integrity of a European Site?	
Dublin-Belfast Corridor Targeted investment in transport infrastructure and services complementing and maintaining its function as part of the EU TEN-T core network.	The corridor in question includes the Dublin Belfast rail line and M1/A1 Motorway as regionally significant transport infrastructure. Links to Dublin Airport and Belfast Port are also part of the EU TEN-T core network. This infrastructure intersects or is in proximity to the following sites: ▪ Rogerstown Estuary SPA and SAC ▪ Broadmeadow / Swords Estuary SPA ▪ Malahide Estuary SAC ▪ River Nanny Estuary and Shore SPA ▪ Boyne Coast and Estuary SAC ▪ Dundalk Bay SPA In addition the corridor transport links passes close to the Boyne Estuary SPA and runs between the Stabannan-Braganstown SPA and Dundalk Bay SPA. Within NI jurisdiction the corridor is in proximity to Slieve Gullion SAC; Derryleckagh SAC; Mountlaghs Moss SAC; Lough Neagh and Lough Beg SPA and Belfast Lough Open Water SPA. No information is presented in relation to the nature of investment in transport infrastructure and services. Potential negative changes however could be anticipated in key indicators of conservation value including water and air quality; potential disturbance to key species; potential reduction of habitat area; and potential habitat or species fragmentation. See further analysis relating to RSES Connectivity Chapter.
Rail ▪ DART Expansion Programme ▪ New stations to provide modal inter-changes ▪ Dunboyne/M3 Parkway line to	Potential negative changes in key indicators of conservation value including water and air quality; potential disturbance to key species; potential reduction of habitat area; and potential habitat or species fragmentation. It is noted that Chapter 8 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.* See further analysis relating to RSES Connectivity Chapter.

Integrated Landuse and Transport	
Navan ▪ MetroLink from Swords to Sandyford; ▪ LUAS Green Line Capacity Enhancement ▪ LUAS network expansion	
Park and ride ▪ *New facilities at Finglas, Dunboyne, Liffey Valley, Naas Road, Carrickmines, Woodbrook, Greystones*	Potential negative changes in key indicators of conservation value including water and air quality; potential disturbance to key species. Criteria for identification of service corridors will include criteria for protection of the integrity of Natura 2000 network. It is noted that Chapter 8 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.* See further analysis relating to RSES Connectivity Chapter.
Bus ▪ *Bus Connects*	Potential negative changes in key indicators of conservation value including water quality. It is noted that Chapter 8 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.* See further analysis relating to RSES Connectivity Chapter.
Metropolitan Cycle Network ▪ *NTA Greater Dublin Area Cycle Network Plan*	Potential positive changes in key indicators of conservation value including air quality as a result of a modal shift from private car and bus to cycling. Potential disturbance to key species with particular emphasis on disturbance of birds along coastal and river frontage from increased visitor pressure; potential reduction of habitat area along coastal and riverine areas to facilitate construction of the network; and potential habitat or species fragmentation as a result of routing. The NTA cycle network plan has undergone SEA and AA and appropriate mitigation has been included. The application of this mitigation will ensure no adverse effects. See further analysis relating to RSES Connectivity Chapter.
Roads ▪ *M4 Maynooth to Leixlip* ▪ *M11 from Jn 4 M50 to Kilmacanogue* ▪ *N3 Clonee to M50* ▪ *M50 Dublin Port South Access* ▪ *Adamstown and Nangor Road Improvements*	Potential negative changes in key indicators of conservation value including air and water quality; potential disturbance to key species; potential reduction of habitat area; and potential habitat or species fragmentation as a result of routing. Continued promotion of car based modes of transport will also negatively influence climate change with potential indirect effects for European sites at a national and regional scale. It is noted that Chapter 8 of the RSES states support for delivery of these services *subject to appropriate environmental assessment and the planning process.* See further analysis relating to RSES Connectivity Chapter.

MASP Housing and Regeneration	
Regional Policy Objective 5.4	Future development of strategic residential development areas within the Dublin Metropolitan area shall provide for higher densities and qualitative standards as set out in the 'Sustainable Residential Development in Urban Areas'5, 'Sustainable Urban Housing; Design Standards for New Apartments' Guidelines6, and Draft 'Urban Development and Building Heights Guidelines for Planning Authorities'

Regional Policy Objective 5.5	Future residential development in the Dublin Metropolitan Area shall follow a clear sequential approach, with a primary focus on the consolidation of Dublin and suburbs, supported by the development of Key Metropolitan Towns in a sequential manner as set out in the Metropolitan Area Strategic Plan (MASP) and in line with the overall Settlement Strategy for the RSES. Identification of suitable residential development sites shall be supported by a quality site selection process that addresses environmental concerns.
Potential Impact on the Integrity of a European Site?	
No. It is stated that identification of suitable residential development sites shall be supported by a quality site selection process that addresses environmental concerns. For clarity it should be explicitly stated that environmental concerns shall include the potential for likely significant effects on European sites. Furthermore, the RSES recognises elsewhere in the strategy that at the project consent stage if it appears that any element of the MASP cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect on the Natura 2000 network. See further analysis relating to RSES Growth and Settlement Chapters.	

Employment Generation	
Regional Policy Objective 5.6	The development of future employment lands in the Dublin metropolitan area shall follow a sequential approach, with a focus on the re-intensification of employment lands within the M50 and at selected strategic development areas and provision of appropriate employment densities in tandem with the provision of high quality public transport corridors.
Potential Impact on the Integrity of a European Site?	
Yes. It is recognised elsewhere in the strategy that at the project consent stage if it appears that any element of the MASP cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect on the Natura 2000 network. However, this RPO does not acknowledge the need for quality site selection process that addresses environmental concerns as is clear in the housing and regeneration element. Without a stipulation that site selection is required for inform these future employment lands there is potential for direct effects as a result of negative changes in key indicators of conservation value (water quality etc); potential disturbance to key species and habitats and fragmentation to habitat or species. See further analysis relating to RSES Growth and Settlement Chapters.	
Mitigation: The RPO should stipulate that the identification of suitable employment sites shall be supported by a quality site selection process that addresses environmental concerns which shall include the potential for likely significant effects on European sites.	

GI and Amenities	
Regional Policy Objective 5.7	Coordinate across Local Authority boundaries to identify manage and develop regional green infrastructure to enhance strategic connections and develop a regional greenbelt policy in the Dublin metropolitan area.
Regional Policy Objective 5.8	Support the promotion and development of greenway infrastructure and facilities in the Dublin metropolitan area and to support the expansion and connections between key strategic cycle routes and greenways as set out in the NTA Greater Dublin Area Cycle Network Plan
Potential Impact on the Integrity of a European Site?	
No potential for impact as a result of coordination across Local Authority boundaries. However there is potential for direct effects from the development of greenway infrastructure and facilities as a result of reduction of habitat area and fragmentation to habitat or species. Also potential for indirect effects as a result	

of negative changes in key indicators of conservation value (water quality etc) and from disturbance to key species and habitats as a result of increased visitor pressure. The following strategic metropolitan greenway network routes are noted in the RSES:

- East Coast Route
- Royal Canal Greenway
- Grand Canal Greenway
- River Liffey Greenway
- Dodder Valley Greenway
- Western Canals Loop.

Other potential strategic radial routes to link into other greenways such as the Tolka, Santry, Poddle and Camac greenways are also mentioned.

It is noted that Chapter 7 of the RSES states that *Local authority Development Plan and Local Area Plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species. Furthermore it is an objective of the RA to Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and Local Authority Development Plans.*

Mitigation: The NTA Cycle Network Plan has assessed the potential adverse effect of the routes identified and mitigation measures have been developed to addressed negative effects. The RSES should stipulate that support for these routes is subject to compliance with the mitigation measures as outlined in the NIS for the NTA strategy.

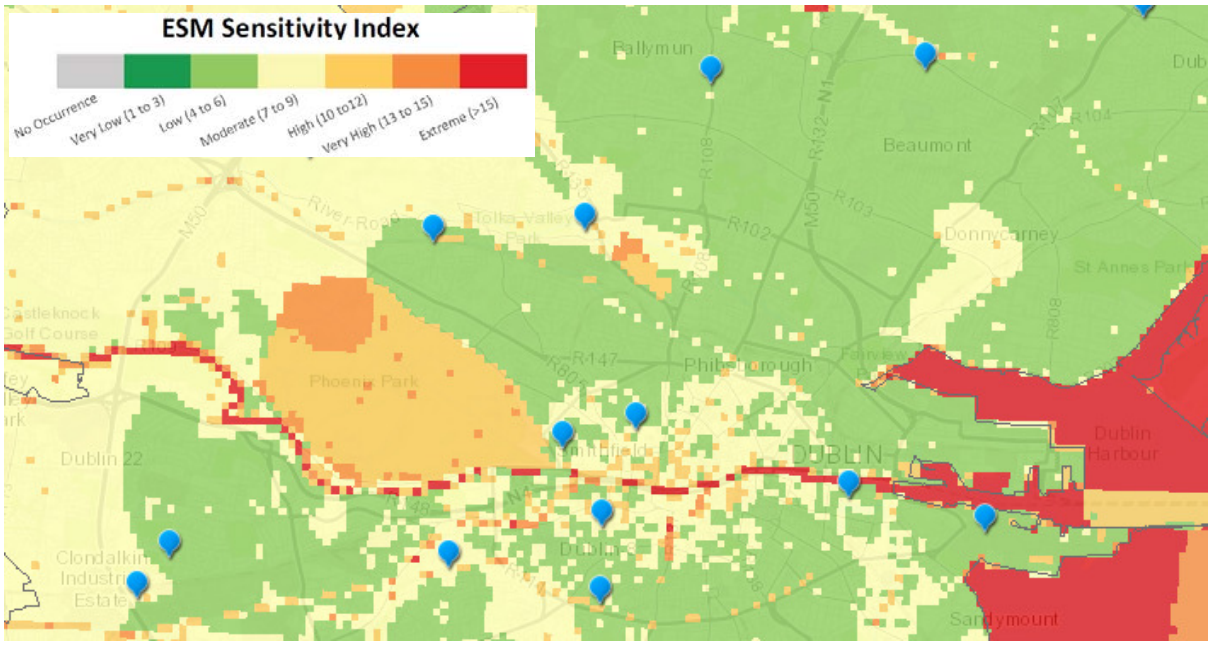
7.4.2 Strategic Corridors and Infrastructure Priorities

Strategic residential and employment development corridors are identified in the MASP, based on their capacity to achieve compact sustainable and sequential growth along key public transport corridors, existing and planned;

- 1. Within the M50 ring (multi-modal)
- 2. North-South Corridor (DART expansion scheme)
- 3. Maynooth/Dunboyne line (DART expansion scheme)
- 4. South-West Corridor (Kildare line-Luas red line)
- 5. Metrolink Corridor (Metrolink - Luas Green Line extension)

Within M50 Ring (Multi modal)

The consolidation of sites within or contiguous to the existing built up and zoned area of Dublin City and suburbs is a key strategic outcome of the draft RSES. There are a number of strategic development areas which have been identified as having the capacity to deliver significant residential development and support the continued growth of Dublin including Dublin Docklands, Cherrywood and Clonburris S DZs. Lands at Dunsink are also recognised as a long term strategic landbank, subject to planning. In the medium term, the proposed LUAS extensions to Finglas and Lucan are also intended to support increased capacity and densification of sites subject to appraisal.



Environmental Sensitivities[11] within M50 Ring

The corridor is upstream of important water dependant European sites. These include North Dublin Bay SAC; South Dublin Bay SAC; South Dublin Bay and River Tolka SPA; and North Bull Island SPA. There are direct pathways within this corridor along the main rivers in the area. There are also indirect pathways as a consequence of the strategy including increased visitor pressure leading to distubance of key habitats and species and changes to environemntal quality as a result of deterioration of air and water quality and introduction of noise disturbance.

Development of Dublin Port and the Poolbeg area will bring particular challenges given the pathways to the European sites adjacent and the nature of the QI and SCIs. The cumulative impact of port related pressures along with proposed transport, residential and commercial pressures noted in the MASP have potential for adverse effects on the QI and SCI of these European sites. Key potential imapcts include:

- Discharge from developments in the area if there is not sufficent capacity in Ringsend WwTP or elsewhere. Excess outflows have historically been discharged to Dublin Bay with a direct connectivity to the adjacent European sites;
- Recreational pressures from increased residential populations and as a result of improved transport links to the area, encouraging additional visitors with increased noise and also cycling, walking, dogs etc. which may impact on birds in particular;
- Disturbance from construction works and changes in water quality as a result of consutrcution works.

[11] The ESM tool has been run using the following layers, with a weighting of 2 applied to Biodiversity, Flora & Fauna and a normal weighting of 1 applied to the other groups: Air & Climatic Factors: Flood extents current scenarios (coastal & fluvial); Biodiversity, Flora & Fauna (weighting of 2): SACs, SPAs, Annex I habitats, Margaritifera sensitive areas, NHAs, pNHAs, salmonid rivers; Cultural Heritage: RMPs/SMR, NIAH; Population & Human health: Drinking waters (river, lake, ground); Soils & Geology: CGSs, GeoParks, peat bogs; Water: aquifer vulnerability, WFD status (river, lake, transitional and coastal), nutrient sensitive areas, recreational waters, shellfish areas.

EMRA is commited to the phasing of services with development and this is stated in Chapter 5 of the RSES. Furthermore Chapter 8 of the RSES states EMRAs support for the undertaking of feasibility studies to determine the carrying capacity of ports in relation to potential for likely significant effects on associated European sites including SPAs and SACs. Furthermore it is acknowledged in Chapter 3 that the RSES recognises that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

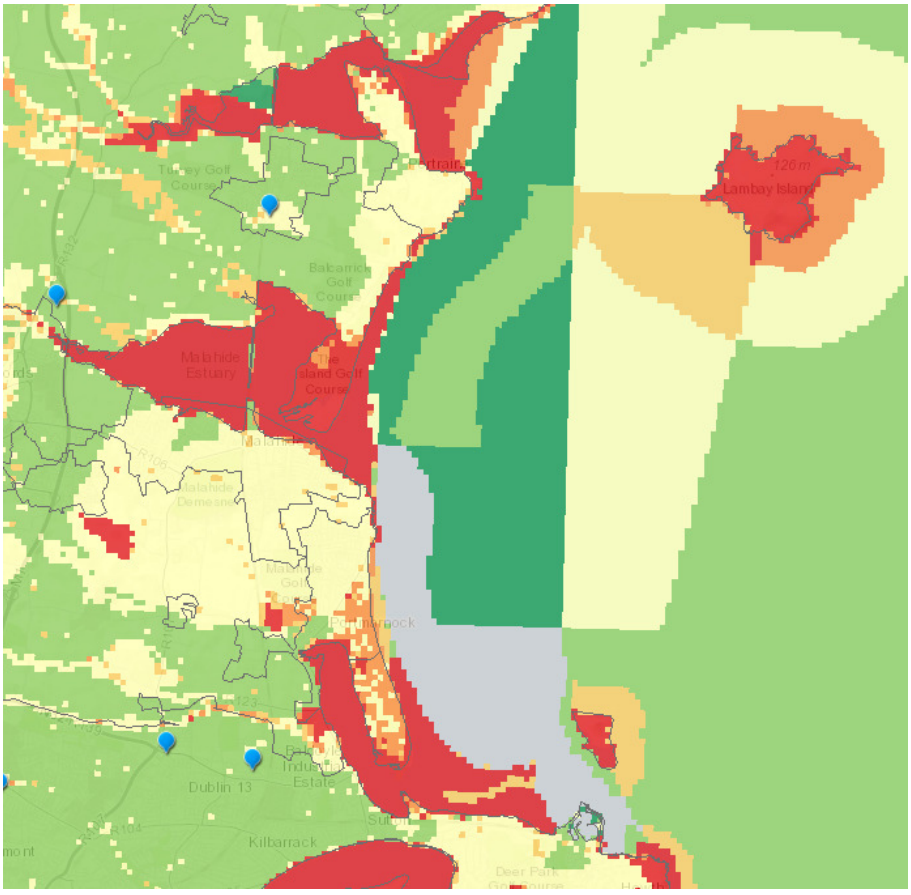
The results of the environmental sensitivity mapping undertaken for the corridor illustrate that the area has some areas of moderate to high sensitivity asscіated with the Phoenix Park and the River Liffey in particular. The park is a key ameity for the city as well as an important biodiversity feature to support urban fauna. Its importance is elevated by the prxomity to the river as together they offer good oppertunities for ecological networking and this should be recognised and valued within EMR. There is also oppertunitiy in relaiton to ecosystem services associated with flooding, maintaining open space and enhancing oppertunities for natural flood alleviation could bring positive for properties along the corridor. It is noted that the majority of the rivers in the corridor are at bad, poor or moderate status and as such additional development and consolidation of activity in the corridor will be chhallaging in terms of the WFD objectives to maintain or imrove to at least good status. This should be a clear focus in terms of mitigation for any planning going forward.

Aquifer vulnerability also features as a senstivity in the area with high to extreme occuring over much of the area. Greenfield areas to the North of the current urban area contain pockets of higher sensitivity associated with cultural heritage, and to the South of the railway line, the potential for cumulative effects increases along the Grand Canal as a result of its ecological significance.

There are water/ wastewater limitations within the corridor e.g. Clonburris which would give rise to heightened senstivity for BFF and W in particular if development is not phased inline with available capcity. Continued liason with Irish Water will be essential to ensure that this occurs. Planning permissions should be conditional on avilabele capacity to ensure the two issues are linked.

DART North – South Eastern Commuter Lines (DART Expansion Scheme)

The DART Expansion Programme proposes improvements of existing infrastructure and electrification of the Northern line, opening up development opportunities at key nodes. The consolidation of Dublin city and suburbs is supported by the continued development of the North Fringe lands served by Stapolin Station and the development of Wood-brook Shanganagh in conjunction with the provision of a new railway station. The city is further supported by the development of strategic lands in the Key Metropolitan Growth Settlement of Bray with future public transport links to lands at Fassaroe and Old Conna, and the Moderate Growth Settlement of Donabate, which are served by the DART and the Northern Commuter rail lines, respectively. The development of the IDA Strategic Site in Greystones will support a more sustainable economic base in this commuter town.



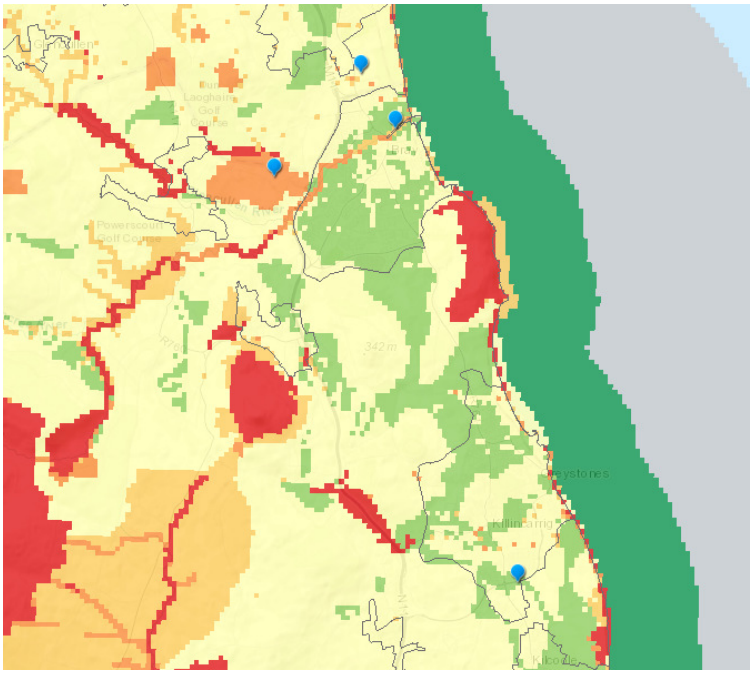
Environmental Sensitivities Along the North- South Eastern corridor - *North [Donabate-Clongriffin-North Fringe]*

The coastal zone to the north has very high senstivy associated with the presence of a number of European sites including the Broadmeadow/ Swords Estuary SPA, the Malahide Estuary SAC; Balydoyle Bay SAC and SPA; North Dublin Bay SAC and Bull Island SPA. The sites have been protected for a number of habitats including mudflats and sandflats and rocky shore but also for signficant populations of birds. The coastal SPAs are also linked to marine SPAs at Lambay Island and Irelands Eye. Together these SAC and SPA provide an essential ecological resource which has the potenial to be impacted form both onshore and offshore development. Key issues include habitat loss and fragmentation, species disturbance and mortality. These arise from construction works and also from longterm pressure from increased emissions and increased recreational pressures among other.

Development along this line will open up areas such as Donabate and Malahide for further population growth. This will bring challenges to the European sites adjacent as such development has to be seen in the context of pressure on the coastal area for tourism, transport etc. There are also flood risk issues associated with much of the caostal area and adjacent to and upstream of the estuaries. This will need to be considered for any planning in the corridor, having regard to the findings of the RFRA which has been carried out in parallel to the SEA. Coastal erosion issues have arisen along this corridor e.g at the Burrow in Fingal. A risk assessment of the vulnerability of settlements and significant infrastrure to erosion should be undertaken to inform future decision making. Key concerns include how erosion may impct in the long term of the stability of Balleally Landfill which is within Rogerstown Estuary which is itself a European site.

Key potential imapcts include:

- Discharge from developments in the area if there is not sufficent capacity in WWTP servicing the northern corridor. It is noted that there are proposals for a new WWTP in fingal however the timeline for delivery is not certain.
- Recreational pressures from increased residential populations and as a result of improved transport links to the area, encouraging additional visitors with increased noise and also cycling, walking, dogs etc. which may impact on birds in particular;
- Disturbance from construction works and changes in water quality as a result of construction works.



Environmental Sensitivities Along the North- South Eastern corridor - *South [Bray-Woodbrook-Fassaroe-Charlesland]*

Further south along this corridor key sensitivies include Bray Head SAC and the Murrows wetland SAC and SPA. These areas will be sentive to increased recreational pressue therefore consideration of how to manage these pressures will be needed at the CDP level to avoid adverse effects. Surface and groundwater are also an important consideratiosn for future development within the corridor. Areas such as Fassaroe and Ballyman have constraints in relation to groundwater dependant ecosystems including Tuffa Springs. Developments which lead to interaction with groundwater quantity and quality may be limited in extent by the presence of these sensitive sites. The corridor is also in proximity to Vartry Resevoir which provides a significant amount of Dublins Water supply. A scheme to upgrade the resevoir was granated permission in 2018. During the planning process the importance of the river as a salmon, sea trout and trout river were highlighted.

Key potential imapcts include:

- Changes to groundwater quantity or quality affecting groudnwater dependant European sites;

- Discharge from developments in the area if there is not sufficent capacity in WwTP servicing the corridor. It is noted that there are proposals for a new WwTP in Fingal and upgrades to Ringsend however the timeline for delivery is not certain. .
- Recreational pressures from increased residential populations and as a result of improved transport links to the area, encouraging additional visitors with increased noise and also cycling, walking, dogs etc.;
- Disturbance from construction works and changes in water quality as a result of consutrcution works.

As noted above, EMRA is commited to the phasing of services with development and this is stated in Chapter 5 of the RSES. Furthermore it is acknowledged in Chapter 3 that the RSES recognises that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Maynooth / Dunboyne Commuter Line

Strategic development opportunities have been identified along the Dunboyne/M3 parkway commuter line to drive economic growth at the Dublin Enterprise Zone in Blanchardstown and for significant residential growth at Hansfield SDZ lands along with the sequential development of lands in Dunboyne and Dunboyne north, which is served by the M3 Parkway station. Along the main line, the electrification of the DART opens up opportunities for sequential growth in Leixlip and Maynooth.

Environmental Sensitivities Along the Maynooth / Dunboyne Corridor

The environmental sensitivity mapping for the Maynooth / Dunboyne Commutor Line show relatively low sensitivity. The main feature of high sensitivity is along the Rye River which is a European site designated for petrifying springs and the Whorl snail. Both are highly sensitive to water/groundwater quality and quantity. Detailed consideration of these habitats and species will be required for all residential and employment development in the corridor. Flooding along the river has also been identified adding to the cumulative constraint.

As with other linear ecological features, these represent important ecological network connections and must be protected from the negative effects associated with densification and consolidation.

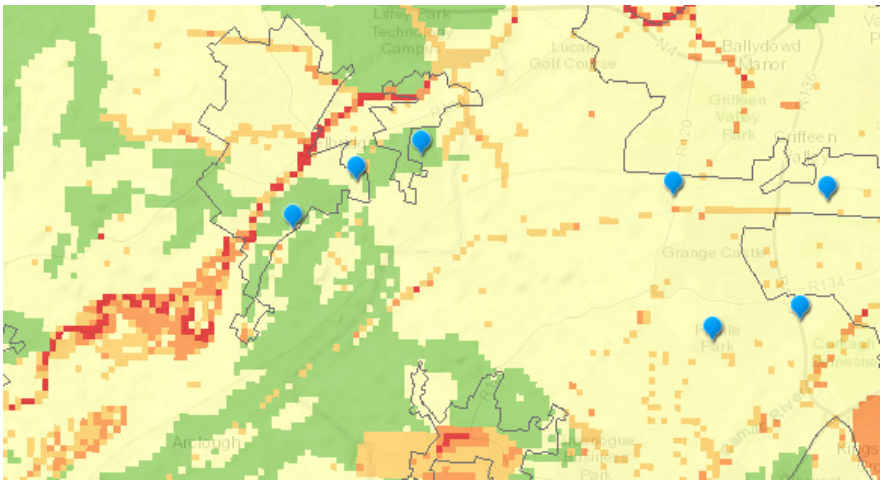
Key potential imapcts include:

- Changes to groundwater quantity or quality affecting groundwater dependant European sites particularly QIs of petrifying springs and the Whorl snail;
- Discharge from developments in the area if there is not sufficent capacity in WwTP servicing the corridor.
- Disturbance from construction works and changes in water quality as a result of consutrcution works.

As noted above, EMRA is commited to the phasing of services with development and this is stated in Chapter 5 of the RSES. Furthermore it is acknowledged in Chapter 3 that the RSES recognises that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

South Western Corridor (Kildare line-Luas red line)

The corridor serves a number of strategically located sites in South Dublin, including the major residential lands of Clonburris, Kilcarbery and Adamstown SDZ and are in proximity to the key emerging employment zones of Grangecastle, which may be supported by additional bus connections. These lands support the consolidation and western expansion of Dublin city and suburbs, supported by the development in a sequential manner of strategic lands in Cellbridge along with the provision of links to Cellbridge-Hazelhatch station.

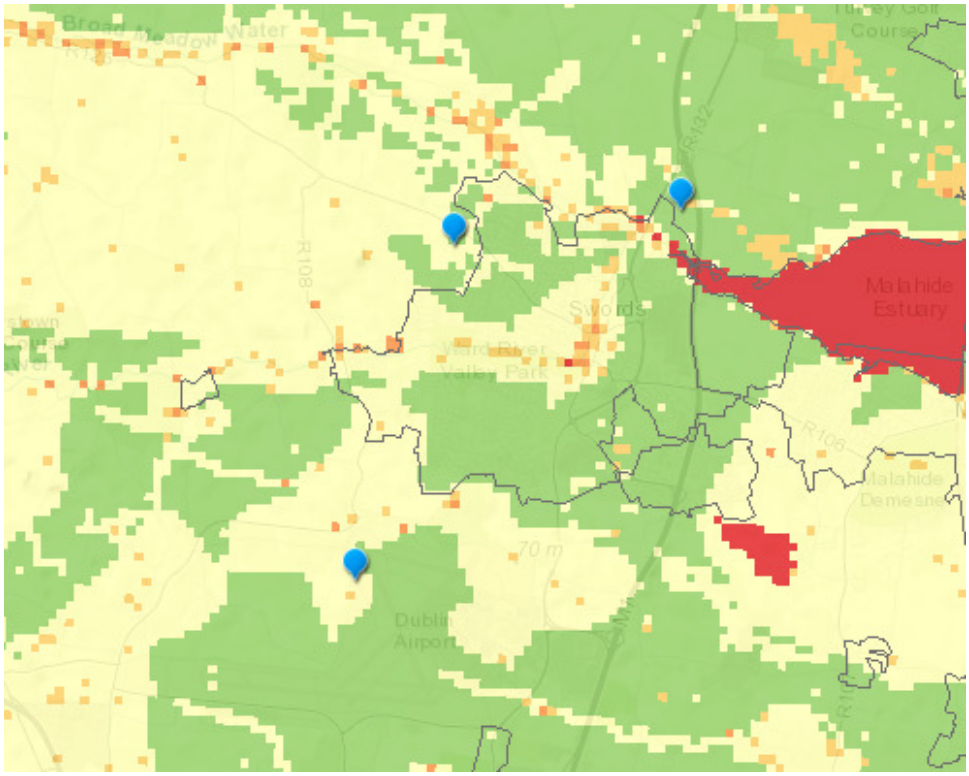


Environmental Sensitivities Along the South Western Corridor

The lands are generally environmentally robust, with some areas having moderate sensitivity as a result of groundwater protection considerations. Changes to the quality of water resources as a result of development in this area have the potential to result in indirect cumulative effects on the downstream European sites. The River Mayne (Poor ecological status) passes through this area representing a sensitivity due to its degraded status. From this there is hydrological connectivity to the coast and the sensitivities there in the form of the Baldoyle Bay SPA and SAC.

MetroLink Corridor (MetroLink - Luas Green Line extension)

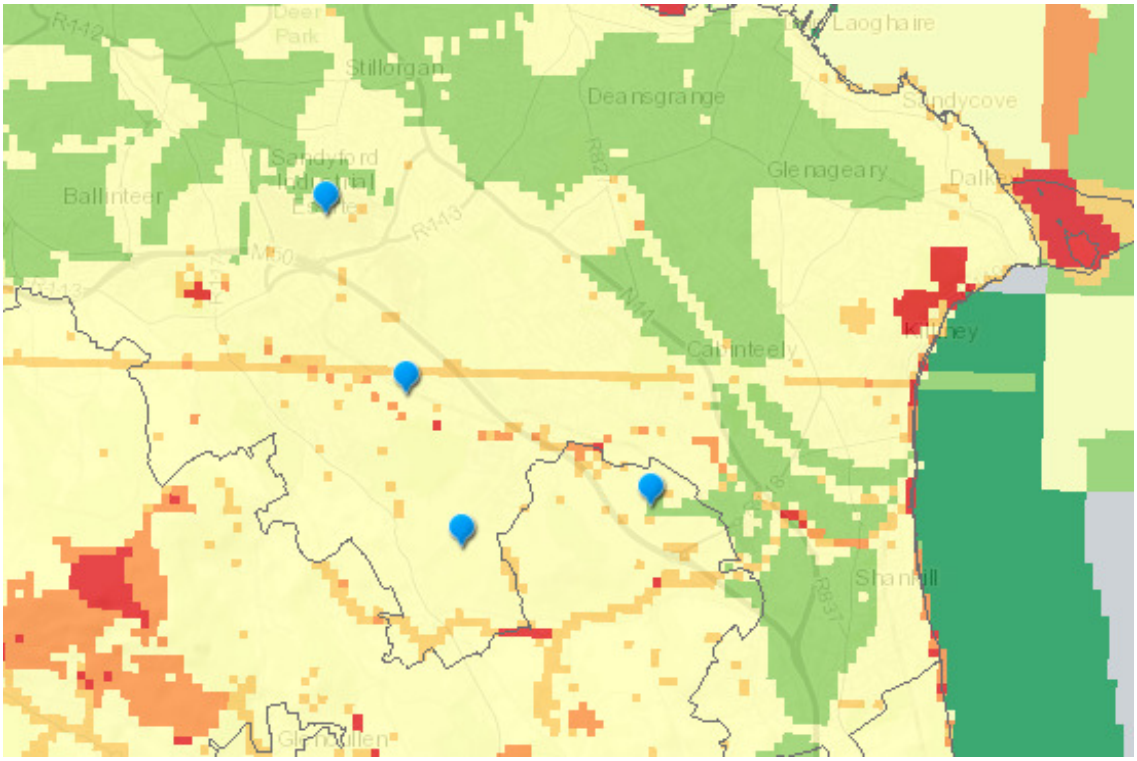
The development of the proposed MetroLink project has the potential to open a number of significant development opportunities post 2027. Swords is identified as a Key Metropolitan Growth Settlement and the indicative route for the new Metro will facilitate its continued development and expansion into Swords-Lissenhall. Swords is located adjacent to the key national gateway of Dublin Airport, which along with MetroLink can support continued economic growth subject to the protection of airport capacity and accessibility. The proposed MetroLink route is proposed to continue via the city centre and onwards to Sandyford using the existing LUAS Green Line and the proposed upgrading of this line would support further growth along this corridor to Cherrywood.



Environmental Sensitivities Along the Metro Link Corridor

The most significant sensitivity is related to the European site located at the Malahide Estuary SAC and Broadmeadow/ Swords SPA. A key issue for the future development of this area is the potential for ex-situ impacts where birds from the SPA use locations outside the SPA boundary for resting and feeding. This supporting habitat is important to the overall wellbeing of the bird populations and loss of these areas may result in adverse effects on the integrity of the European site. A clear understanding of how these populations interact with their surrounding areas will be needed at CDP level to properly inform decisions at CDP, LAP and SDZ level as well as project planning.

Isolated pockets of moderate sensitivity are related to both the Broad Meadow River and the Ward River. Both of these linear features are important ecological networks linking through to the coastal area and are direct pathways for impact to the European sites downstream. The Broadmeadow is at poor status for much of its length and parts of the Ward River are also under pressure although it has stretches of good status also. Protection of these rivers and associated riverine habitat in terms of their values to downstream protection of the receiving European sites and the benefits of maintaining flood plains in terms of flood elevation should be considered in development within this corridor.



Environmental Sensitivities Along the Metro Link Corridor

Further south along the MetroLink corridor it is proposed to upgrade the Luas Green Line to Metro. Already there is significant development along the Luas Line extending out to Cherrywood, which is also serviced by the M50. The general area has moderate sensitivity associated with the aquifer vulnerability and also the presence of a number of rivers in the area. The Wicklow Mountains National Park is located to the south west and this is also an SAC and SPA. Increasing population along the Metro corridor may increase visitor pressure to this area and ongoing liaison with NPWS would necessary to manage sustainable access to this resource.

The Carrickmines Stream (Moderate ecological status) runs through the northern part of the SDZ and joins the Shanganagh River (Good status and a designated rivver for drinking water abstraction) which flows to the south of the Cherrywood lands. The river passes next to the Loughlinstown Woods pNHA before discharging to the Dalkey Coastal Zone and Killiney Hill pNHA and a number of Annex I habitats at the coastline: perrenial vegetation of stony banks and tidal mudflats

Key potential impacts include:

- Changes to groundwater quantity or quality affecting groudnwater dependant European sites;
- Discharge from developments in the area if there is not sufficent capacity in WwTP servicing the corridor. It is noted that there are proposals for a new WwTP in Fingal and upgrades to Ringsend however the timeline for delivery is not certain. .
- Recreational pressures from increased residential populations and as a result of improved transport links to the area, encouraging additional visitors with increased noise and also cycling, walking, dogs etc.;
- Disturbance from construction works and changes in water quality as a result of consutrcution works.

7.5 ECONOMY AND EMPLOYMENT (CHAPTER 6 OF RSES)

Chapter 6 of the draft RSES identifies the Eastern and Midlands Region (EMR) as the epicentre of the country's economic progress, which drives national progress. The chapter is driven by the key principle of economic opportunity, whilst the draft RSES identifies a number of Regional Strategic Outcomes.

Key Policy Area	Assessment	Mitigation
Competitive and Resilient Economic Base	No potential for adverse effects from RPO 6.1 which is a supporting function for the region. It is noted however that the policy includes *guiding principles for strategic employment and investment prioritisation in placemaking for enterprise development*. These principles do not address protection of the environment or avoiding adverse effects on the integrity of the European sites within the region or those with connectivity to the region.	The region will develop and apply guiding principles for the protection of the Natura 2000 network and the avoidance of adverse effect on integrity of European sites.
Sustainable Development	No potential for adverse effects from RPO 6.2 which acknowledges the need to have regard to environmental and sustainability considerations and proper site/route selection of any new development . The RPO requires that LA examine environmental constraints including but not limited to biodiversity, flooding, landscape, cultural heritage, material assets, including the capacity of services to serve any new development.	Specific reference should be made to potential for adverse effects on European sites as one of the issues to examine in RPO 6.2
Unexpected Opportunities for Enterprise Development	No potential for adverse effects from RPO 6.3. All city and county development plans are subject to AA in their own right and the agility and flexibility called for will be in the context of the wider policy base which must meet the tests prescribed by AA at the CPD level.	None
Dublin-Belfast Corridor	Potential for adverse effects from RPO 6.4. As noted in Section 7.4 and 7.7 of this NIR, there are a number of European Sites along the Dublin Belfast Corridor. Proposals for growth centres at Dundalk and Drogheda have potential to adversely effected those European sites which are intersected or adjoin the conceptual corridor. See Section xx for further consideration.	See section 7.4. and 7.7
Rural Economy	No adverse effects on site integrity from RPO 6.5 to 6.7 which support the role for LECP in rural areas. RPO6.8 supports initiatives to enhance sectors such as agricultural and food, forestry, fishing and aquaculture, energy and extractive industries, the bio-economy and diversification into alternative onfarm and off-farm activities. Where such activities occur there can be significant potential for adverse impacts on site integrity across a range of protected habitats and species depending on location. The policy	Local economy and community plans are subject to AA when prepared. This will ensure avoidance of adverse effects in the first instance and mitigation measures if required.

Key Policy Area	Assessment	Mitigation
	does reference sustainable economies and also notes the importance of maintaining and protecting the natural landscape and built heritage bt is not explicit in acknowledging the potential negative effects of these activities or the need to protect European sites and avoid adverse effects. In developing such initiatives, each LA must consider the potential for the initiative to lead to likely significant effects and where necessary adverse effects on site integrity.	
Retail Strategies and Retail Planning Guidelines	The preparation of retail strategies as identified in RPO6.9 and the application of the existing retail hierarchy in the region will not give rise to adverse effects on integrity of any European sites.	None
Town Centre Renewal	No adverse effects on European sites as a result of RPO11-RPO13	None
Natural and Cultural Tourism Assets	Potential for adverse effects on site integrity as a result of this policy base if unmitigated as it seeks to encourage visitors to cultural and natural heritage assets in the region. These may include cultural and natural assets adjacent to or within European sites. Key impacts include: New or more intense disturbance to key species or habitats which are QIs or SCIs fr the site or which support the QIs and SCIs of the site. Harnessing of tourism assets may also potentially lead to increased visitor numbers, along with associated recreational activities, within or adjacent to sensitive areas especially along coastal areas and rivers and lake which could lead to adverse impacts on the Natura 2000 network, if unmitigated. Disturbance of species supported by a European site is likely to increase where there is an increase in activity levels from recreation and amenity or from developments within or adjacent to designated areas. Sources of disturbance include noise, vibration, light, associated with construction and operation phases. Direct and indirect habitat loss and deterioration. Construction of supporting infrastructure may result in encroachment into designated sites and may include the removal of habitats or supporting features. This is particularly relevant to coastal or riverine cycle or walkways which may consider construction of linear infrastructure which leads to shading and or loss of habitat.	Visitor Experience Development Plans will specifically include a clear plan to avoid adverse effects on the integrity of European sites within the zone of influence of the plan including specific consideration of how supporting infrastructure like car parks and shops can influence the level of pressure on habitats and species the immediate vicinity. EMRA will support Local Authorities in the developing specific monitoring protocols for visitor pressure to ensure that tourism activities are maintained within sustainable limits for the European sites in the region.

Key Policy Area	Assessment	Mitigation
	Changes in key indicators of conservation concern. This may occur as a result alteration to the drainage regime in sensitive wetland areas; run-off of pollutants during construction, alterations to water quality and quantity for sites which are dependent on water quality and quantity (habitats and species), pollution events where temporary populations during "high" season may put unsustainable pressure on services. Spread of invasive species. This is a significant threat to European sites. It may occur particularly in relation to navigation and fishing activities within the region as visitors move boats and equipment from one navigation channel to another. In addition to spread of invasive species this can also increase the risk of spread of disease such as the Crayfish Plague which was evident in the Barrow river during the summer of 2018. This could lead to direct species mortality or changes in species assemblages which would impact on the conservation objectives of sites within the region. Linear infrastructure such as greenways and blueways may also act as conduits for the transfer of invasive species.	
Identification of Destination Towns.	The identification of destination towns outlined in RPO 6.18 will not give rise to adverse effects on integrity of any European sites.	None
Marine Economy	RPO 6.19 supports the preparation of the upcoming Maritime Spatial Plan. This will not give rise to adverse effects on integrity of any European sites. It is noted this plan will be subject to SEA and AA when prepared and will need to address the coastal and marine European sites in particular in developing a sustainable marine economy.	None
Low Carbon and Circular Economy	RPO 6.20 will not give rise to adverse effects on the integrity of any European sites.	None
Skills and Talent	RPO 6.21 will not give rise to adverse effects on the integrity of any European sites.	It is recommended that RAPJs, LEOs and Local Authorities are supported by the Regional Assemblies in upskilling on compliance with AA obligations through the planning hierarchy.
Innovation	RPO 6.22 will not give rise to adverse effects on the integrity of any European sites.	None
ITecnology and innovation Poles	RPO 6.23 supports the development of sites where high-tech and high potential start-up can establish in conjunction with IoTs and	Robust feasibility and site selection, which includes explicit consideration of likely significant effects on

Key Policy Area	Assessment	Mitigation
	Universities. No specific sites are identified at this stage. RPO 6.23 will not give rise to adverse effects on the integrity of any European sites.	European sites and where relevant potential for adverse effects on the integrity of a European site will be carried out in advance of any site development.
Smart cities	RPO 6.24 supports the development of smart city initiatives and development of smart city programmes. RPO 6.24 will not give rise to adverse effects on the integrity of any European sites.	None
Innovation Capacity	RPO 6.25 will not give rise to adverse effects on the integrity of any European sites.	None
Ecosystem Performance	RPO 6.26 will not give rise to adverse effects on the integrity of any European sites.	None
Infrastructure Investment	RPO 6.27 will not give rise to adverse effects on the integrity of any European sites.	None
Branding	RPO 6.28 will not give rise to adverse effects on the integrity of any European sites	None
Bidding Capacity	RPO 6.29 will not give rise to adverse effects on the integrity of any European sites.	None
Shared Evidence Base	RPO 6.30 will not give rise to adverse effects on the integrity of any European sites.	None
Economic Risk Management System	RPO 6.31 will not give rise to adverse effects on the integrity of any European sites.	None
Anticipating Economic Structural Changes	RPO 6.232 will not give rise to adverse effects on the integrity of any European sites.	None

7.6 ENVIRONMENT (CHAPTER 7 OF RSES)

Chapter 7 of the draft RSES acknowledges that a clean, well protected environment supports human health and wellbeing and provides a natural resource for agriculture and tourism industries. The drivers of the chapter are the key principles of healthy placemaking and climate action.

Four key Regional Strategic Outcomes have been identified as follows:

- The need to conserve and enhance the biodiversity of our protected habitats and species including landscape and heritage protection;
- To identify, protect and enhance our Green Infrastructure;
- To ensure the sustainable management of our natural resources; and
- To build climate resilience, to support the transition to a low carbon economy by 2050 and the protection of the healthy natural environment to ensure clean air and water for all.

The management of the environment is governed by various pieces of legislation at national, European and international level.

Key Policy Area	Assessment
Integrated Land and Marine Planning	No potential for adverse effects from RPO's 7.1 to 7.6. Broadly speaking the RPOs for Integrated Land and Marine Planning relate to the growth of Ireland's marine sector, developing coastal erosion and flooding protection, develop fisheries and aquaculture and the protection of maritime heritage. Where such activities occur there can be significant potential for adverse impacts on site integrity across a range of protected habitats and species depending on location but in particular European Sites with coastal, estuarine and/or marine Conservation Objectives. It is noted that the RPOs aim to integrate and align with plans and directives which aim to protect marine waters in order and achieve effective integrated land and marine planning. Objectives will comply with the Marine Strategy Framework, the upcoming National Maritime Spatial Plan, Marine Spatial Planning and the Water Framework Directive. Coastal dynamics will be supported by Integrated Coastal Zone Management. RPO 7.2 aims to "achieve and maintain Good Ecological Status" for marine waters.
Mitigation: Land and marine plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

Key Policy Area	Assessment
A Clean and Healthy Environment	No potential for adverse effects from RPO's 7.7 to 7.11. The RPOs for a clean and healthy environment are positive and relate to supporting improvements to air and water quality as well as reducing pollution from noise and light. It is noted that the RPOs will support various Environmental Directives in order to achieve a clean and healthy environment e.g. RPO 7.8 acknowledges incorporating the EU Environmental Noise Directive and RPO 7.10 supports the implementation of the Water Framework Directive. The RPOs 7.7-7.9 & 7.11 requires the support and work of Local Authorities in order to implement improvements. In order to achieve policy objectives ongoing support for Local Authority implementation is required to ensure this positive impact is achieved. RPO 7.11 includes recognition of the need to deliver efficient wastewater facilities with sufficient capacity and thus contribute to improved water quality in the Region. The development of new infrastructure to support this RPO could to lead potential likely significant effects and where necessary adverse effects on site integrity which should be considered.
Mitigation: Any plans relating to the development of wastewater facilities are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

Key Policy Area	Assessment
Flood Risk Management	No potential for adverse effects from RPO's 7.12 to 7.15. The RPOs for a flood risk management are broadly positive and relate to reducing flood risk and implementing flood risk management plans. Incorporating Strategic Flood Risk Assessments into future statutory landuse plans is acknowledged in order to avoid inappropriate land use zoning and development in areas at risk of flooding. Local Authorities will also take into account Flood Risk Management Plans (FRMP) during the development of local planning policies. In addition the recommendation from the Catchment Flood Risk Assessment and Management (CFRAM) programme is to be incorporated into flood risk management policies. FRMPs have been subject to Strategic Environmental Assessment (SEA), and Appropriate Assessment (AA) The integration of sustainable water management solutions will be directly positive to waters in relation to protection and conservation of water resources**.** In particular RPO 7.15 is positive which aims to enhance biodiversity and amenities and to ensure the protection of environmentally sensitive sites and habitats.
Mitigation: Any plans such as those relating to local flooding solutions are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

Key Policy Area	Assessment
Biodiversity and Natural Heritage	No potential for adverse effects for RPO 7.16 and 7.19 which support the implementation of the Habitats Directive and designation of peatlands in the midlands as a national park. Potential for adverse effects from RPO's 7.18 and 7.20. These RPOs for are broadly positive however policies supporting development and facilities within European Sites have the potential for adverse effects. RPO 7.18 specifically relates to working with Local Authorities to promote the development of visitor experiences and facilities within Wicklow National Park which is intersected by the Wicklow Mountains SAC and SPA. RPO 7.20 specifically relates to the development of improved visitor experiences, nature conservation and sustainable development activities within the Dublin Bay Biosphere which ajoins or intersects a number of European Sites.
Mitigation: Any plans for developments within European sites must be cognisant of the implications of increased visitor pressure upon QI/SCIs within the site. Any plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

Key Policy Area	Assessment
Green and Blue Infrastructure	No potential for adverse effects for RPO 7.21 to 7.24. The RPOs for green and blue infrastructure are broadly positive. RPO 7.21 relating to the inclusion of green infrastructure within Local Authority Development Plans and Local Area Plans and it is noted that regard should be given to the conservation of European sites. RPOs 7.23 and 7.24 promote and support the development of greenways, blueways and peatways as well as other cycling/walking infrastructure. Greenways and cycleways are generally positive from an environmental perspective acting as ecological corridors if designed appropriately. However, as with any linear infrastructure, there is potential for both direct and indirect negative impacts through habitat loss, habitat fragmentation, species disturbance from construction or visitor pressure, decrease in water quality, alteration to ecological processes and potential spread of invasive species. The sensitive siting and routing of this infrastructure is essential to ensuring there are no impacts on the integrity of the sites or on achievement of their conservation objectives. See RPO 4.7, 4.12, 4.32, 4.43, 4.46, 5.8 for further RPOs relating to greenways, blueways and peatways.
Mitigation: Any development is supported by a quality site/route selection process that addresses environmental concerns such as landscape, cultural heritage and biodiversity as a minimum. Any future development of greenways, blueways, peatways, cycleways or walkways will include an assessment of any impacts that may arise from increased visitor pressures, in particular, on sensitive European sites and the design of the network will consider the provision of protective measures on sites sensitive to disturbance/visitor pressure.	

Key Policy Area	Assessment
Landscape	No potential for adverse effect for RPO 7.25. While it is welcomed that a Regional Landscape Character Assessment will be prepared, it must be noted that a significant amount of development has occurred in the region in the absence of a National Landscape Character Assessment in the intervening years since the publication of the National Landscape Strategy. As such, greater clarity is needed on the actions needed to progress a Regional LCA and timelines established. Potential for adverse effects for RPO 7.26. The identification of high value agricultural land has potential for negative impacts through the further intensification of key areas located near sensitive habitats and/or species. Impacts can include further habitat loss, simplification of the landscape through monocultures, habitat fragmentation, habitat loss, species disturbance and degradation in water quality. It is noted this RPO promotes sustainable farming practice that

	maintain the quality of the natural environment, protect farm landscapes and support the achievement of climate targets. The RPO 7.27 for is broadly positive supporting policies and strategies such as Bord Na Mona Biodiversity Plan 2016-2021 and Climate Mitigation and Adaption Plans.
Mitigation: In order implement sustainable farming practices and prevent adverse effects on European sites the RSES must align with other plans and directives such as the River Basin Management Plans, Water Framework Directive, Nitrates Directive, Nitrates Action Plan, , National Biodiversity Action Plans, Climate Mitigation and Adaptation Plans, Flood Risk Management Plans and any other related plans. Any plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

Key Policy Area	Assessment
Climate Change	No adverse impact for RPOs 7.28 to 7.42. The RPOs are broadly positive in supporting a transition to a low carbon, circular & climate resilient region. A number of the RPOs place obligations on the Climate Action Regional Office and EMRA to inventory, monitor and report emissions and this monitoring and reporting function is welcomed. It is noted this has been added as a result of SEA recommendations as part of the iterative assessment process. Other objectives place obligations on the local authorities that will have positive and broader environmental impact only if successfully implemented. To this end, a set of guidelines and ongoing support for local authority implementation is required to ensure this positive impact is achieved consistently and comprehensively across the region and down through the planning hierarchy. See Section 7.7.10 for further discussion on Climate impacts.
Mitigation: Any plans are subject to AA when prepared prior to adoption. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.	

7.7 CONNECTIVITY (CHAPTER 8 OF RSES)

Chapter 8 of the draft RSES sets out Regional Policy Objectives in relation to the Transport and includes a number of RPOs for improved access, improved linkages (road and rail) and delivery of public transport and active transport options (greenways, walking routes, cycling routes) in addition to more specific reference to projects, some already in the planning process.

The delivery of any linear infrastructure has the potential for significant effects on European Sites including;

- Habitat loss or destruction during construction;

- Loss of key supporting habitats and ecosystem complexes during construction;
- Habitat fragmentation or degradation as a result of routing / siting
- Introduction of barriers to movement;
- Disturbance to habitats/species from noise, air light emissions;
- Species mortality from collision or resulting from disturbance of habitat;
- Alterations to water quality and/or water movement from drainage patterns;
- Alterations to air quality from transport related emissions especially road, air and sea transport;
- Introduction or spread of invasive species during construction and operation; and
- Alternations due to climate change from continued emissions of GHG.

Key Policy Area	Assessment	Mitigation
Integration of Transport and Landuse Planning	RPO 8.1 – RPS 8.4 address integrated transport and land use planning. The policies present a list of guiding principles for integration of landuse and transport however none of the guiding principled explicitly deals with ecological matters, protection of the environment, European sites, protected habitats and species or the Natura 2000 network. While the guiding principles as presented will not impact on the integrity of any European site, it is acknowledged that they will inform decision making at lower planning levels and as such they offer an opportunity to increase awareness and protection of individual European sites and the Natura 2000 network as a whole. RPO 8.4 specifically references both the NTA's Transport Strategy for the GDA. This is currently undergoing SEA and AA and it will be essential that the mitigation is applied through lower level land use plans once available.	The guiding principles for integration of transport planning and land use planning should explicitly reference the protection of the Natura 2000 networks and the ecological linkages which support it.
Local Transport Plans	RPO 8.5 requires the preparation of Local Transport Plans. There are no adverse effects on site integrity as a result of this policy. However given the subject matter of these plans it will be important to undertake AA to inform local solutions and mitigation measures which can avoid adverse impacts on site integrity through mitigation or compensation measures as appropriate.	AA of local transport plans will be required.
Rail Infrastructure	Rail infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section 7.7.1 for discussion. It is noted that the rail projects supported	As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the

Key Policy Area	Assessment	Mitigation
	in Table 8.2 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments and as such the reference in the draft RSES is subject to the outcome of appropriate environmental assessment and the planning process. Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*	draft RSES Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed.
Bus Infrastructure	Bus infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section 7.7.2 for discussion. It is noted that the bus projects supported in Table 8.3 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments and as such the reference in the draft RSES is subject to the outcome of appropriate environmental assessment	As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES Detailed and robust route and site selection will be required to inform decision making in relation to the bus projects listed.

Key Policy Area	Assessment	Mitigation
	and the planning process. Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*	
Investment in Improved Road Infrastructure	Road infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section 7.7.3 for discussion. It is noted that the bus projects supported in Table 8.3 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments and as such the reference in the draft RSES is subject to the outcome of appropriate environmental assessment and the planning process. Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by*	As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the road projects listed.

Key Policy Area	Assessment	Mitigation
	robust site/ route selection processes which consider a full range of alternative modes and technologies.	
Dublin- Belfast Economic Corridor	Rail and road infrastructure has the potential to result in adverse effects on European sites through a number of pathways. The EU TEN-T network as it relates to the Dublin Belfast Corridor has specific potential to adversely affect European sites as it passes adjacent to /over a number of European sites along the east coast including a number designated for birds– see section 7.7.4 Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*	A specific development plan for this Dublin-Belfast corridor should be prepared in consultation with NI authorities. This should in turn be subject to AA once clear objectives and proposals are known. A *feasibility* study into the impact of high speed rail on the European sites along the corridor with particular attention to bird populations, between Belfast-Dublin-Cork will be required to inform decision making in relation to such a proposal.
Rural Transport Programme	RPO 8.11 relates to the Rural Transport Network. No adverse effects on site integrity.	None
Park and Ride	Park and Ride infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section 7.7.5 for discussion. It is noted that the bus projects supported in Table 8.5 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments and as such the reference in the draft RSES is subject to the outcome of appropriate environmental assessment and the planning process.	As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the park and ride projects listed.

Key Policy Area	Assessment	Mitigation
	Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*	
Walking and Cycling	Walking and cycling can impact both positively and negatively on European sites and this is addressed further in Section 1.1.6. Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.*	As per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the walking and cycling infrastructure referenced with a view to identifying and subsequently avoiding high sensitivity feeding or nesting points for birds and other sensitive fauna. The mitigation measures provided for in the NIS for the National Cycle Plan and the GDA Cycle Network should be fully applied. The National Cycle Plan should undergo AA to align with the decision making applied to the GDA Cycle Network Strategy.
International Connectivity	RPO 8.13 and 8.14 support international gateways for Ireland. This broadly includes, ports, airports, road and rail connections. This infrastructure has potential to impact on site integrity. Pathways for impact of road and rail have been discussed above and for ports and airports they are discussed below. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments.	As per the road and rail priorities listed elsewhere, support for investment in international gateways should be clearly linked to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to such projects.

Key Policy Area	Assessment	Mitigation
Dublin Airport	RPO 8.15 has the potential for adverse effects on site integrity. Key pathways for impact are: ▪ Noise disturbance of birds in SPAs along approach and landing paths to and from the airport; ▪ Changes in water quality as a result of run-off and pollution events from actions such as de-icing; ▪ In combination impacts from Metrolink and the other road and rail connections mentioned; ▪ Changes in the habitat and conditions supporting European site function as a result of climate change. See section 7.7.7 for further discussion. Metrolink is in planning and will be subject to AA. The other references to rail and road connections will be subject to AA as part of planning when details are know. RPO 8.16 relates to a cycleway adjacent to the airport. No adverse effects on site integrity from this objective. RPO 8.17 – 8.18 relate to restrictions in planning for noise sensitive developments in the vicinity of noise and safety zones delineated around the airport. No adverse effects on site integrity from these objectives.	EMRA should seek to support an appraisal of the existing drainage systems in operation at Dublin Airport to ensure it is capturing pollutants to avoid downstream impacts on water quality which provides a direct link to European sites. An analysis of the drainage system for capacity to take increased air traffic movements associated with secondary hubbing proposals is also required to inform future planning. EMRA should seek to support a dedicated study into the impact of aircraft movements at Dublin Airport on European sites on landing and take-off flight paths to and from the airport to inform future project proposals and planning for strategic infrastructure at the airport.
Ports	Port infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section7.7..8 for discussion. It is noted that the ports policy supported in Chapter 8 of the RSES is underpinned by RPO 8.22 which states that *EMRA supports the undertaking of feasibility studies to determine the carrying capacity of ports in relation to potential for likely significant effects on associated European sites including SPA and SAC.* This specific policy is welcomed as it clearly acknowledges the	None

Key Policy Area	Assessment	Mitigation
	potential for port activities to adversely impact on the integrity of European sites within the zone of influence of the port.	
Communications Networks and Digital Infrastructure	ICT infrastructure has the potential to result in adverse effects on European sites through a number of pathways – see section 7.7.9 for discussion. Detailed and robust route and site selection will be required to inform decision making in relation to the broadband roll out and other ICT infrastructure. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.* Consenting development of the broadband network at project level, the Local Authorities, or other Public Authorities/Competent Authorities where applicable, are responsible for ensuring that the installation or construction of the broadband network at local level will not adversely affect the integrity of any European Sites. It is acknowledged that there is potential for likely significant effects on European Sites if a consistent and co-ordinated approach is not followed by the competent authorities for AA. As such the addition of RPO 8.24 is welcomed.	The mitigation measures provided for in the NIS for the National Broadband Plan should be fully applied.

7.7.1 Rail Infrastructure

It is noted that the rail projects supported in Table 8.2 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available.

The provision of public transport options has the potential to offset GHG emissions related to use of private cars. Climate change is a significant driver for negative impacts on European Sites therefore measures to reduce emissions should be viewed as broadly positive.

The DART, Luas and Metro lines proposed are focussed on the Dublin region. The DART system has been operational in Dublin for over two decades. Many of the lines run along the coastal sections of Dublin, adjacent to the SPAs along south and north Dublin Bay. Irish rail has proposed a DART expansion programme which includes the delivery of Dart Underground and the electrification of a number of key lines in the GDA. This expansion has the potential for direct and indirect negative effects on European Sites though construction related activities leading to pollution of downstream watercourses with run-off or suspended solids and disturbance of species in adjacent European Sites such as at the Broadmeadow/ Swords Estuary (SPA), Malahide Estuary (SAC) and Rogerstown Estuary (SPA) where the rail line crosses directly through the European Sites, loss of protected habitat and habitat supporting QIs for these sites.

Many of the Luas lines have already been constructed and potential for impact on European Sites has focussed on construction related issues such as surface water management given the downstream European Sites in Dublin Bay. Proposed expansions to the Luas network will need to consider a wider remit of impact pathways as they move outward from the city confines. Any expansion to Bray for example will need to consider implications for Ballyman Glen SAC, which hosts priority habitat which is groundwater dependant. As identified in Table 8.2, appraisal is needed in the first instance to establish the feasibility of such an expansion. In line with the mitigation hierarchy, avoidance should be the first approach and this necessitates details and robust route selection to inform such expansions. Key issues for the proposed Metro line will relate to surface water and groundwater pathways given the potential for underground sections.

The wider rail network at a regional scale also has potential for negative effects on the Natura 2000 network through support of commuter rails services in the midlands. While delivery of new / expanded rail lines will be limited, refurbishment and reopening of lines has the potential for negative effects on European Sites. Disused rail lines in many cases have become ecological corridors and may be relevant for some protected species such as bats/ otters depending on the location. Upgrades etc. have potential for construction related impacts primarily related to pollution to surface waters. Emissions to air as a result of rail can give rise to NO_x, SO_x and particulates emissions, particularly where diesel stock is in use. While much of the DART system is electrified it is noted that the source of the electricity may be from non-renewable sources dependant on burning of fossil fuels and biomass which give rise to those emissions discussed to air.

7.7.2 Bus Infrastructure

It is noted that the bus projects supported in Table 8.3 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available.

The provision of public transport options has the potential to offset GHG emissions related to use of private cars. Climate change is a significant driver for negative impacts on European Sites therefore measures to reduce emissions should be viewed as broadly positive.

No direct impacts to European sites from the proposed bus improvements identified. Potential for indirect effects as a result of temporary construction related effects from widening and / or resurfacing through drainage pathways.

7.7.3 Investment in Improved Strategic Road Connectivity

It is noted that the bus projects supported in Table 8.3 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available.

Climate change is a significant driver for negative impacts on European Sites therefore measures which promote private car use have the potential to increase GHG emissions as well as other transport related emissions such as NO_x, SO_x and particulates. The key effects on European Sites associated with fuel combustion are; nitrogen/sulphur deposition leading to acidification and eutrophication of soils/water, deposition of particulate matter leading to vegetation damage and/or change in species assemblage and increased atmospheric CO and CO_2 accelerating climate change. Atmospheric deposition of sulphur and nitrogen compounds causes acidification of soil and surface waters. It has also been found that particulate matter (PM) deposition can result in acidification of soils (Bhattacharjee, *et al*., 1999). In 2010, 7% of land area in the EU-28 (28 EU Member States) exceeded acidification critical loads and this is projected to decrease to 4% by 2020 (EEA, 2015a). Deposition of sulphur and nitrogen compounds also causes eutrophication of freshwater and saltwater systems (EEA, 2015a).

Nitrogen deposition, as a result of NO_x emissions, causes many alterations to vegetation communities. It has been found that the number of species at risk within acidic and calcareous grasslands increased at nitrogen deposition rates greater than 5-10 kg N ha^{-1} yr^{-1} (JNCC, 2011). Increases of up to 50% in canopy height at N-deposition rates of 45-50 kg N ha^{-1} yr^{-1} (Stevens, *et al*., 2010) and an increase in the occurrence and abundance of competitive species have also been documented (JNCC, 2011). The JNCC (2011) also found that increased N-deposition on calcareous grasslands resulted in decreased species richness, forb and bryophyte cover and an increase in grass cover. This results in an overall decline in biodiversity.

The European Environment Agency (EEA) highlight that NO_x emissions contribute to the acidification of soil, lakes and rivers, causing loss of animal and plant life and biodiversity (EEA, 2015b). Similarly the EEA (2014) identified one of the main pressures on grassland ecosystem biodiversity was airborne nitrogen, amongst other pressures such as habitat fragmentation, conversion of land for alternative fuel crop and afforestation. Airborne nitrogen was identified to encourage the establishment of competitive species, favour species poor communities (i.e. reduced diversity) and reduce the structural density of grasslands through acidification and eutrophication. Nitrogen deposition is known to be affecting acidic and calcareous grasslands, heathlands and bogs (JNCC, 2011). The EEA published a report which succinctly summarised the links between increased nitrogen deposition, eutrophication and loss of biodiversity (European Environment Agency, 2010). They stated that nitrogen deposition can lead to eutrophication of ecosystems (European Environment Agency, 2010; Rai, 2016) and when deposition rates exceed critical load values "*it is damaging to biodiversity*". The report went on to state that excessive levels of reactive nitrogen, in the form of nitrogen deposition, constitute "*a major threat to biodiversity in terrestrial, aquatic and coastal ecosystems*". Many mapping efforts to investigate the impacts of nitrogen deposition on biodiversity are focused around 'critical loads'. However "*not all critical loads are defined to protect biodiversity*." The report also stated that in terrestrial habitats N-deposition "*causes a loss of sensitive species and hence biodiversity*". This was attributed to the excess nitrogen inputs favouring "*a few nitrogen tolerant species over less tolerant ones*" (European Environment Agency, 2010). As can be seen, "*N-deposition reduces the conservation value of sensitive priority habitats*" by impacting biodiversity and is a significant barrier to the UK (and by inference, Ireland) achieving the "*targets within the Habitats Directive and Biodiversity Action Plans*" (RoTAP, 2012). It must be kept in mind however that many of these studies state that research into the effects on biodiversity are lacking.

Emissions of particulate matter can have many detrimental effects on vegetation (Beckett, *et al.,* 1998; Rai, 2016). Rai (2016) stated that particulate matter may adversely affect biodiversity, in particular urban forests. Biomass combustion, wood burning in particular, is a major source of particulates in the atmosphere (EEA, 2015) due to the high ash and moisture content of wood and the often incomplete combustion associated with small-scale wood burning. Incomplete combustion of wood causes increased levels of coarse particulate matter (PM_{10}) in the atmosphere and the nucleation, condensation or coagulation of nitrogen oxides, sulphur dioxide, ammonia, and volatile organic compounds (found in biomass combustion emissions) result in the formation of secondary particles ($PM_{2.5}$) (USEPA, 2004). Particulate matter deposition is considered by many, albeit with limited direct research available, to cause many impacts such as reduced biodiversity, sedimentation of surface waterbodies and impacted growth of vegetation (Rai, 2016).

Alterations to the physical structure of vegetation has been found to occur as a result of PM deposition; a significant source of damage to trees, by particulate matter (PM) pollution, can be the abrasive action of the turbulent deposition of the PM (Das, *et al*., 2012; Hirano, *et al*., 1995; Kulshreshtha, *et al.*, 1994). Kulshreshtha, *et al.*, (1994) showed this to have increased callus tissue formation on leaf surfaces. The increase deposition of atmospheric PM has also been shown to result in the occlusion of stomata, thereby decreasing the efficiency of gaseous exchange (Beckett, *et al*., 1998; Das, *et al*., 2012; Hirano, *et al*., 1995). The formation of a 'crust' on leaves and bark surfaces has also been observed, due to PM deposition. This crust disrupts physiological processes, such as bud break, pollination and light absorption/reflectance (Beckett, *et al.,* 1998). Although fine PM deposition has been found to provide nutrients to vegetation, it also "changes leaf surface properties, increases the duration of surface wetness" and can result in modification of the habitat for epiphytic organisms, which may lead to increased risks from pathogens (Cape, 2008; Manning and Feder, 1980; Shkaraba and Perevedentseva, 1991).

The projects listed in Table 8.3 include a number which have potential for likely significant effects depending on the project solution proposed. This includes:

- M7 Naas to Newbridge project which is in proximity to Pollardstown Fen SAC and Maudes Bog SAC;
- N2 Slane which would require a crossing of the river Boyne and River Blackwater SAC and SPA;
- Laytown and Bettystown Link which is adjacent to the River Nanny Estuary and Shore SPA
- N4 Maynooth toLeixlip which is in proximity to the Ryewater Carton SAC
- N Mullingar to Longford which is directly adjecnt to the Lough Owel SAC and SPA

Detailed and robust route and site selection will be required to inform decision making in relation to these road projects. These early stage assessment must consider initially potential for likely significant effects of the various routes / sites as part of multi-criteria assessment and where necessary criteria which address avoidance of adverse effects on integrity of European sites may be required as a differentiator in decision making if not clear low risk alternative presents itself. In this way the EMRA can support the delivery of sustainable solutions for transport which protect the integrity of European sites.

7.7.4 Dublin Belfast Corridor

The corridor in question includes the Dublin Belfast rail line and M1/A1 Motorway as regionally significant transport infrastructure. Links to Dublin Airport and Belfast Port are also part of the EU TEN-T core network. This infrastructure intersects or is in proximity to the following sites:

- Rogerstown Estuary SPA and SAC
- Broadmeadow / Swords Estuary SPA
- Malahide Estuary SAC
- River Nanny Estuary and Shore SPA
- Boyne Coast and Estuary SAC
- Dundalk Bay SPA

In addition the corridor transport links passes close to the Boyne Estuary SPA and runs between the Stabannan-Braganstown SPA and Dundalk Bay SPA. Within NI jurisdiction the corridor is in proximity to Slieve Gullion SAC; Derryleckagh SAC; Mountlaghs Moss SAC; Lough Neagh and Lough Beg SPA and Belfast Lough Open Water SPA.

No information is presented in relation to the nature of investment in transport infrastructure and services. Potential negative changes however could be anticipated in key indicators of conservation value including water and air quality; potential disturbance to key species; potential reduction of habitat area; and potential habitat or species fragmentation.

7.7.5 Park and Ride

It is noted that the projects supported in Table 8.5 of the RSES are supported, *subject to the outcome of appropriate environmental assessment and the planning process.* This qualification is welcomed as it clearly acknowledges that the proposals will require detailed consideration once project specific information is available.

The provision of park and ride is positive, as it facilitates redirection of car travel toward more sustainable public transport options. There locations mentioned are not specific although several of the listed park and ride locations are near of adjacent to the coast; Woodbrook is approximately 3km north of Bray Head SAC and Greystones is located 1.2km south of the same European site. The NTA's indicative map of the proposed MetroLink Swords park and ride is located around the Seafield area, approximately a kilometre from Malahide Estuary SAC and Broadmeadow/Swords Estuary SPA. The Naas Road crosses the Grand Canal pNHA at Inchicore and Liffey Valley is directly adjacent to the Liffey Valley pNHA. As such there is potential for these proposals to impact indirectly on European sites through deterioration of habitats, disturbance of species, habitat fragmentation, deterioration of air and water quality locally etc. as a result of siting and drainage related issues. The extent of such potential cannot be determined at this stage.

Indirect impacts to European sites may also occur where park and ride facilities indirectly encourage recreational use of wild and protected areas in the wider area which could take in sensitive areas (e.g. Broadmeadow/Swords Estuary SPA is less than 1km from the proposed Seafield area proposed as a possible location for the MetroLink Swords Park and Ride as noted above. Understanding how customers will use the facilities beyond the basic concept will be an important element to avoiding

unforeseen impacts. It may therefore be necessary to include design elements or incentivise customers to avoid sensitive habitats / locations as part of the design of these facilities.

7.7.6 Walking and Cycling

Climate change is a significant driver for negative impacts on European Sites therefore measures to reduce emissions should broadly be viewed as positive for the Natura 200 network as they contribute to improved air quality and reduced GHG emissions. However, promotion of smarter travel can result in direct and indirect likely significant effects on European Sites through land use change to develop greenways, cycleways or other cycling/walking infrastructure. This could include direct habitat loss, fragmentation or degradation to construct the infrastructure, species mortality during construction and operation, habitat and species disturbance due to increased human presence adjacent to or in close proximity to European Sites.

It is stated that policy measures outlined in the Connectivity Chapter have been prepared with regard to the *National Climate Change Mitigation Plan* and DTTAS's first adaptation plan for the transport sector, *Developing Resilience to Climate Change in the Irish Transport Sector* however it is not clear how a firm commitment to reducing GHG emissions is supported at regional level when no emission alternatives are not supported as RPOs.

Provision of cycleways is generally positive from an environmental perspective, but cycleways in proximity to sensitive sites and species may disturb wildlife, particularly feeding and nesting birds. Their construction may also impact on groundwater and surface water quality and quantity. There GDA Cycle Network Plan has undergone AA. It is noted within the AAs that some routes may have an impact on Natura 2000 sites and wider biodiversity. This is particularly the case along coastal sites and canal and river sites which by their linear nature can act as important links and stepping stones for biodiversity. The GDA plan notes that in all cases, avoidance of such impacts should be achievable, and details of the measures required to achieve this are given in that report. More detailed mitigation measures will be developed through the process of project-level Environmental Impact Assessment and Appropriate Assessment.

Provision of greenways and blueways may also result in indirect negative impacts; key issues for European Sites include the provision of support infrastructure such as slipways and quays, water pollution form fuel from boats, noise disturbance form power boats, human disturbance from increased footfall on adjacent towpaths and people using the water, loss or disturbance of riverine or fringing habitat to provide associated infrastructure. In addition there is potential for transfer of disease and spread of invasive species as a result of boating activity. A recent example is the introduction of crayfish plague in the River Barrow system. This can result in 100% mortality for the protected white clawed crayfish. The policy base should include a clear objective to prevent the spread of IAS within the region. It is not clear if the national cycle plan has undergone AA.

7.7.7 Dublin Airport

Dublin Airport is not located within or adjacent to any European sites however there are a number of potential pathways for impact including emission to surface water, collision and noise disturbance. These have the potential for indirect negative impacts, particularly on downstream SAC and SPA in Dublin Bay and north and south of this. Those with hydrological connectivity and / or lie beneath an approach path include:

- Baldoyle Bay SAC

- Lambay Island SAC
- Rogerstown Estuary SAC
- Rockabill to Dalkey Island SAC
- Malahide Estuary SAC
- North Dublin Bay SAC
- South Dublin Bay SAC
- Baldoyle Bay SPA
- Lambay Island SPA
- Rogerstown Estuary SPA
- Broadmeadow/ Swords Estuary SPA
- Ireland's Eye SPA
- Howth Head Coast SPA
- North Bull Island SPA
- South Dublin Bay and River Tolka Estuary SPA

Water quality is known to be poor in a number of the rivers traversing the airport although it is acknowledged that a pollution control system is in place. RPO 8.15 supports the development of Dublin Airport as a secondary hub and it can be anticipated from this that it is proposed that more aircraft will land and take off at Dublin Airport. Activities such as de-icing, refuelling, general wear and tear of tyres etc. which generate pollutants along with run-off from the runways surface may also increase. In addition, there is significant development of lands around Dublin airport for residential, industrial and airport related functions as well as improved connectivity via road and rail proposals which is also changing the dynamics of rivers and streams in the catchment. An appraisal of the airport drainage system servicing the existing infrastructure at the airport is required to establish if it is adequately dealing with the existing emissions from the airport and associated infrastructure in a manner which achieves the Water Framework Objectives assigned to those water bodies. Further analysis is also required to determine how the increased capacity is to be achieved to facilitate growth of the airport as a secondary hub without adverse effects on the receiving waters and potentially the downstream European sites which have hydrological connectivity to the airport.

While there is no evidence to indicate that birds in the coastal SPAs on aircraft approach paths are disturbed by the aircraft movements, a dedicated study should be undertaken to inform future proposals at the airport, particularly in relation to any change to existing operations.

7.7.8 Ports

It is noted that the ports policy supported in Chapter 8 of the RSES is underpinned by RPO 8.22 which states that *EMRA supports the undertaking of feasibility studies to determine the carrying capacity of ports in relation to potential for likely significant effects on associated European sites including SPA and SAC.* This specific policy is welcomed as it clearly acknowledges the potential for port activities to adversely impact on the integrity of European sites within the zone of influence of the port.

A national ports policy was developed in 2013 to better address maritime transport services. The policy clearly delineated Tier 1 ports of international significance which includes Dublin Port, Tier 2 ports of national significance [none listed within EMR] and other ports of regional significance which include Drogheda, Dun Laoghaire Dundalk; Greenore and Wicklow.

All of these ports in the region are in or directly adjacent to European Sites and include extensive areas of protected habitats and species. *Growth of ports* has the potential for impact on the

European Sites through changes in coastal processes and sediment budgets as a result of dredging or similar works. Sources of impact at ports include:

- dredging (maintenance and / capital) resulting in changes in coastal processes and sediment budgets commercial shipping and associated noise and disturbance;
- emissions of to water and air;
- waste generation and land reclamation;
- attraction of associated industrial development;
- traffic accessing the port
- contaminated land issues;
- construction activities.

These in turn give rise to pressures on adjacent SAC and SPA. Key pressures include:

- Direct and indirect disturbance to QI/SCI habitats and/or species of European Sites from commercial shipping and associated noise and disturbance spread of invasive species
- Loss / disturbance to feeding or nesting areas for Annex bird species as a result of expansion of activities and land reclamation;
- Disruption of feeding resources for Annex bird species as a result of expansion of activities and land reclamation and encroachment;
- Underwater noise disturbance leading to behavioural change and/ or physical injury in marine mammals as a result of piling and other engineering activity.
- Deterioration in water quality result in deterioration of wetland, marine and coastal habitats with respect to their water quality and favourable conservation status as a result of suspended sediments and/or contaminants escaping into the marine environment during marine engineering construction.

Recognising the complexities of issues in the estuarine and coastal zone, the European Commission published guidelines on the *Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones*. The guidelines note that port development in European sites is not precluded but must be approached with care and must include early stakeholder dialogue. The approach to port development in any of the ports noted must adhere to these guidelines in order to protect the European Sites.

RPO 6.19 supports Dublin Port as a Tier 1 port and references expansion and improved transport links. An AA has been completed on the revised Dublin Port Masterplan 2040 and this identified the key pathways for impact as:

- Water quality and habitat deterioration
- Underwater noise and disturbance
- Aerial noise and visual disturbance
- Habitat loss

The NIS for the Dublin Port Masterplan noted potential *adverse effects on the integrity of the South Dublin Bay and River Tolka Estuary SPA to occur at project stage as a result of bringing forward some development options in the medium term of the Masterplan to provide new deepwater Lo-Lo and multipurpose berths in a location incompatible with the existing tern breeding site on the ESB dolphin. A negative assessment of the implications for this SPA must meet the requirements of Article 6(4) of the Habitats Directive by demonstrating an absence of alternative solutions and imperative reasons of overriding public interest including those of a social or economic nature, if a consent is to be granted*.

Any plans to facilitate growth and port access must first ensure that it will not have any adverse effects on the integrity of the site(s) and if necessary meet the requirements of Article 6(4) of the Habitats Directive. This is supported by RPO 8.22.

It is also noted that there is uncertainty in relation to the effects of Brexit on level of activity at Dublin Port which is a link for distribution of goods from Northern Ireland to the UK.

7.7.9 Communications Networks and Digital Infrastructure

Impacts to European Sites arising from communications networks and digital infrastructure differ depending on the type of technology used. For example, stringing cables onto existing overhead telecommunications infrastructure typically occurs alongside the road network, as this is the existing location of much of the telecommunications infrastructure. However, existing overhead electricity infrastructure typically transverses rural countryside and therefore stringing cables onto this infrastructure involves carrying out works in off-road areas and carries an increased likelihood of having access to European Sites.

Where existing utilities infrastructure is used for roll out of communications networks and digital infrastructure, potential for likely significant effects on European Sites can arise from installation, operation and maintenance of same. The main effects on European Sites associated with this include:

- Direct habitat loss of European Sites if infrastructure is constructed within the Sites;
- Direct or indirect habitat loss or fragmentation through loss of small patches of habitat within a larger European Site to facilitate access/installation of infrastructure if the existing utilities infrastructure was already sited within the Sites. This could also arise from loss of ecological corridors and connectivity, outside of European Sites but which support the functioning of the European Sites, such as loss of hedgerows or treelines through small scale clearance to facilitate access/installation of the broadband network.
- Destruction of species and habitat within and outside of European Sites during installation of the network e.g. destruction of Otter holts along due to machinery traversing over or in close proximity to the area e.g. along field drains or wet ditches.
- Direct habitat degradation resulting from access of construction related machinery or trampling during installation and maintenance of the network.
- Potential direct loss of species through collision with the network e.g. birds colliding with overhead wires or masts. It should be noted that the existing utilities over ground network may have collision impacts already associated with it which could lead to cumulative collision impacts.
- Barriers to movement of species as a result of construction of a new network e.g. construction of overhead lines or masts in flight paths or migration routes of birds;
- Potential alteration to ground water movement through installation of underground cable routes and masts which could impact water dependent habitats and species; and
- Direct and indirect disturbance to QI/SCI habitats and/or species of European Sites[12] located in the vicinity during installation and operation/maintenance of the infrastructure e.g. via noise or human disturbance.
- Impacts on water quality both ex-situ and in-situ arising from installation/construction works, such as sedimentation and release nutrients from soil which could impact water dependent habitats and species. This is also relevant to the maintenance/operation of the network.

[12] Including potential transboundary impacts on European Sites in Northern Ireland for which there is a pathway of connectivity as a result of the implementation of the Intervention Strategy.

- Potential introduction and spread of invasive species to a European Site, or adjacent to or adjoining a European Site, through vector material carried on machinery/equipment required for installation and operation/maintenance of the network or materials required for construction and operation/maintenance of the network.

7.7.10 Climate Change Impacts on Biodiversity and the Natura 2000 Network

Global warming and climate change are recognised threats to biodiversity, and specifically European sites. It is acknowledged that climate change can have both positive and negative impacts on biodiversity which poses complex problems for planning and particularly nature conservation policy and practice which is seeking to mitigate and adapt to climate change. Numerous studies have been conducted in Ireland and the UK investigating the impacts of climate change on biodiversity and the conservation status of European sites.

In Ireland, the EPA funded research investigating the impacts of climate change on the nature conservation resources of Ireland, through the use of ecological modelling as part of their 2007-2013 research programme [13]. The results of this study suggested that the habitats most vulnerable to the impacts of climate change in Ireland are:

- Upland habitats (siliceous and calcareous scree, siliceous and calcareous rocky slopes, alpine and subalpine heath);
- Peatlands (raised bog, blanket bog); and
- Coastal habitats (fixed dunes, etc.).

This is also acknowledged in the National Biodiversity Action Plan 2017-2021 which also highlights negative impacts on a suite of species from climate change.

Habitats and Vegetation

Peatlands i.e. raised bogs, blanket bogs and fens, cover c. 21% of Ireland's land cover (NPWS, 2015). Peat-forming bogs (i.e. active bogs) act as important long-term carbon sinks. Although their distribution is limited to approximately 2-3% of the earth's land surface (Heijmans et al., 2008), peat accumulation has resulted in vast quantities of carbon being stored in bogs; equating to approximately 20% of the global carbon store held in terrestrial ecosystems (Gorham 1991). Bogland species typically consist of Sphagnum (the main peat forming species) and other vascular plant species. A study using ecological modelling found that areas dominated by Sphagnum, at the expense of vascular plants, typically exhibit higher carbon sequestration rates. This study further highlighted that Sphagnum growth rate typically increases when exposed to increased ambient CO2 concentrations. This is due to this species being less nutrient-limited than other vascular plant species typically found on bogs and therefore gaining competitive advantage. It is also linked to the increased water use efficiency of Sphagnum (Heijmans et al., 2008). These findings indicate towards the close relationship between atmospheric carbon concentrations and peat-formation rates and highlight the possible effects that changing atmospheric carbon concentrations could have on the future of peatlands and their associated biodiversity.

A national study (BOGLANDS) carried out from 2007 to 2013 on the peatlands of Ireland (EPA, 2011) highlighted the importance of climate change in relation to peatlands and the impacts it has on peatland biodiversity. Elevated air temperatures due to global warming has resulted in the "melting

[13] EPA Climate change Research Programme (CCRP) 2007-2013 Report Series No. 19. *Winners and Losers: Climate change impacts on Biodiversity in Ireland.*

of permafrost peatlands" (Camill, 2005) and altered vegetation patterns in temperate peatlands (Chapman et al., 2001; Gunnarsson et al., 2002). As part of the BOGLANDS study, climate change scenario data was analysed to investigate future projections of climate change and the sensitivity of different Irish peatlands. These analyses outputs showed that predicted changes will affect low Atlantic blanket bogs in the West of Ireland the least. The outputs also showed that these predicted changes in climate are likely to place peatlands under severe stress resulting in significant impacts on the peatland carbon store, GHG fluxes and biodiversity (EPA, 2011).

Other studies have been conducted investigating the impacts of elevated atmospheric carbon dioxide on peatland vegetation and some show that plant productivity increases with increasing carbon dioxide levels (Kang et al., 2001; Saarnio et al., 2003), leading to a subsequent increase in soil respiration (Norby, 1997) and methane emissions (Dacey et al., 1994; Saarnio and Silvola, 1999). This alteration of the soil habitat and floral composition is likely to affect the biodiversity of the peatland habitat.

Peatlands worldwide act as a major sink of carbon, naturally mitigating anthropogenic rises in atmospheric carbon dioxide. However, degraded peatlands, where there is drawdown of the water table and a drying-out of the peat, release the stored carbon as carbon dioxide emissions. As a result of this, the situation in Ireland is thought to differ from the sink scenario, due to the high levels of degradation of Irish peatlands. The areas of degraded peat are emitting greater amounts of carbon dioxide than the areas which are sequestering this GHG (Wilson, 2008) resulting in a source scenario, rather than a sink. This further exacerbates the impacts of elevated atmospheric carbon and likely results in declines in peatland biodiversity.

A modelling study carried out by the Irish EPA as part of their 2007-2013 research programme [14] investigated the impacts of climate change on biodiversity in Ireland. Modelling outputs suggested that "species representative of Arctic-montane, boreal-montane and boreo-arctic montane biomes will be most vulnerable" to the impacts of climate change as these species in Ireland will not have higher altitudes and latitudes to move to. Whereas, species with "disjunct and narrow distributions are projected to experience the largest range changes, contracting and expanding, respectively". Some of the key messages from this study were that widespread changes are already occurring in natural ecosystems and these will continue, but will accelerate in scope and scale in the coming decade due to GHG already in the atmosphere. However, it also outlines that the scale and extent of changes will continue to accelerate over longer timescales if GHGs emissions continue or increase.

Montane heath habitats (comparable to the protected 'Alpine & Subalpine heath' habitats found in Ireland) are also experiencing impacts on their biodiversity due to climate change caused by GHGs; due to montane species limited adaptability they are extremely vulnerable to the effects of climate change (Berry et al., 2003), such as elevated temperature and ambient carbon dioxide concentrations. This results in intensified pressure on montane biodiversity (Perrin et al., 2009).

Climate change can impact different habitats in varying ways. Although indications suggest that protected areas are likely to retain 'climatic suitability' for species more so than unprotected/ undesignated areas, studies have shown that in fact European Sites retain climatic suitability no more or no better than unprotected areas and sometimes are even less effective than unprotected areas (Araújo et al., 2011).

Coll et al. (2012) suggest that policy initiatives in Ireland, aimed at reducing climate change impacts on biodiversity need to focus on two key habitat types:

[14] EPA Climate change Research Programme (CCRP) 2007-2013 Report Series No. 19. *Winners and Losers: Climate change impacts on Biodiversity in Ireland.*

- The first type are that of 'displaced refugia' where 'species are able to find suitable habitats after they have been displaced by climate change from their original location'; and
- The second areas are 'regions of high connectivity that allow species to track climate changes through dispersal'.

They therefore surmise that efforts are needed to integrate protected/designated areas into wider landscapes, seascapes and sectors. This can be achieved through the use of connectivity measures, i.e. development of ecological networks and corridors. In addition to this, restoration of already degraded habitats is essential to addressing climate change impacts and increasing the habitats resilience to climate change (Coll et al., 2012). This is more appropriately addressed through climate change adaptation strategies more so than mitigation; mitigation dealing with the causes of climate change and adaptation dealing with the impacts of climate change.

The effects of climate change going forward will have major consequences for the species which European sites are designated. Impacts on species will differ greatly and may result in alterations of the species composition which define the habitats on which site designation is based upon. Future designation of sites will therefore need to incorporate projected climate change impacts. Management of current sites will also need to take account of projected climate change impacts and appropriate adaption strategies must be developed. In order for this to occur, dynamic systems for designating sites may be required as species ranges change (Coll et al., 2012).

Climate change can impact the biodiversity of terrestrial sites through impacts on vegetation also. One example of such an impact is the effect of elevated CO_2 on plant responses; elevated atmospheric CO_2 can influence plant responses to various stressors, such as water availability (Cowling and Sykes, 1999; Farquhar and Sharkey, 1982). Short-term measurements showed that under elevated CO_2 conditions, plants showed reduced transpiration rates and exhibited increased water use efficiency (WUE) (Farquhar and Sharkey, 1982). This alteration of plant responses can alter the plants vulnerability to the impacts of climate change and the varying environmental conditions that can occur.

In recent geological time (the Pleistocene era), atmospheric CO_2 concentrations were 25–50% below the current level (Cowling and Sykes, 1999; Sage and Coleman, 2001). It is known that photosynthetic productivity of certain plants (known as C3 plants) is significantly reduced at these low CO_2 levels, which is further compounded by higher temperatures and during stress. Photosynthesis may have acclimated to these reduced CO_2 concentrations in order to compensate for this inhibition. However, plants have limited control of Rubisco (an enzyme involved in carbon fixation) and other photosynthetic protein production following CO_2 reduction. Therefore, it is postulated that low CO_2 levels resulted in the evolutionary selection of plants adapted to CO_2 deficiency. Sage and Coleman (2001) postulated that adaptations to low CO_2 concentrations may still exist in plants and therefore may constrain responses to rising CO_2 concentration, resulting from ever increasing anthropogenic emissions. This response formed the basis for their prediction that low atmospheric CO_2 would have had a greater impact on vegetation in mid-latitude, warm-temperature climates than cold habitats. This study found that reducing ambient CO_2 from 360ppm to 180ppm caused a plant biomass decline of 50%, potentially due to a decline in productivity. This study highlights the unlikely scenarios that can occur as a result of reducing GHG's; plant production may actually decline in response to reducing anthropogenic emissions, thereby reducing atmospheric CO_2 levels.

A phenomenon known to occur under elevated CO_2 concentrations is known as the "nitrogen dilution effect" (Veteli, 2003). This phenomenon describes the scenario where plants commonly have decreased foliar nitrogen concentrations when grown under elevated CO_2, i.e. an increase in

the C:N ratio. Lincoln et al. (1993) stated that this effect is dependent on; the carbon fixation pathway of the plant species (i.e. C3 or C4 plant); the plant species and community; and the availability of other resources. This phenomenon has been observed for agricultural and non-domesticated species in many habitats (Lincoln et al., 1993; Bezemer and Jones, 1998). In nearly all studies which investigated this phenomenon it was found that nitrogen concentrations had decreased by an average of 15% (Bezemer and Jones, 1998).

Coastal and Estuarine Habitats

Increasing levels of GHGs and primarily CO_2, are of particular concern when considering the biodiversity within coastal, estuarine and marine habitats. Ireland is home to numerous coastal, estuarine and marine protected habitats, with many also designated as priority habitats under Annex I of the Habitats Directive (92/43/EEC), e.g. coastal lagoons, fixed dunes (grey dunes), decalcified dune heath and machair. Coastal, estuarine and marine habitats are particularly sensitive to elevated atmospheric carbon inputs due to the multitude of impacts that occur as a result, such as:

- Increased water temperature due to global warming effects;
- Ocean acidification;
- Decreased shellfish calcification (Gazeau et al., 2007); and
- Altered thermal stratification patterns of lagoons.

Approximately one third of the world's anthropogenic CO_2 emissions are stored in the Earth's oceans, at a rate of approximately 22 million tonnes of carbon dioxide a day (Feeley et al., 2006), which has resulted in a decline in pH (Orr *et al*., 2005) and is predicted to further decline in the future (Caldeira and Wickett, 2003). Ocean acidification has been noted occurring in the offshore coastal areas of Ireland (ICES, 2014); the recent State of the Environment Report 2016 (EPA, 2016) noted ocean acidification of Irish waters as potentially "very damaging" to marine organisms and further stated that it is a concern worldwide, due to increasing climate change.

A report by the EU Commission (COM, 2009) assessing the impacts of climate change on water, coasts and marine systems in Europe predicted that marine ecosystems and marine biodiversity will in the future continue to be impacted by elevated atmospheric CO_2, through ocean acidification; impacts to biodiversity will occur through alterations to species fecundity, feeding patterns and distribution, increased frequency of algal blooms and altered distributions of planktonic organisms.

Declining ocean pH has many direct and indirect impacts on biodiversity. One such negative impact is the decreased calcification of many shellfish species. Ocean acidification results in decreased pH of the waters and a consequent decrease in calcium carbonate saturation. This decreased availability of calcium carbonate in the water impacts calcareous organisms greatly as they depend on soluble calcium carbonate to synthesis their protective shells. Experiments have shown that at elevated CO_2 coralline algae, coccolithophorids and foraminifera exhibit reduced size and reduced calcification (Agegian, 1985; Bijma et al., 1999; Leclercq et al., 2000; Riebesell et al., 2000; Langdon and Atkinson, 2005) and a more recent study also exhibited this effect in relation to two common bivalves; the edible mussel (Mytilus edulis) and Pacific oyster (Crassostrea gigas) showed a negatively correlated linear relationship between calcification and CO2 concentration. These declines in such shellfish species can have significant impacts on "coastal biodiversity and ecosystem functioning and services" (Gazeau et al., 2007).

The direct impacts of decreased calcification on calcifying marine organisms is evident, however a number of indirect impacts can occur also; in response to reduced calcium carbonate saturation in oceans, calcifying organisms may adapt to this change by shifting their spatial distribution and moving to areas of higher carbonate ion concentrations (Doney et al., 2009). This may result in significant negative impacts on the associated flora and fauna (Burns, 2008). Another indirect impact is the potential loss of important habitats such as cold-water coral reefs (found along the west coast of Ireland) and/or maërl beds which would likely result in reduced local biodiversity (Ní Longphuirt et al., 2010).

Juvenile bivalves are extremely sensitive to the impacts of ocean acidification; a link has been observed between high mortality of juveniles and calcium carbonate dissolution (Green et al., 2004). This impact can result in a loss of juvenile stages of many bivalve species resulting in reduced biodiversity.

Some marine organisms are also at risk of hypercapnia (excessive CO2 in the blood) and acidosis (serious condition resulting from hypercapnia) due to ocean acidification (Findlay et al., 2008; Pörtner et al., 2004, Shirayama & Thornton 2005, Miles et al., 2007). This increased rate of hypercapnia and acidosis can result in increased mortality thereby reducing the biodiversity of marine habitats experiencing elevated CO2 or CO2 saturation.

Impacts on Species

Ireland currently plays host to 61 species (flora and fauna) protected under Annex II of the EU Habitats Directive 92/43/EEC13. Responses to climate change and elevated atmospheric CO_2 in particular are species-specific (as seen above with calcifying marine organisms) and must therefore be investigated individually. Although broad observations can be made for various faunal (birds, fish, mammals) or floral (angiosperms, gymnosperms, algae, bryophytes) groups, investigations at species level elicit more accurate predictions of future impacts to species, with increasing carbon dioxide concentrations. For the purposes of this report, a number of species will be discussed in detail with regard to the impact of climate change and elevated atmospheric CO_2 concentrations on their populations and inferences will be made as to the impacts this has on the biodiversity of their corresponding habitats.

It is known that as concentrations of atmospheric CO_2 increase forage quality typically decreases and this may affect the foraging habits of grazing and browsing animals (Dukes, 2000). Although cattle farmers may be able to maintain livestock populations at current levels (i.e. under current concentrations of atmospheric CO_2) by supplementing the livestock feed with nutritional additives, the growth and reproduction of wild fauna is likely to experience a decline due to deterioration of foraging habitat (Owensby et al. 1996).

The European Commission conducted a modelling and analyses study into the impacts of climate change on 212 species of Community Interest for which model data was available, within the Natura 2000 Network in Europe (EC, 2009). The study “assessed the direct impacts of climate change on the Natura 2000 network and also related the results of the species vulnerability assessments to the Natura 2000 network”.

The findings of the study were as follows;

- For breeding birds one out of the 149 species assessed was seen to react positively to climate change. However, in European Sites in the Mediterranean biogeographic region,

about 78% of species fall into the top four vulnerability categories; extremely critically vulnerable, critically vulnerable, very highly vulnerable and highly vulnerable;

- Vascular plants did not show large numbers of highly vulnerable species; and
- Protected butterfly species in European Sites exhibit low or moderate vulnerability to climate change.

The Waxwing (*Bombycilla garrulous*) nests in northern Scandinavia and winters in central Europe. Although small numbers of Waxwings are seen in Ireland each winter, unusually high numbers of the species have been sighted in Ireland in winter 2017 (Holland, 2017). This is thought to be due to the abnormally low temperatures occurring across central Europe, an occurrence that may be attributed to climate change. The Waxwing feeds almost exclusively on berries during the winter months. However due to the freezing temperatures across central Europe their food supply has been depleted and therefore it is thought that birds are moving towards Ireland in search of a more plentiful supply of berries. Flocks of up to 400 birds have been observed in Ireland. Thus the species range may be altering due to effects of climate change.

Positive Impacts of Elevated Carbon Dioxide on Biodiversity

Although elevated atmospheric carbon dioxide is largely thought to have solely negative impacts on vegetation and botanical biodiversity it has been shown that elevated CO_2 can sometimes positively impact vegetation.

Numerous studies have been conducted to investigate the impact of elevated CO_2 on plant productivity, primarily due to concerns over food security and crop yields. In over 1000 studies it was conclusively shown that a doubling in the atmospheric concentration of CO_2 resulted in a c. 33% increase in C3 crop yields and a c. 10% increase in C4 crop yields (Kimball, 1985; Cure and Acock, 1986). Other studies have also shown that plants grown at elevated CO_2 concentrations exhibit increased water use efficiency (Dukes and Mooney, 1999), which is preferential should drought events increase in frequency with climate change. This highlights the potentially negative impact that reducing atmospheric CO_2 may have on plant productivity, which may have knock-on effects such as reduced crop yields and food shortages.

As plants typically increase their water use efficiency in response to growth under elevated CO_2 concentrations, this is likely to allow some species, annual grasses for example, to extend their ranges further into drier, more arid regions. However, in more mesic areas, grassland dominant species increasing in water use efficiency will likely increase deep water percolation. This will benefit shrubs and other deep-rooting species. This may result in rapid population increases in leguminous shrubs due to their deep-rooting patterns and increased N fixation, as rising CO_2 concentration stimulates N fixation (Dukes, 2000).

A number of insect species have been shown to benefit from increased atmospheric concentrations of carbon dioxide. Some studies investigating aphid populations suggest that populations could increase under elevated CO_2 concentration, due to increased fecundity and longer settling time on foliage (Awmack *et al.* 1996; Smith 1996). However, it is thought that this effect may be dependent on the host plant species. For example, the potato aphid (*Aulacorthum solani*) population levels respond quite differently to elevated CO2 concentration dependent on whether it is feeding on bean (*Vicia faba*) or tansy (*Tanacetum vulgare*) (Awmack *et al.,* 1997).

Light-bellied brent goose (Branta bernicla hrota) is a long distance Arctic migratory species that winters in Ireland, utilising the many grasslands and estuaries as feeding grounds. This species is

amber-listed as the largest proportion of the global population winter at less than ten sites in Ireland, thereby making the Irish population internationally significant. A recent study was published in the UK (Cleasby *et al*., 2016) which looked at the impacts of climate change on the species. The primary focus of this study was the potential impact climate change is having on the reproductive rates of females and the survival rates of males and females and possible links between these rates. It is known that migratory species such as the Brent goose are particularly sensitive to climate impacts due to the various climatic conditions they must endure throughout their annual cycle.

The study was conducted using integrated population models (IPM) and demonstrated that climatic conditions, when experienced at the start of the breeding season, exerted the most influence on survival and fecundity and resulted in these rates occurring in opposite directions (Cleasby et al., 2016), and therefore were the biggest driver of population vital rates, which has previously been concluded in other studies also (Boyd, 1987; Gaston et al., 2005). Because climatic conditions appear to have "opposing effects on different demographic rates" (Cleasby et al., 2016; Oudenhove et al., 2014) the interactions between these rates is likely important and should not be ignored in future studies of climate change impacts.

Another interesting finding of this study related to the survival rates of male brent geese versus female and the influence of climate. It was found that when June North Atlantic Oscillation (NAO) values were negative (negative NAO indices during the summer represent favourable environmental conditions for breeding) female survival rates declined. However, this correlation was not seen for male geese (Cleasby et al., 2016; Oro et al., 2010). Therefore, it could be reasoned that female survival rates are lowest in years when productivity rates are highest. This led the researchers to the conclusion that the most likely cause of this relationship between survival rate and climatic conditions is that it is driven by a "classic life-history trade-off between investing in reproduction versus self-maintenance" (Williams, 1966), partly influence by environmental conditions. It is thought that decreased survival rates during increased productivity years is due to increased predation rates (Hagen et al., 2007) as female birds are spending longer sitting on nests, leaving them more vulnerable to predators. The take-home message from this report is that climate change has the potential to affect population dynamics in this species (Cleasby et al., 2016) and therefore affect biodiversity of a number of geographical locations due to the numerous habitats the geese utilise during their annual cycle.

In the Japanese beetle (Popillia japonica Newman) elevated atmospheric carbon dioxide and the resultant increase in ambient temperature are known to effect herbivory rates in native and agricultural communities (Niziolek et al., 2012). Niziolek et al. (2012) investigated the impacts of elevated carbon dioxide and elevated temperature on soybean crops and on the herbivory rates of the Japanese beetle which feeds upon it. Elevated CO_2 and elevated temperate were investigated individually and in conjunction. It was known, from previous studies, that when soybeans were exposed to levels of CO_2 predicted to occur by 2050, the damage to foliage greatly increased due to increased chewing by insects, the Japanese beetle in particular (Coviella & Trumble, 1999; Hamilton et al., 2005; Dermody et al., 2008). It was also known that when the beetle fed on foliage grown under elevated CO_2 conditions the survivorship of the beetles increased (O'Neill et al., 2008). However, Niziolek et al. (2012) found that when elevated CO_2 was applied simultaneously with elevated temperature (as would occur under such conditions in the troposphere), the effect of temperature on leaf damage appeared stronger than the effect of elevated CO_2. This was thought to be likely due to the direct effect of the temperature increase on insect metabolism. This response may indicate that under elevated temperature and CO_2 concentration, as the climate warms from anthropogenic impacts, soybean may experience greater foliage damage.

This study showed that with elevated temperature Japanese beetles will spend more time feeding, along with an increase in herbivory rate and will not experience a decline in overall survivorship,

given that there are no other changes in beetle behaviour and physiology (Niziolek et al., 2012). This exhibits how elevated carbon dioxide and elevated temperature, conditions predicted under climate change, can benefit a species. However, this is with consequent impacts to the food plant, the soybean.

While much of the research discussed above includes habitats and species wider than the Irish context, it illustrates the extent of potential impacts associated with biodiversity as a result of climate change. The EPA Climate Change Research Report on the winners and losers in Irish biodiversity concluded that:

> *It is projected that many species in Ireland will experience significant changes to their ranges under future climate scenarios. Species with disjunct and narrow distributions are projected to experience the largest range changes, contracting and expanding, respectively.*

The key messages from the research indicate that we are already seeing changes in natural systems in Ireland and these are likely to continue, accelerating in scope and scale into the future. This scope and scale will continue into the future if greenhouse gas emissions continue unabated or increase.

7.8 QUALITY OF LIFE (CHAPTER 9 OF RSES)

Chapter 9 of the draft RSES sets out the RPOs in relation to both quality of life and placemaking. It is the acknowledgement that the place or environment in which we live or work, including its physical nature and social environment or community, has a profound impact on physical and mental health wellbeing, and quality of life.

Placemaking is an essential link between spatial planning and facilitating improvements in people's quality of life, and Irish culture has a longstanding identification with place. The goal of this is to use placemaking to improve quality of life through, *inter alia*, planning and integration, availability and access to services .

Key Policy Area	Assessment
RPOs **Promoting Healthy and Attractive Communities**	RPO 9.1 and 9.2 relate to initiatives to improve special integration. No potential for adverse effects on the integrity of any European Sites.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Housing**	RPO 9.3, 9.4, 9.5 and 9.6 relate to supporting policies for housing development, specifically, the provision of affordable, appropriate and adaptable accommodation, also reflecting the strategic outcomes and policy objectives of the NPF. No potential for adverse effects on the integrity of any European Sites. See also Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Placemaking**	RPO 9.7 and 9.8 relate to urban placemaking and transforming the spaces between buildings into vibrant urban spaces that offer comfort, safety and inspiration. The objective of these RPOs is to improve human wellbeing and enhance the attractiveness of places for business investment, visitors, workers and shoppers. This will be achieved through ongoing improvements to the physical and social infrastructure of urban centres. No potential for adverse effects on the integrity of any European Sites. See also Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Compact Urban Development Targets**	RPO 9.9 relates to the need for compact growth in line with one of the key elements of the NPF. To achieve this, the approach taken will be the regeneration of infill and brownfield sites, for sustainable compact growth and revitalisation of existing settlements to ensure they achieve their full potential. No potential for adverse effects on the integrity of any European Sites. See also Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Regeneration**	RPO 9.10 supports the National Land Development Agency in co-ordinating strategically located landbanks, particularly publicly owned lands, in city and town centres that require consolidation and aggregation of land to enable regeneration. This is a supporting policy objective that will not result in potential adverse effects on the integrity of any European Site. RPOs 9.11 and 9.12 are also supporting policies relating to working with Local Authorities in their promotion of urban development and regeneration in line with the Guiding Principles set out in the draft RSES. No potential for adverse effects on the integrity of any European Sites. These are supporting policy objectives that will not result in potential adverse effects on the integrity of any European Site. RPO 9.13 relates to the exploration of ways to effectively deal with waste and contamination relating to brownfield generation and as such there is no potential for adverse effects on the integrity of European Sites. See also Section 7.3 for further consideration.

Mitigation: None required

Key Policy Area	Assessment
RPOs **Social Inclusion**	RPO 9.14 relates to the integration of all persons in a community in an equal manner. This is in line with the Economic Strategy of the draft RSES which seeks to promote the creation of quality jobs that support a decent standard of living and afford economic security. No potential for adverse effects on the integrity of any European Sites.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Childcare, education and lifelong learning**	RPO 9.15 supports investment in the sustainable development of childcare services as an integral part of regional infrastructure, while RPO 9.16 relates to the provision of accessible schools in areas where significant new housing is proposed. There is no potential for adverse effects on the integrity of any European Sites. These RPOs relate to the development of key settlement areas. See also Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Access to Social Infrastructure**	RPO 9.17 supports the role of LCEPs in planning for social infrastructure needs. RPO 9.18 ensures that new social infrastructure developments are accessible and inclusive. No potential for adverse effects on the integrity of any European Sites. See also Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Recreation and Open Space**	RPO 9.19 and 9.20 are supporting policies for the provision of easily accessible social, community, cultural and recreational facilities to meet the needs of the communities they serve. This includes the objectives of the National Sports Policy to increase sport and physical activity participation levels locally. The function is to support the provision of improved opportunities for recreation and the creation of attractive green spaces, rich in biodiversity in order to contribute to improved physical and mental health. No potential for adverse effects on the integrity of any European Sites. See Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Provision of Health Services**	RPO 9.21 and 9.22 are support the objectives of public health policy and facilitate the development of healthcare facilities to cater for the specific needs of an ageing population. This will be achieved in accordance with draft RSES settlement strategy and core strategies of development plans. See Section 7.3 for further consideration.
Mitigation: None required	

Key Policy Area	Assessment
RPOs **Arts, Culture and Heritage**	RPO 9.23 relates to the promotion of the role of arts and culture and harnessing its potential for economic development through a unique cultural tourism offering. RPO 9.24 promotes cultural and heritage led urban and rural regeneration. RPO 9.25 relates to supporting the clustering of the film and audio visual sector in the Dublin and Wicklow areas in addition to supporting the training of people in that industry and exploiting opportunities within the industry outside of these hubs. RPO 9.26 seeks to promote historic towns in the Region in the practice of heritage led regeneration through appropriate reuse of historic building stock and industrial structures. This will be carried out with the aim of strengthening their capability to draw down European and national funding. RPO 9.27 is a supporting policy for the implementation of language plans for the Region's Gaeltachts. RPO 9.28 supports the designation of UNESCO candidate sites in the region for the protection of cultural heritage resources. No potential for adverse effects on the integrity of any European Sites.
Mitigation: None required	

7.9 INFRASTRUCTURE (CHAPTER 10 OF RSES)

Chapter 10 of the draft RSES relates to the provision of services and infrastructure in a plan led manner to ensure that there is adequate capacity to support future development. The draft RSES has identified a number of key Regional Strategic Outcomes which are discussed below, in relation to the sustainable management of water and other resources, supporting the transition to a low carbon economy by 2050 and building climate resilience.

Key Policy Area	Assessment
RPOs **Water Supply**	A key priority for the Region is to ensure that water supply needs are met by new national projects to enhance the supply. Contingency plans will be considered to address any potential delays in the delivery of projects to ensure the resilience of the water supply for the Region. The current major water supply capacity issue relates to the provision of a new water supply for the Eastern & Midland Region in order to service current and future growth on a regional scale. RPO 10.1 outlines the need for Local Authorities to include proposals in Development Plans to ensure the efficient and sustainable use and development of water resources and water services infrastructure. The delivery of these services and infrastructure are essential for the management and conservation of water resources, particularly in light of economic development. There is potential for any development in relation to water management to impact on water dependent habitats and species (e.g. hydromorphological impacts) within European sites and also for potential adverse impacts via infrastructural development which could result in qualitative changes to water resources. See Section 7.3 for further consideration. RPO 10.2 supports the delivery of the following strategic water services projects: the Water supply project for the Eastern and Midlands Region, the Vartry Water Supply Scheme, Irish Water's National Programme of Investment to tackle leakage through find and fix and water mains rehabilitation and the Rural Water Programme. These projects have direct pathways for impact on European sites including potential negative changes in key indicators of conservation value (water quality etc.); and potential disturbance to key habitats and species. The Water supply project for the Eastern and Midlands Region includes a proposal to transfer water from one catchment to another. The suitability of this solution will be dependent on the project being able to demonstrate no adverse effects on the integrity of any European site. Indirect pathways are also noted as improvements to water availability will encourage population growth with potential to result in habitat or species fragmentation, reduction in habitat area, disturbance to key species. The Vartry project has been the subject of planning and certain elements remain at appeal stage. The proejc will only be delivered subject to being able to demonstrate no adverse effects on the integrity of any European site. An AA determination will be made by the planning authority in due course. RPOs 10.3 and 10.4 are supporting policies for the provision of the necessary infrastructure to increase capacity in order to service settlements in accordance with the settlement strategy of the RSES and Local Authority Core Strategies, and for reducing leakage in the Region which will minimise demand for capital investment. Population growth will result in increased demand on water supply and therefore there is potential for Increased abstractions leading to changes/pressures on existing hydrological/hydrogeological regimes. This could result in adverse impacts on the integrity of water dependent European sites. There is potential for in-combination impacts with Dublin City and Suburb, Regional Growth Centres and Key Growth Settlements, in the form of

	multiple pressure points on interrelated European Sites.

Mitigation:

Delivery of these services will be *subject to appropriate environmental assessment and the planning process.*

Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network.

In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures).

Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment.

A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.

Key Policy Area	Assessment
RPOs **Waste Water Treatment**	The sustainable growth of the Region requires the provision of infrastructure and services in a plan led manner to ensure there is capacity for future development. High-quality infrastructure provides essential functions and services that support, *inter alia*, environmental systems. It is recognised that improvements are required in water and waste water practices within Ireland and steps have been taken through the provision of a single utility provider. 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, and compliance with the Urban Waste Water Treatment Directive. The EPA Sewage Treatment Maps[15] indicate that there are 29 urban areas within the Region that are on the EPA Priority List because they fall under one or more of the following criteria: Failing to meet EU sewage treatment standards; discharging raw sewage because there is no treatment plant; key pressure on rivers or lakes; impacting on bathing water; improvement needed to protect Pearl Mussels; or improvement needed to protect Shellfish Waters. It is essential that untreated discharges in the EMR are eliminated and that a strategic approach for the development of the treatment of wastewater in the Region is taken, in order to future-proof treatment capacity for long-term growth. This will include the development of a new rural settlement investment approach, with the inclusion of specific policies for sustainable management of waste water in smaller towns, villages and communities, as well as outside the networks served by Irish Water. This is in line with RPO 10.5 supports both Irish Water and Local Authorities in achieving these goals and increasing compliance with the UWWTD. See Section 7.3 for further consideration. RPO 10.6 supports the delivery of the following wastewater treatment infrastructure, subject to appropriate environmental assessment and the

[15] https://gis.epa.ie/EPAMaps/SewageTreatment

	planning process: The Greater Dublin Drainage, Ringsend WWTP Project, the Athlone Main Drainage Project and the Upper Liffey Valley Sewerage Scheme. These projects and schemes have direct pathways for impact on European sites including potential negative changes in key indicators of conservation value (water quality etc.); potential disturbance to key terrestrial and marine habitats and species; and potential for reduction in habitat area. All listed projects are subject to planning and an AA determination will be made by the planning authority in due course. The suitability of the solutions put forward will be dependent on the project being able to demonstrate no adverse effects on the integrity of any European site. There is potential for in-combination impacts with Dublin City and Suburb, Regional Growth Centres and Key Growth Settlements, in the form of multiple pressure points on interrelated European Sites. RPO 10.7 supports strategic wastewater treatment infrastructure in Development Plans in line with the above stated requirements. As such, the potential for adverse impacts discussed for the above projects are applicable to all future projects. RPO 10.8 is a supporting policy for the extraction of energy and other resources from sewerage sludge. Any transport or infrastructural requirements to achieve this objective may have the potential to impact on European sites. RPO 10.9 relates to the servicing of rural villages in order to provide an alternative to one-off housing in the countryside. As discussed above, the delivery of wastewater treatment infrastructure provides pathways that have the potential to adversely impact on European Sites.
Mitigation: Delivery of these services will be *subject to appropriate environmental assessment and the planning process.* Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. For the management of wastewater, increasing population growth should be planned on a phased basis in collaboration with Irish Water and the Local Authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site.	

Key Policy Area	Assessment
RPOs **Surface Water**	For the management of surface waters, the incorporation of Sustainable Urban Drainage (SuDS) in all public and private developments in urban areas is recommended, as is the need for diversion of storm water from combined sewers. This management should have a positive impact on water quality,

	biodiversity and flooding. The management of SuDS includes control structures and strategies designed to efficiently and sustainably drain surface water, while minimising pollution. These practices ultimately manage any potential impacts on surface water bodies. Flood mitigation measures seek to mitigate the potential adverse impacts of climate change; however these measures can have adverse environmental impacts. See Section 7.6 for further consideration. The draft RSES includes a number of guiding principles to be incorporated into Development Plans and LAPs. Notably, these include: '*Take opportunities to enhance biodiversity and amenity and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned. Plans and projects that have the potential to negatively impact on Natura 2000 sites should be subject to the requirements of the Habitats Directive.*' and '*Seek to reduce the extent of hard surfacing and paving as well as requiring the use of sustainable drainage techniques. Where possible, consideration should be given to measures that have benefits for both WFD and flood risk management objectives, such as natural water retention measures, and also for biodiversity and potentially other objectives*.' These guiding principles ensure that plans and projects will be subject to AA, whilst consideration being given to WFD objectives will also indirectly benefit European sites, as an objective of the WFD dictates that there will be no deterioration in the status of water bodies. RPOs 10.10, 10.11 and 10.12 relate to supporting relevant bodies in the improvement of storm water infrastructure to improve sustainable drainage and reduce flood risk, and the implementation of policies and recommendations outlined in the Greater Dublin Strategic Drainage Study (including SuDS). The implementation of such will have a positive impact in terms of water quality and flooding, however there is potential for adverse impacts on European sites as discussed, particularly in relation to flood risk management. This could occur through direct and indirect impact on water dependant SACs/SPAs due to changes in water quality or hydromorphology and loss/disturbance of Annex habitats as a result of infrastructure provision. RPO 10.13 states that Local Authorities shall ensure adequate surface water drainage systems are in place which meet the requirements of the WFD and the associated RBMP, the objectives of which seek to improve the quality of surface and groundwaters and prevent any degradation.
Mitigation: As stated in the guiding principles of the draft RSES, '*Plans and projects that have the potential to negatively impact on Natura 2000 sites should be subject to the requirements of the Habitats Directive.'* See mitigation in relation to flood risk management in Section 7.6	

Key Policy Area	Assessment
RPOs **Energy Infrastructure**	The RPOs supporting energy infrastructure are grounded in increased use of renewables. This has long term positive impacts for biodiversity in general and European sites, as it contributes to Irelands obligations in terms of reduction of GHG emissions and climate change. However this policy base is likely to require new grid and generation infrastructure e.g. wind farms on and offshore; wave; tidal; overhead lines and underground/ sub-sea cables, all of which have potential for direct and indirect adverse effects on European sites. Key issues include: ▪ Alteration to water quality from construction activities; ▪ Permeant and temporary loss of habitat from construction / operation of new infrastructure; ▪ Spread of invasive species; ▪ Mortality from collisions; ▪ Disturbance from surface and sub-sea noise generation during construction; ▪ Reduced fecundity; ▪ Reduction in available feeding area / roosting sites as a result of exclusion; ▪ Changes to migration paths. Planning of any energy infrastructure, including upgrades will require careful consideration of all potential impacts at project level. It is acknowledged that RPO 10.15 notes that development of electricity and gas supply and associated infrastructure are subject to subject *to appropriate environmental assessment and the planning process.* *RPO 10.17* addresses enforcement and strengthening of the electricity transmission and distribution network within the island and through to Europe. Key issues in relation to European sites include: bird strikes; deterioration of water quality from construction including loss of suspended solids with direct and indirect impact on water dependant SAC/ SPA; loss / disturbance of Annex habitats as a result of infrastructure provision; impact on marine mammals from disturbance during construction, loss of feeding and resting areas, alteration to migration paths etc., loss or disturbance of marine habitats. Detailed and robust route and site selection will be required to inform decision making in relation to the projects listed. Chapter 3 of the draft RSES states the following: *Feasibility studies will be carried out to support decision making in relation to policy base for this draft RSES and this will include an environmental appraisal which considers the potential effects on the wider environment, including specifically, the Natura 2000 Network. Furthermore, feasibility studies will be supported by robust site / route selection processes which consider a full range of alternative modes and technologies.* RPO 10.18 also notes that delivery of Eirgrids Grid IP and TDP and any subsequent plans is supported *subject to* appropriate environmental assessment and the outcome of the planning process.

	RPO 10.19 references sustainable development of offshore resources. Bird collisions; disturbance or collision with marine mammals; loss of designated habitats are all risks associated with offshore development. Landfall can also be a significant constraint in this regard. Coastal habitats; coastal bird populations in particular are at risk from landfall activities and from construction activities for offshore development. It is acknowledged that SEA and AA has been completed for the OREDP and the mitigation contained therein shall be implemented to achieve sustainable development of the offshore resource.
Mitigation: RPO 10.14: the enabling new Smart Grids and Smart Cities Action Plan should be subject to AA to ensure that connections, grid balancing, energy management and micro grid development do not adversely affect site integrity of any European sites. RPO 10.19 should be amended to include the following text in line with the other RPOs in the section: *subject to* appropriate environmental assessment and the outcome of the planning process	

Key Policy Area	Assessment
RPO Waste Management	RPO 10.20 promotes circular economy and reduction of waste. Adopting a circular economy model to waste management is likely to have direct and indirect positive impacts on biodiversity, and by extension the Natura 2000 network, as waste and its associated potential ecological impacts are reduced.
Mitigation: Ensure proper site selection of any proposed storage space which includes criteria to avoid likely significant effects on European sites and if necessary avoids adverse effects on site integrity.	

7.10 ALL ISLAND COHESION (CHAPTER 11 OF RSES)

Chapter 11 of the draft RSES sets out the RPO in relation to an 'All Ireland Approach' which recognises the strong links between our Region and Northern Ireland. It recognises the need to work together for mutual advantage in areas such as economic development and promotion, co-ordination of social and physical infrastructure provision and environmental management.

All Ireland Approach
RPO 11.1: *In co-operation with relevant departments in Northern Ireland, the Eastern and Midlands Regional Assembly will support mutually beneficial policy development and activity in the areas of spatial and infrastructure planning and related spheres*. **Assessment:** There is a strong link between our region and Northern Ireland; therefore there is a requirement to work together for mutual advantage in areas such as economic development and promotion, co-ordination of social and physical infrastructure provision and environmental management. In preparing the draft RSES, the Regional Assembly engaged in collaboration with Local Authorities and Government agencies in Northern Ireland. Implementation of the RSES in tandem with the Regional Development Strategy (RDS) for Northern Ireland will require collaborative work which will be supported by the Framework for Co-operation

on Spatial Strategies between Ireland and Northern Ireland.

As Ireland shares a land boundary with Northern Ireland, there is potential for environmental impact on water quality and biodiversity which are transboundary. The protection of shared assets such as European Sites, biodiversity and the water network is a crucial element of the draft RSES. In recognition of this, the potential for adverse transboundary effects on European Sites must be considered in the context of the "source –pathway-receptor" approach.

The ***source*** relates to the policy measures outlined in the draft RSES which have the potential to adversely impact European Sites e.g. regeneration and development. The ***pathways*** by which draft RSES policy measures can impact European Sites include changes in land use, habitat loss/fragmentation, emissions to air and via hydrological or hydrogeological connections. The ***receptors*** in this instance will be the European Sites, potentially including those transboundary sites with Northern Ireland for which there is a pathway of connectivity as a result of the implementation of the draft RSES.

The potential for transboundary impacts to those European Sites that intersect both regions is relatively simple. By comparison, when hydrological and hydrogeological pathways are considered, this increases the number of European Sites that could be affected. Typically a buffer of 15 km is used during Appropriate Assessment however potential contaminants can travel beyond this buffer when conveyed by the water network or mobile species.

Dublin Belfast Corridor has been identified in the draft RSES as a regional growth enabler, and is the largest economic agglomeration on the island of Ireland. Further consideration is given in Chapters 5 and 8. This needs to be supported through targeted investment in transport infrastructure and services in connecting major urban centres and international gateways. The investment and development in this corridor has the potential for adverse impacts on transboundary European Sites.

In addition, there is a strategy to support the co-operation with relevant Departments in Northern Ireland to provide enhanced transport connectivity between Ireland and Northern Ireland, which will include cross-border road and rail, cycling and walking routes, as well as blueways, greenways and peatways. Furthermore there are projects of common interest such as the need for a new Interconnector between electricity grids to enhance energy security and resilience in the future; the development of stable, innovative and secure digital communications and services infrastructure on an all-island basis; and enhanced tourism strategy. These developments could result in the potential for significant adverse effects on European Sites in the absence of adequate co-ordination.

In recognition that national and other administrative boundaries do not reflect the transboundary nature of the environment and its stewardship, the draft RSES seeks to ensure effective management of shared landscapes, heritage, water catchments, habitats, species and transboundary issues in relation to environmental policy in co-operation with relevant Departments in Northern Ireland, with due consideration given to the policy objectives of the RDS. Catchment based strategies which address the hydrological and hydrogeological linkages between jurisdictions will be essential for effective management of transboundary issues. Currently, the WFD already requires that Member States co-ordinate their efforts in relation to international river basin districts. This co-ordinated approach must also account for the management of all transitional and coastal water bodies surrounding the island of Ireland, transboundary rivers, lakes and groundwater bodies.

There is potential for in-combination impacts between Ireland and Northern Ireland, in the form of multiple pressure points on interrelated European Sites.

Cross border co-operation will be required in order to address potential pressures in a coherent manner. There is potential for impact through lack of integration between jurisdictions.

Mitigation:

Co-ordination and integration of plans and programmes with the relevant bodies in both jurisdictions to ensure that the potential for adverse effects is addressed in a coherent manner (e.g. catchment based strategies).

Any plans or programmes that stem from all island cohesion will be subject to appropriate

environmental assessment.

7.11 IMPLEMENTATION AND MONITORING (CHAPTER 12 OF RSES)

Chapter 12 of the draft RSES sets out Regional Policy Objectives to support the implementation and monitoring of the delivery of the EM RSES. See IM1-6 in Appendix A11.

Assessment and Discussion of Implementation and Monitoring
The inclusion of implementation and monitoring objectives is broadly positive as it provides opportunities to audit effectiveness of objectives and to monitor unforeseen impacts from across a wide policy base. Frequency for IM4 would provide additional strength to this commitment. It is recommended that at a minimum, the update of baseline data coincides with the EPA State of the Environment Reporting which is published on a 4-yearly cycle and the NPWS Article 12 and Article 17 reporting in relation to the status and condition of SAC and SPA. This takes place on a 6-yearly cycle with the next reporting period due in 2019. Two particular baseline data issues which will be required to inform decision making in relation to the RSES relate to bird data and visitor pressure. For both aspects there is often a deficit of information at the project level which can lead to significant delays at planning as data needs to be collected. The commitment for corrective action in IM5 is positive however the mechanism for how this can be applied is not clear and should be developed in consultation with relevant agencies such as NPWS and EPA.
Mitigation Measures and Recommendations: ▪ A regional working group should be established to improve the coherence of European Site protection and management and to address cross-boundary site and species protection. ▪ A repository for NIS and NIR documents should be established to facilitate data sharing and exchange on transboundary sites. ▪ Consideration should be given to requiring planning permissions, particularly for large infrastructure in the region, to provide raw data in a readily searchable format to improve the evidence base available for decision makers at planning authority level.

7.12 ASSESSMENT OF IN COMBINATION EFFECTS WITH OTHER PLANS OR PROJECTS

The assessment of in-combination effects with other plans or projects is a crucial and often difficult aspect of Article 6(3) assessment, particularly at the plan level. This step aims to consider the policy and framework within which the Draft RSES is being developed and to identify at this early stage any possible in-combination effects of the Draft RSES with other plans and projects. In theory, there are many other plans/ projects that interact with or have the potential to combine pressures and threats to European sites; however, the in-combination assessment is a matter of applying a practical and realistic approach.

In line with MN2000 guidance, a stepwise approach has been taken to consideration of in-combination effects, outlined in **Table 7.2**, as follows:

- Identify plans / projects that might act in combination;
- Identify the types of impact that might occur;
- Define boundaries of the assessment;
- Identify pathways for impact; and
- Impact prediction and assessment.

Table 7.2 – In-Combination Impacts with Other Plans and Strategies

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
Northern and Western RSES and Southern RSES (In prep) Regional strategies are being prepared for the other two regional assembly areas. Similar objectives in terms of delivering on the NPF but with regional rather than national focus.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	These plans are subject to AA. Potential for in-combination effects as activity and development in these areas may have indirect impacts on land use, population growth and scale of development outside their administrative boundry. AA will be undertaken at all levels in the planning hierarchy, evolving alongside greater certainty / detail in proposals through the regional, county and local level, in all cases ensuring that proposals are in keeping with the objectives of the Habitats Directive.
National Planning Framework (Ireland 2040 Our Plan) The National Planning Framework is a long-term strategy for the next 20 years and it will focus on ensuring compatibility between future growth of cities/ towns within Ireland alongside environmental sustainability. It is intended that the National Planning Framework will both provide the focus to guide and inform future planning and set the framework for integrated investment decisions. It is intended that the national policy will be detailed through the Regional Spatial and Economic Strategies in order to set out long term national, regional and local development frameworks from within which sectors will work together to ensure proper planning and sustainable development. Both the National Planning Framework and the Regional Spatial and Economic are being subject to the AA process.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to water quality and/or water movement; ▪ Alteration to air quality; ▪ Disturbance.	Potential for in-combination effects as it sets the policy framework on which RSES is based. However, it is a policy[16] of the National Planning Framework to ensure the resilience of our natural resources and cultural assets. Linkage to wider policies such as for European Sites under the Birds and Habitats Directives and the Water Framework Directive is recognised and the need to set high level planning policies in protecting and making responsible use of our natural environment. The plan has been subject to AA.
National Development Plan 2018-2027 The National Development Plan sets out the investment priorities that will underpin the implementation of the National Planning Framework (NPF). This will guide national, regional and local	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water	The NDP is a high level budgetary and finance document which identifies priorities for capital investment. Given the nature of the capital investment the majority of the projects referenced and funded under the NDP have been or will be subject to EIA/AA. The NDP does not confer planning, it identifies strategic need.

[16] http://www.housing.gov.ie/sites/default/files/publications/files/towards_a_national_planning_framework_december_2015.pdf , Appendix II – Page 2

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
planning and investment decisions in Ireland over the next two decades, to cater for an expected population increase of over 1 million people.	movement; and ▪ Introduction or spread of invasive species	
Water Services Strategic Plan 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). The WSSP sets out the challenges we face as a country in relation to the provision of water services and identifies strategic national priorities. It includes Irish Water's short, medium and long term objectives and identifies strategies to achieve these objectives. As such, the plan provides the context for subsequent detailed implementation plans (Tier 2) which will document the approach to be used for key water service areas such as water resource management, wastewater compliance and sludge management. The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current version of the CIP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned asset	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	The WSSP has undergone SEA and AA, which highlighted the need for additional plan/project environmental assessments to be carried out at the tier 2 and tier 3 levels. No likely significant in-combination effects are envisaged.
Catchment Flood Risk Assessment and Management (CFRAM) Programme, under the Floods Directive 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	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to water quality and/or water movement; ▪ Disturbance;	CFRAM Studies and their product Flood Risk Management Plans have undergone appropriate assessment. Any future flood plans will have to take into account the design and implementation of water management infrastructure as it has the potential to impact on hydromorphology and potentially on the ecological status and

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
Catchment based Flood Risk Assessment and Management (CFRAM) Programme. As part of the directive Ireland is required to undertake a Preliminary Flood Risk Assessment, 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 Flood Risk Management Plans have been prepared. These plans have been subject AA.	▪ In-combination impacts within the same scheme	favourable conservation status of water bodies. The establishment where flooding is occurring is an importing consideration for the RSES and spatial planning in general, with regard to the siting of houses, services and infrastructure. The AA of the CFRAMs considered the potential for impacts from hard engineering solutions and how they might affect hydrological connectivity and hydromorphological supporting conditions for protected habitats and species. No likely significant in-combination effects are envisaged.
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.	▪ Habitat loss or destruction; ▪ Disturbance of species; and ▪ Introduction or spread of invasive species.	This strategy includes a number of aims relating to regeneration and reuse of building stock. Potential in-combination impacts relate to urban regeneration, infill development and reuse of protected/ vacant / derelict buildings (e.g. potential habitats for bats). However at a project level any project will be subject to AA and any necessary mitigation. Therefore, no potential for in-combination impacts are envisaged.
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.	▪ Species disturbance.	Healthy Ireland is a long-term strategy concerned with the health and wellbeing of people and communities, The plan encourages healthier lifestyles such as walking and cycling which, in combination with the RSES policies for greenways, could lead to species disturbance particularly along coasts and rivers. As noted elsewhere, robust route / site selection must be applied for all linear infrastructure to avoid potential for impacts.
Towards Nearly Zero Energy Buildings in Ireland – Planning for 2020 and Beyond	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation;	This framework includes a number of aims which are linked to the aims under the RSES related to climate change and the transition to a low-carbon economy. Potential in-combination impacts relate

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
Proposed approach to Irish compliance with the EPBD commitments, prepared by the DECLG in November 2012. By 2020 all new dwellings in Ireland will have a Maximum Permitted Energy Performance Coefficient (MPEPC) and Maximum Permitted Carbon Performance Coefficient (MPCPC) of 0.30 and 0.35 in accordance with the common general framework set out in Annex I of EPBD.	▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	to construction of infrastructure. However at a project level each project will be subject to AA and any necessary mitigation. Therefore, no potential for in-combination impacts are envisaged.
The Energy Performance of Buildings Directive (2002/91/EC recast by Directive 2010/31/EU) Contains a range of provisions to improve the energy performance of new and existing buildings. One of the key measures in this Directive is that all new buildings must be nearly zero energy buildings by 31 December 2020 (public buildings by 31 December 2018).	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve energy efficiency and therefore environmental quality.
National Energy Efficiency Action Plan (NEEAP) Presents the national ambition to deliver a 20% reduction in energy demand across the whole of the economy by 2020, along with a 33% reduction in public sector energy use. Ireland's third NEEAP was published 2014 and the fourth was produced in early 2017.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	This plan would not be expected to conflict with any aspects of the RSES but to positively contribute to it going forward subject to AA of the 4th review.
National Climate Change Adaptation Framework 2012 The framework provides strategic focus to ensure adaptation measures are taken across different sectors and levels of government to reduce Ireland's vulnerability to the negative impacts of climate change.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation. ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Disturbance to habitats/ species.	The measures and research as a result of the plan will place a responsibility on all stakeholders to adapt to the impacts of predicted climate change. This framework prioritises reducing knowledge gaps through an evidence base and to develop tools to support the adaptation decision-making process. The framework and the RSES will be complimentary and as such no significant in-combination effects are envisaged.

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
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*".	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Disturbance to habitats/ species.	The RSES shares common goals with these European lead programmes; a reduction in climate change impacts and increasing energy efficiency. Therefore, they are complimentary to the RSES and as such no significant in-combination effects are envisaged.
Energy 2020 – A strategy for competitive, sustainable and secure energy Sets out three key requirements of energy supply; security, competitiveness and sustainability. Also sets out the following targets; ▪ Increase the share of renewable energy in the EU's energy mix to at least 20% of consumption; and ▪ Improve energy efficiency by at least 20%.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Disturbance to habitats/ species.	The RSES shares common goals with Energy 2020; including increasing energy efficiency and increasing the share of renewable energy in the European energy mix. Therefore, the National Planning Framework will contribute towards the plan and as such has no significant in-combination effects are envisaged.
The Renewable Energy Directive (2009/28/EC) Policy for the production and promotion of energy from renewable sources in the EU to implement 2020 strategy. The national 2020 target for Ireland is to source 16% from renewable resources (i.e. 40% electricity, 12% heat and 10% transport).	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	The RSES shares common goals with the Renewable Energy Directive; increasing energy efficiency and increasing the share of renewable energy in the European energy mix. The potential for in-combination effects would be expected to be in relation to electricity generation infrastructure and energy source production (e.g. biomass, feedstock). However, the main thrust of the plan is positive and would not be expected to conflict with any aspects of the RSES but to positively influence it going forward.
The EU Policy Framework for Climate and Energy in the period from 2020 to 2030 Sets targets for the period 2020 to 2030:	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality;	This policy framework underwent impact assessment before publishing. This framework includes a number of aims which are linked to the RSES. The overall drive of both is to increase the use of renewable energy, increase energy efficiency and both contain

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
▪ 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.	▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	measures aimed at increasing electricity interconnection. Therefore, there is potential for in-combination impacts.
Energy Roadmap 2050 This roadmap does not set specific energy targets at this point but does aim to achieve an 80% to 95% reduction in greenhouse gases compared to 1990 levels by 2050.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to air quality; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	The key aim of the Roadmap is a guide to a low carbon Europe. This plan will be complimentary to the RSES and as such no significant in-combination impacts are envisaged.
The National Renewable Electricity Policy and Development Framework (in prep) The main objective of this plan will be to guide the development of renewable electricity projects to ensure Ireland meets its future needs for renewable electricity in a sustainable manner.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive species.	This plan is undergoing its own AA but it is not yet completed. A key issue to be addressed will be the method of renewable electricity generation and associated ecological impacts. The potential for in-combination effects is unclear as the plan is not sufficiently developed at this stage, however, would be expected to be in relation to electricity generation infrastructure and potential emissions to air. However, the main thrust of the plan is positive and no in-combination effects are predicted.
The National Renewable Energy Action Plan (NREAP) The NREAP is produced as a requirement of the Renewable Energy Directive, and sets out Ireland's "*national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020*".	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive	This plan was not subject to AA, but some actions arising out of it have since been subject to AA owing to judicial review. The plan is positive in that its aims are to accelerate the uptake on renewable energy, thereby reducing the dependence on fossil fuels. The RSES will contribute to reaching the targets set in the NREAP and as such the plans are complementary.

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
Offshore Renewable Energy Development Plan (OREDP) The OREDP identifies the opportunity for the sustainable development of Ireland's abundant offshore renewable energy resources for increasing indigenous production of renewable electricity, thereby contributing to reductions in our greenhouse gas emissions, improving the security of our energy supply and creating jobs in the green economy. The OREDP sets out key principles, policy actions and enablers for delivery of Ireland's significant potential in this area. In this way, the OREDP provides a framework for the sustainable development of Ireland's offshore renewable energy resources.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	This plan was subject to AA. No significant in-combination impacts are envisaged at plan level. Projects arising from the OREDP, and successors to the OREDP, will be required to undergo AA Screening which will ensure no in-combination effects further down the planning hierarchy.
Harnessing our Ocean Wealth - an Integrated Marine Plan for Ireland 2012 Ireland aims to have the ocean become a key component for economic recovery and sustainable growth. As a national asset the potential of the Irish Sea is seen as something to be harnessed as outlined in Harnessing our Ocean Wealth an Integrated Marine Plan for Ireland 2012. Three high-level goals have been developed: Ireland will utilise market opportunities to improve the maritime economy and create sustainable growth; Improve the health of the sea ecosystems for economic benefit, and goods and services such as food, climate, health and well-being; and Encourage engagement with the sea to increase awareness of its value. There are two key targets: Double the value of our ocean wealth to 2.4% of GDP by 2030; and increase the turnover from our ocean economy to exceed €6.4bn by 2020.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Hydromorphological impacts through infrastructure expansion; ▪ Alterations to water quality ▪ Disturbance to habitats and/or species; and ▪ Introduction or spread of invasive species.	This increased productivity and activity proposed in Harnessing our Ocean Wealth is likely to have implications for coastal areas e.g. impacts to coastal and marine European Sites as a result of a greater intensity of development and activity. The RSES includes a number of marine policies which also see greater productivity in the maritime space and as such there is potential for in-combination effects.
White Paper 'Irelands Transition to a Low Carbon Energy Future (2015 – 2030)	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation;	Ireland's White Paper underwent consultation and was developed with cognisance of environmental impact. This plan has similar

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
"A complete energy policy update, which sets out a framework to guide policy between now and 2030". This instrument ensures supplies of energy to the public and private sector remain secure, affordable and competitive.	▪ Alterations to water quality; ▪ Alterations to air quality; ▪ Disturbance to habitats and/or species; and ▪ Introduction or spread of invasive species.	aims to the NPF with the key focus being a reduction in national greenhouse gas emissions. The RSES is also seeking to address GHG emissions at the regional level. No likely significant in-combination effects are envisaged.
Grid25 Implementation Programme 2011-2016 and Ireland's Grid Development Strategy, Your Grid Your Tomorrow The Grid25 Implementation Programme (IP) was a practical strategic overview of how the early stages of Grid25 were intended to be implemented. The IP identified the best current understanding of those parts of the transmission system that were envisaged as likely to be developed over the five years. Ireland's Grid Development Strategy, Your Grid Your Tomorrow, published in 2017 outlines that Grid25 will be replaced in 2017 with an updated Implementation Programme and will be subject to environmental assessment.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance.	There is potential for in-combination effects with the RSES in terms of infrastructure requirements resulting in habitat loss, fragmentation and degradation and the associated ecological impacts. These plans are subject to AA therefore no significant in-combination impacts are envisaged at plan level.
National Policy Framework on Alternative Fuels Infrastructure in Transport 2017-2030 Supports the provision of refuelling infrastructure for alternative fuels, common technical standards and appropriate consumer information. The alternative fuel options could include electricity, hydrogen, biofuels and natural gas.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	This plan underwent SEA and AA. The potential for in-combination effects is expected to be in relation to the production and generation of alternative fuels which could have resultant impacts such as emissions to air and land use change, and requirement for infrastructure. This plan would not be expected to conflict with any aspects of the RSES but to positively contribute to it going forward.
The Bioenergy Plan (draft) Aims to develop cost-effective harnessing of sustainable, indigenous, renewable energy resources. Also aims to reduce harmful emissions from	▪ Habitat loss or destruction; ▪ Habitat degradation or fragmentation; ▪ Species mortality; ▪ Alterations to water quality and/or water	This plan is currently undergoing its own AA but it is not yet completed. The potential for in-combination effects is expected to be in relation to the production of biomass for energy which can result in habitat loss and the associated ecological impacts as well as emissions to air during combustion. This plan would not be

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
traditional fuels. This plan will underpin the development of the sector in the period up to 2020 and lay foundations for its longer term growth and in contributing to renewable energy targets.	movement; ▪ Alteration to air quality; and ▪ Disturbance to habitats and/or species; ▪ Introduction or spread of invasive species.	expected to conflict with any aspects of the RSES but to positively influence/inform it going forward.
National Peatlands Strategy (NPS) and Raised Bog SAC Management Plans Establishes principles in relation to Irish peatlands in order to guide Government policy. Aims to provide a framework for which all of the peatlands within the State can be managed responsibly in order to optimise their social, environmental and economic contribution. Aims to meet nature conservation obligations while having regard to national and local economic, social and cultural needs.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; ▪ Alteration to air quality; ▪ Introduction or spread of invasive species.	The Raised Bog SAC Management Plan was subject to its own AA. The RSES will ensure protection of peatlands in terms of land use utilisation. This plan would not be expected to conflict with any aspects of the RSES but to positively interact with it and outline a series of considerations in relation to peatlands. Therefore there are no likely significant in-combination effects foreseen.
Food Wise 2025 Food Wise 2025 strategy identifies significant growth opportunities across all subsectors of the Irish agri-food industry. Growth Projection includes increasing the value added in the agri-food, fisheries and wood products sector by 70% to in excess of €13 billion.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Disturbance to habitats / species.	Spatial planning under the RSES is closely aligned with land use change related to agriculture and rural growth and continued development of the rural economy. Some likely significant impacts are addressed through the Rural Development Plan 2014-2020 through the requirement for Appropriate Assessment, monitoring and introducing several pieces of legislation under the Good Agricultural Practice for Protection of Waters (Regulations 2014, S.I. 31/2014). There is potential for in-combination impacts as the rural economy is promoted under the RSES.
The Common Agricultural Policy (CAP) A key agricultural policy with the main objectives of ensuring a decent standard of living for farmers and the provision of stable and safe food supply at affordable prices for consumers. The CAP through various iterations is the principal policy that drives agricultural management throughout the European Union. It recognises the economic and rural importance of agriculture through a system subsidies	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive species.	Spatial planning under the RSES is closely aligned with land use change related to agriculture and rural growth and continued development of the rural economy. Some likely significant impacts are addressed through the Rural Development Plan 2014-2020 through the requirement for Appropriate Assessment, monitoring and introducing several pieces of legislation under the Good Agricultural Practice for Protection of Waters (Regulations 2014, S.I. 31/2014). There is potential for in-combination impacts as the rural economy is promoted under the RSES.

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
and support programmes.		
Action Plan for Rural Development Action Plan for Rural Development sets out the Government's approach for rural places in Ireland to grow and adapt through supportive measures which encourage innovation and build on the existing strengths of rural communities in Ireland.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive species.	No AA appears to have been carried out for the Action Plan for Rural Development which includes over 230 actions focussed on developing the rural economy. As such there is potential for in combination impacts with the RSES and other agricultural plan and policies. AA screening of the Action Plan is required to offset the potential for in-combination effects.
Rural Development Programme 2014-2020 Provides a new suite of rural development measures 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. Includes provisions under GLAS; Bio-Energy; nutrient management planning; "Carbon Navigator" software tool	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive species.	The Rural Development Plan (RDP) was subject to its own AA. Mitigation in the RDP requires that Appropriate Assessment is to be carried out for all individual building, tourism or agricultural reclamation projects, stakeholder engagement and site based monitoring. With the required mitigation in the RDP, alongside the mitigation in the RSES no significant in-combination impacts are predicted.
Forestry Programme 2014-2020 Provides Ireland's proposals for 100% state aid funding for a new Forestry Programme for the period. The measures proposed are consistent with "Forests, products and people Ireland's forest policy – a renewed vision". The Programme identifies the needs of the Forestry sector as: ▪ Increase forest cover ▪ Increase the production of forest biomass to meet renewable energy targets ▪ Support forest holders to actively manage their plantations	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Species mortality; ▪ Alterations to water quality and/or water movement; ▪ Alterations to air quality; and ▪ Introduction or spread of invasive species.	The Forestry Programme was subject to its own AA and includes a number of policies for the protection of habitats and species under the Birds and Habitats Directives. With the required mitigation in the Forestry Programme, alongside the mitigation in the RSES, no significant in-combination impacts are predicted.

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
Nitrates Directive (91/676/EEC) and Nitrates Action Programme (currently being updated) This Directive has the objective of reducing water pollution caused or induced by nitrates from agricultural sources and preventing further pollution. The NAP is Ireland's response to implementing the directive.	▪ Habitat degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; ▪ Nutrient enrichment; and ▪ Alteration to air quality.	No risk of likely significant in-combination effects from the Directive as the primary purpose of is to improve environmental quality. Furthermore it is noted that the latest update to the NAP is undergoing AA and an NIS is in preparation. This will ensure appropriate mitigation is included to prevent significant in-combination effects from occurring.
The EU Sustainable Development Strategy (EU SDS) and **Our Sustainable Future: A Framework for Sustainable Development in Ireland (2012)** (national) The overarching sustainable development policy document in the EU. During the 2009 review the EU noted a number of unsustainable trends that require urgent action including a decrease in high energy consumption in the transport sector in line with the 2020 Strategy. At national level, **Our Sustainable Future: A Framework for Sustainable Development in Ireland (2012)** has followed the model used in the EU SDS.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	There is potential for in-combination effects with the RSES in terms of infrastructure requirements resulting in habitat loss, fragmentation, degradation and the associated ecological impacts. However, the main thrust of the plan is positive and would not be expected to conflict with any aspects of the RSES but to positively influence it going forward.
National Mitigation Plan 2017 Plan outlining the measures and actions of four specific sectors to mitigate climate change in the areas of transport, energy, the built environment and agriculture.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to water quality and/or water movement; ▪ Disturbance; and ▪ In-combination impacts within the same scheme.	The NMP was subject to its own SEA and AA. The framework supports climate change mitigation. No risk of likely significant in-combination effects.
Smarter Travel 'A New Transport Policy for Ireland' 2009-2020 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	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Species mortality; ▪ Alterations to air quality; ▪ Disturbance to habitats/species;	There is potential for in-combination effects with the RSES in terms of infrastructure requirements resulting in habitat loss, fragmentation, degradation and the associated ecological impacts, potential collision impacts and/or disturbance. However the main thrust of the plan is overall positive as it relates to reducing emissions and reliance on fossil fuels in the transport sector and

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
transport.	▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	therefore will positively influence/inform the RSES going forward.
Water Framework Directive (2000/60/EC) The primary purpose of this Directive and the various pieces of national legislation that have enacted through the implementation of River Basin Management Plans, is to achieve good status for all water bodies, with no deterioration in water body status.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve ecological status. The proper management of agriculture, forestry and infrastructural development will contribute to achieving the objectives of the WFD as developed through the RBMP. The second cycle draft River Basin Management Plan 2018-2021 has been published together with an NIS including mitigation to offset negative effects.
Marine Strategy Framework Directive (2008/56/EC) The Marine Strategy Framework Directive (MSFD) 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 in their marine waters by 2020. Ireland has developed a Programme of Measures that will meet targets set in order to achieve or maintain good environmental status. This is of direct relevance to the RBMP which is required under the WFD which sets a goal of achieving good ecological status for all EU ground and surface waters (including intertidal, transitional and coastal waters), which directly complements the goal of good environmental status under the Marine Strategy Framework Directive. The Marine Spatial Planning Directive obliges all coastal Member States to establish maritime spatial plans as soon as possible and at the latest by 31st March 2021. This will help promote sustainable growth of maritime activities recognising the ever	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	The MSFD Programme of Measures[17] have not been subject to AA as all measures included within the POMs are currently being applied in Ireland under existing directive implementation e.g. WFD POMs, marine planning and licensing etc. It is recommended that when the Maritime Spatial Plan(s) for Ireland are development, that they are subject to the AA process to avoid the potential for in-combination effects with other plans and programmes in the marine environment (particularly in the WFD) and to align land use planning with maritime spatial planning.

[17] http://www.housing.gov.ie/sites/default/files/public-consultation/files/outcome/msfd_poms_summary_report.pdf

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
increasing use and exploitation of the maritime space and its resources by a number of sectors such as fishing, shipping, leisure, aquaculture and renewable energy.		
EU Groundwater Directive (2006/118/EC) This Directive establishes a regime, which sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater.	▪ Habitat degradation; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
The Integrated Pollution Prevention Control Directive (96/61/EC) Objective is to achieve a high level of protection of the environment through measures to prevent in the first instance or to reduce emissions to air, water and land from industrial sources.	▪ Habitat degradation; ▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	Particularly relevant to the electricity generation and transport sector. No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
European Union Biodiversity Strategy to 2020 Aims to halt or reverse biodiversity loss and speed up the EU's transition towards a resource efficient and green economy as per the Convention on Biological Diversity.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	No risk of likely significant in-combination effects will result as the primary purpose of the Strategy is to halt the loss of habitat and species. One target is to increase the contribution of agriculture and forest to biodiversity, integrating more biodiversity needs into CAP and forest management plans. Opportunities exist in the implementation of the RSES to assist in achieving the objectives of the Strategy through consideration and integration of environmental issues throughout the spatial planning hierarchy.
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.	▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species.	No risk of likely significant in-combination effects as this plan is entirely positive in its actions. The framework supports climate change mitigation. The framework will assist in ensuring the Natura 2000 Network adapts to climate change.
Biodiversity Action Plan 2017-2021 Ireland's third iteration of the Biodiversity Action Plan (BAP), for conserving and restoring Ireland's	▪ Improved habitat and species protection	As the BAP is aimed at environmental protection, there are no in-combination effects.

Plan/ Programme/ Policy	Key Types of Impacts	Potential for In-combination Effects and Mitigation
biodiversity covering the period 2017 to 2021. 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.		
Dublin Port Masterplan and Review	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species	Dublin port masterplan identifies expansion and growth which is supported by RSES. Other proposals in RSES for infill and brownfield may also increase pressure in the Dublin port area. The masterplan has been subject to AA.
National Transport Strategy The NTA's Transport Strategy for the Greater Dublin Area (GDA) provides a framework for the planning and delivery of transport infrastructure and services over the period 2016 - 2035.	▪ Habitat loss or destruction; ▪ Habitat fragmentation or degradation; ▪ Alterations to air quality; ▪ Disturbance to habitats/species; ▪ Alterations to water quality and/or water movement; and ▪ Introduction or spread of invasive species	This Transport Strategy has informed the RSES. The RSES is required by legislation to be consistent with the National Transport Authority's Transportation Strategy for the Greater Dublin Area. The strategy has undergone AA.

7.13 CHANGES MADE TO DRAFT RSES BY COUNCILLOR MOTION

Chapter	Changes Made
Chapter 2: Strategic Vision	Discussion text added on key challenges facing the region, namely the transition to a low carbon society: *Insert on page 17: A key challenge facing the Region, along with all other regions, is the transition to a low carbon society. For the RSES this means five primary areas of transition which are at the core of the Strategy:* ▪ *spatial development patterns which reduce transport demand and encourage low* ▪ *carbon transport modes;* ▪ *sustainable transport systems (people and freight);* ▪ *carbon storing and sequestering land uses;* ▪ *energy efficient buildings and industry; and* ▪ *renewable energy*.
Assessment *No changes to the assessment.*	
Proposed Mitigation *None proposed.*	

Chapter	Changes Made
Chapter 4: People and Place	Discussion text added on taking account of existing plans, headroom discussion taking account of the NPF Roadmap, and measuring delivery through active land management. Under the preceding discussion text for RPO 4.47 and 4.48 for Portlaoise, text has been inserted relating to the need for job creation in zoned land.
Assessment No changes to the assessment	
Proposed Mitigation None proposed	

Chapter	Changes Made
Chapter 5: Dublin Metropolitan Area Strategic Plan (MASP)	Table 5.1 and Table 5.2 have had minor text deletions/ sentence reordering in terms of greenfield/ brownfield named sites, and the timing of LUAS extension (medium to long term). Reference to other industry in the MASP area has been added.
Assessment *No changes to the assessment.*	
Proposed Mitigation *None proposed.*	

Chapter	Changes Made
Chapter 7: Environment	The discussion under Section 7.4, *Flood Risk Management Plans (FRMPs)*, now includes a reference to Appendix H to the RSES which lists the flood relief schemes in the region. Under the discussion for Section 7.6, *Development of Greenways, Blueways and Peatways*, the list of named greenways has been added to with a reference to the Blessington Greenway, and the reference to the Barrow Way clarified by the naming of a specific stretch of the way, from Lowtown to Graiguecullen/Carlow. Under Section 7.8, *Climate Change*, a discussion paragraph has been added which outlines the need for the region to assess transport demand and understand its regional greenhouse gas emissions, through informing decision-making in the core strategies of development plans. An additional guiding principle for Integration of Land Use and Transport has been added to outline that: "*The predicted impact of the potential land use and transport infrastructure on modal split and transport greenhouse gas emissions should be assessed to deliver on national and regional targets*."
Assessment The schemes listed in Appendix H have been identified under the relevant CFRAMs which has been subject to AA. In due course, as schemes are rolled out at project level further assessment will be applied to inform the design solution. The impacts associated with greenways and blueways have been assessed under Chapter 7 Environment and Chapter 8 Connectivity. A greenway in the vicinity of Blessington will need to consider connectivity with surrounding sites including Red Bog SAC and particularly Poulaphouca Reservoir SPA. Increased vistor pressure in this location may give rise to adverse effects on site integrity. As such, proper site selection will be essential to avoid adverse effects. The additional text under Section 7.8 is supportive of progressing a method of greenhouse gas emissions assessment and in consultation with key stakeholders. The inclusion of this is welcome and positive overall as climate change is a significant threat to the Natura network.	
Proposed Mitigation *Robust feasibility and route selection will be required for all greenways to avoide adverse effects. These preliminary studies will need to consider do nothing as well as do something options.*	

Chapter	Changes Made
Chapter 8: Connectivity	**Policy Changes** The first two points of RPO 8.6 has been updated with minor word revisions: **RPO 8.6:** The RSES supports delivery of the rail projects set out in Table 8.2, subject to the outcome of appropriate environmental assessment and the planning process; Delivery of DART Expansion Programme - delivery of priority elements including investment in new train fleet, new infrastructure and electrification of existing lines. Provide fast, high-frequency electrified services to Drogheda on the Northern Line, Celbridge/Hazelhatch on the Kildare Line, Maynooth and M3 Parkway on the Maynooth/Sligo Line, while continuing to ~~provide~~ improve DART services on the South-Eastern Line as far south as Greystones. Provide for an appropriate level of commuter rail service in the Midlands and South-East. **RPO 8.8:** The RSES supports appraisal and or delivery of the road projects set out in Table 8.4 subject to the outcome of appropriate environmental assessment and the planning process. A number of significant regional road schemes will also be supported, including those listed below, and local relief roads will be brought forward as a means of reallocating existing road space in urban areas to public transport, walking and cycling in accordance with guiding principles of this draft Strategy, subject to the outcome of appropriate environmental assessment and the planning process.

	Significant Regional Road Schemes: • Adamstown and Nangor Road Improvements; • Portlaoise Southern Distributor Road; • Laytown to Bettystown Link Road; • Athy Southern Distributor Road; • Portlaoise Southern Distributor Road. • N80 Improvements including inter regional and intra regional accessibility. • N81 Tallaght to Hollywood scheme including linkage roads from Baltinglass and Dunlavin to N9 from N81. **RPO 8.14:** Support the improvement and protection of the TEN-T network to strengthen access routes to Ireland's ports, including investment in the ongoing development of the N11/M11 to improve connectivity to Rosslare and improvements to the Dublin-Wexford Rail line.
Assessment **RPO 8.6:** Minor text changes; no changes to assessment. **RPO 8.8:** The improvements to the N80 has now been added to referencing inter- and intra-regional connectivity. A new regional road scheme, N81 Tallaght to Hollywood, has been added to the list of regional schemes. The impacts of road schemes in general has been assessed previously, and it is noted that the policy stipulates "subject to the outcome of appropriate environmental assessment and the planning process", which is appropriate at the regional level, recognising that site selection and assessments will be required at the project level. **RPO 8.14:** Minor text changes, clarifying the N11/M11, and now including reference to improvements to the southern commuter/intercity railway lines. The impacts of rail improvements have been assessed previously and no change to the assessment.	
Proposed Mitigation *None proposed.*	

Chapter	Changes Made
Chapter 9: Quality of Life	Under Section 9.8, *Healthy Communities*, the discussion text for RPO now includes a reference to including the recommendations of the Trauma Steering Group – A Trauma System for Ireland in reference to meeting growing healthcare needs.
Assessment *No changes to assessment.*	
Proposed Mitigation *None proposed.*	

8 MITIGATION MEASURES / RECOMMENDATIONS

The section sets out the strategic approach to mitigation to address potential adverse effects on the integrity of Natura 2000 sites within the EMR. Mitigation measures are aimed at minimising or cancelling the potential adverse effects of a plan or project on a European site, during or after completion, and form an integral part of the specifications of the project (EC, 2000). In addition, they must ensure the continuity of biological processes and protect the overall coherence of the Natura 2000 network (EC, 2011).

Mitigation is defined in the Commission services guidance document 'Managing Natura 2000 sites: The provisions of Article 6 of the ''Habitats'' Directive 92/43/EEC' as 'measures aimed at minimising or even cancelling the negative impact of a plan or project, during or after its completion' (paragraph 4.5.2). The research for this guidance document suggests that mitigation measures should be considered in accordance with a hierarchy of preferred options as illustrated in **Figure 8-1** below. The overall objective is to avoid senstivities.

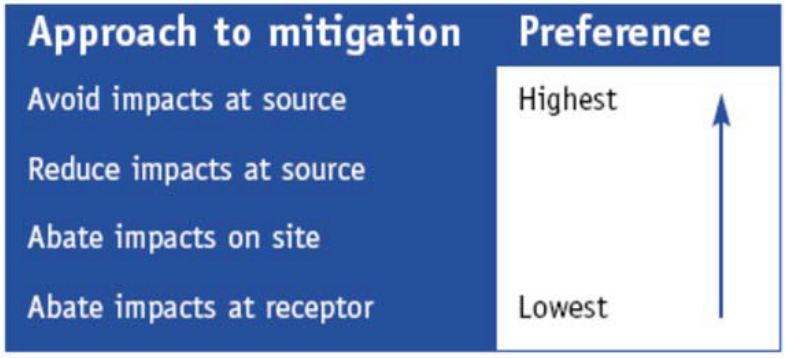


Figure 8-1 – Hierarchy of Preferred Mitigation Options

8.1 OVERALL MITIGATION STRATEGY

It is noted that actions arising out of the RSES shall be required to conform to the relevant regulatory provisions aimed at preventing pollution or other environmental effects likely to adversely affect the integrity of European Sites, where applicable and appropriate. In addition, all lower level plans and projects arising from the implementation of the RSES will themselves be subject to screening for AA and where relevant, AA.

Mitigation proposed is aligned with and has been drawn up in parallel with the allied SEA Environmental Report. The overall strategy responds to the level of detail available at the RSES level and the role for other inter-related plans and programmes which have defined competent authorities which interact with the RA.

The overarching mitigation strategy is therefore that potential Likely Significant Effects (LSE) or Adverse Effects on Site Integrity (AESI) will be considered fully at project level during pre-planning design and AA, when the specific effects of a development option can be reduced or eliminated through targeted project-specific surveys and iterative design, in order to limit the potential for LSEs or AEIS.

Targeted and 'appropriate' evaluation and analysis will be undertaken at initially CPD level and ultimately project stage, supported where necessary with site-specific or project-specific surveys or studies. Project level Screening for appropriate assessment and if applicable Natura Impact Statements shall be prepared for all projects falling out of the RSES as required by in Chapter 3 of the draft RSES.

Table 8.1 – How Mitigation Measures/Recommendations have been Addressed in the Draft RSES

Chapter Ref.	Proposed Mitigation Measures / Recommendations
Chapter 2: Strategic Vision	▪ An explicit RSO should be included to protect and manage the Natura 2000 network. ▪ The requirements of Article 10 of the Habitats Directive are not specifically considered under the AA process (except in so far as they support a qualifying feature) but it is recommended that the EMRA includes a specific RSO which addresses the ensures that ecological connectivity within the Plan area is maintained or improved, which will in turn improve the coherence of the Natura 2000 network. ▪ Develop an ecological resource map for the region.
Chapter 3 & 4: Growth and Settlement Strategy	***Regional Growth Centres*** <u>Athlone</u> ▪ The Joint Area Action Plans should explicitly consider potential for impact pathways in relation to European sites and the potential for ex-situ impacts. Action plans will ensure no adverse effects on the integrity of any European site as a key objective. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. <u>Drogheda</u> ▪ Phasing of services in terms of growth and settlement is essential to

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	avoid adverse impacts on the integrity of the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. <u>Dundalk</u> ▪ The Dundalk wastewater treatment plant is operating within its design capacity and is considered to have sufficient headroom. The plant, however, is listed as a Priority Urban Area and is failing more stringent treatment standards. As such, population growth needs to be phased alongside improvements to wastewater treatment. ▪ The expansion of activities associated with ports and marinas such as identified for Dundalk will require a feasibility study to be undertaken in the first instance and recognition that in the absence of coastal zone management, there is potential negative impacts to European sites. ▪ An Urban Area Action Plan, which is cognisant of transboundary Local Government Authorities in Northern Ireland (Newry, Mourne and Down) should explicitly consider potential for impact pathways in relation to European sites and the potential *ex-situ* impacts. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ The areas within lands zoned future residential and employment

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	hubs identified within the predicted Flood Zone A & B require site specific flood risk assessments to no ensure no adverse flood risk impacts. The Justification Test applies to applications within these areas. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. ***Key Growth Towns*** Swords ▪ Phasing of services and development in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ In considering specific developments for the Swords area, it is important that consideration of the wider MASP objectives, which may not be under the control of the Local Authority are taken on board, particularly with respect to in-combination impacts. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures). ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Maynooth ▪ The primary emission point for the Maynooth wastewater is elsewhere as part of the Lower Liffey Valley Regional Sewerage

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	Scheme. However there is storm water overflow to the Rye water, a river whose WFD status is poor and at risk. Increasing population growth in Maynooth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to cumulative degradation of water quality. ▪ Phasing of services and development in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration in consultation with Irish Water should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures). ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. <u>Bray</u> ▪ Phasing of services and development in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration in consultation with Irish Water should be given to the suitability of existing drinking water sources (e.g. hydromorphological pressures). ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Navan ▪ The primary emission point for the Navan wastewater treatment plant is noted to discharge to a section of the River Boyne which is at Moderate WFD status and At Risk of not meeting WFD objectives, and is also a designated Nutrient Sensitive River as a result of the wastewater outfall. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ Any development within the River Boyne and Blackwater SAC/SPA and pNHA as part of the Boyne Greenway should consider all likely significant effects. It is noted that the RPO for the extension of the Boyne Greenway state that this is subject to the outcome of the planning process and environmental assessments. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. Naas ▪ Population growth targets within the catchment areas being served by the Upper Liffey Valley Sewerage Scheme/Oberstown Wastewater Plant, which includes Naas as well as other towns, should have regard to the status and progress of the planned upgrades to the plant and other network elements, which will be subject to the outcomes of the planning process, to ensure the protection of the environment and water quality. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Wicklow-Rathnew ▪ With regard to the enhancement and expansion of Wicklow port and harbour, to expand commercial berthing and pleasure craft capacity, a study will be undertaken on its feasibility, with particular focus on avoiding adverse impacts on the integrity of adjacent European Sites. ▪ Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Longford ▪ Phasing of services in terms of growth and settlement is essential to

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	avoid adverse impacts on the integrity of the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Mullingar ▪ Mullingar treatment is noted to be currently operating within capacity. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make

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	provision for the level and location of development for which it can be concluded that there will be no adverse effect. Tullamore ▪ The primary emission point for the Tullamore wastewater treatment plant is noted to discharge to a section of the River Tullamore which is at Poor WFD status and At Risk of not meeting WFD objectives, and is also a designated Nutrient Sensitive River as a result of the wastewater outfall. Increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authority to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ Phasing of services in tandem with growth and settlement is essential to avoid adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources e.g. hydromorphological pressures. ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Portlaoise ▪ Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ With regard to the management of wastewater, increasing population growth should therefore be planned on a phased basis in collaboration with Irish Water and the local authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking

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	water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect. Carlow (Graiguecullen) ▪ With respect to the co-ordinated cross-boundary joint UAP by Carlow and Laois County Councils, regard shall be had to the respective housing, retail and other Local Authority strategies that may be in place. ▪ Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ With regard to the management of wastewater, increasing population growth should therefore be planned on a phased basis in collaboration with Irish Water and the local authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ Policy wording in the RSES shall recognise that at the project consent stage if it appears that any element of the RSES cannot be implemented without adverse impacts which cannot be adequately mitigated or compensated then the proposals will only make provision for the level and location of development for which it can be concluded that there will be no adverse effect.

Chapter Ref.	Proposed Mitigation Measures / Recommendations
Chapter 5: Dublin Metropolitan Area Strategic Plan (MASP)	▪ RPO 5.6: The RPO should stipulate that the identification of suitable employment sites shall be supported by a quality site selection process that addresses environmental concerns which shall include the potential for likely significant effects on European sites ▪ RPO: 5.8: The NTA Cycle Network Plan has assessed the potential adverse effect of the routes identified and mitigation measures have been developed to address negative effects. The RSES should stipulate that support for these routes is subject to compliance with the mitigation measures as outlined in the NIS for the NTA strategy.

Chapter 6: Economy and Employment	▪ Economic Base: The region will develop and apply guiding principles for the protection of the Natura 2000 network and the avoidance of adverse effect on integrity of European sites.
	▪ Sustainable Development: Specific reference should be made to potential for adverse effects on European sites as one of the issues to examine in RPO 6.2
	▪ Rural Economy: Local economy and community plans are subject to AA when prepared. This will ensure avoidance of adverse effects in the first instance and mitigation measures if required.
	▪ Tourism Assets
	  ▪ Visitor Experience Development Plans will require AA.
	  ▪ Visitor Experience Development Plans will specifically include a clear plan to avoid adverse effects on the integrity of European sites within the zone of influence of the plan including specific consideration of how supporting infrastructure like car parks and shops can influence the level of pressure on habitats and species the immediate vicinity.
	  ▪ EMRA will support Local Authorities in the developing specific monitoring protocols for visitor pressure to ensure that tourism activities are maintained within sustainable limits for the European sites in the region.
	▪ Skills and Talent: It is recommended that RAPJs, LEOs and Local Authorities are supported by the Regional Assemblies in upskilling on compliance with AA obligations through the planning hierarchy.
	▪ Technology and Innovation: Robust feasibility and site selection, which includes explicit consideration of likely significant effects on European sites and where relevant potential for adverse effects on the integrity of a European site will be carried out in advance of any site development.

Chapter 7: Environment	▪ Land and marine plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required. ▪ Any plans relating to the development of wastewater facilities are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required. ▪ Any plans such as those relating to local flooding solutions are subject to AA when prepared. This will ensure avoidance of adverse

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	effects on the integrity of European Sites in the first instance and mitigation measures if required. ▪ Biodiversity and Natural Heritage: Any plans for developments within European sites must be cognisant of the implications of increased visitor pressure upon QI/SCIs within the site. ▪ Any plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required. ▪ Green and Blue Infrastructure: Any development is supported by a quality site/route selection process that addresses environmental concerns such as landscape, cultural heritage and biodiversity as a minimum. ▪ Any future development of greenways, blueways, peatways, cycleways or walkways will include an assessment of any impacts that may arise from increased visitor pressures, in particular, on sensitive European sites and the design of the network will consider the provision of protective measures on sites sensitive to disturbance/visitor pressure. ▪ In order implement sustainable farming practices and prevent adverse effects on European sites the RSES must align with other plans and directives such as the River Basin Management Plans, Water Framework Directive, Nitrates Directive, Nitrates Action Plan, , National Biodiversity Action Plans, Climate Mitigation and Adaptation Plans, Flood Risk Management Plans and any other related plans. ▪ Landscape: Any plans are subject to AA when prepared. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required. ▪ Climate Change: Any plans are subject to AA when prepared prior to adoption. This will ensure avoidance of adverse effects on the integrity of European Sites in the first instance and mitigation measures if required.
Chapter 8: Connectivity	▪ The guiding principles for integration of transport planning and land use planning should explicitly reference the protection of the Natura 2000 networks and the ecological linkages which support it. ▪ AA of local transport plans will be required. ▪ Rail Infrastructure: As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES Detailed and robust route and site selection will be required to inform decision making in relation to the rail projects listed. ▪ Bus Infrastructure: As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES Detailed and robust route and site selection will be required to inform decision making in relation to the bus projects listed.

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	▪ Road Infrastructure: As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the road projects listed. ▪ A specific development plan for this Dublin-Belfast corridor should be prepared in consultation with NI authorities. This should in turn be subject to AA once clear objectives and proposals are known. ▪ A *feasibility* study into the impact of high speed rail on the European sites along the corridor with particular attention to bird populations, between Belfast-Dublin-Cork will be required to inform decision making in relation to such a proposal. ▪ Park and Ride: As per the RPO, support for these projects is subject to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the park and ride projects listed. ▪ As per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to the walking and cycling infrastructure referenced with a view to identifying and subsequently avoiding high sensitivity feeding or nesting points for birds and other sensitive fauna. ▪ The mitigation measures provided for in the NIS for the National Cycle Plan and the GDA Cycle Network should be fully applied. ▪ The National Cycle Plan should undergo AA to align with the decision making applied to the GDA Cycle Network Strategy. ▪ As per the road and rail priorities listed elsewhere, support for investment in international gateways should be clearly linked to *the outcome of appropriate environmental assessment and the planning process.* Furthermore as per commitments in Chapter 3 of the draft RSES detailed and robust route and site selection will be required to inform decision making in relation to such projects. ▪ EMRA should seek to support an appraisal of the existing drainage systems in operation at Dublin Airport to ensure it is capturing pollutants to avoid downstream impacts on water quality which provides a direct link to European sites. An analysis of the drainage system for capacity to take increased air traffic movements associated with secondary hubbing proposals is also required to inform future planning. ▪ EMRA should seek to support a dedicated study into the impact of aircraft movements at Dublin Airport on European sites on landing and take-off flight paths to and from the airport to inform future project proposals and planning for strategic infrastructure at the airport. ▪ The mitigation measures provided for in the NIS for the National

Chapter Ref.	Proposed Mitigation Measures / Recommendations
	Broadband Plan should be fully applied.
Chapter 9: Quality of Life	*None required*
Chapter 10: Infrastructure	▪ Delivery of these services will be *subject to appropriate environmental assessment and the planning process.* ▪ Phasing of services in terms of growth and settlement is essential to avoid adverse impacts on the integrity of the Natura 2000 network. ▪ In order meet the increased demands on the water supply and prevent adverse impacts the integrity of water dependent habitats and species within the Natura 2000 network, due consideration should be given to the suitability of new and/or existing drinking water sources (e.g. hydromorphological pressures). ▪ Selection of sites for regeneration and expansion should be supported by a quality site selection process and subject to detailed environmental assessment. ▪ A set of site selection criteria should be developed by EMRA to assist local authorities in decision making. This should include explicit consideration of the potential for likely significant effects as a distinct criterion for short-listing of site and if necessary the potential of sites to avoid adverse effects on the integrity of any European site. ▪ For the management of wastewater, increasing population growth should be planned on a phased basis in collaboration with Irish Water and the Local Authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality. ▪ As stated in the guiding principles of the draft RSES, '*Plans and projects that have the potential to negatively impact on Natura 2000 sites should be subject to the requirements of the Habitats Directive.'* ▪ See mitigation in relation to flood risk management in Section 7.6. ▪ RPO 10.14: the enabling new Smart Grids and Smart Cities Action Plan should be subject to AA to ensure that connections, grid balancing, energy management and micro grid development do not adversely affect site integrity of any European sites. ▪ RPO 10.19 should be amended to include the following text in line with the other RPOs in the section: *subject to* appropriate environmental assessment and the outcome of the planning process. ▪ Ensure proper site selection of any proposed storage space which includes criteria to avoid likely significant effects on European sites and if necessary avoids adverse effects on site integrity.
Chapter 11: All Ireland Cohesion	▪ Co-ordination and integration of plans and programmes with the relevant bodies in both jurisdictions to ensure that the potential for adverse effects is addressed in a coherent manner (e.g. catchment based strategies). ▪ Any plans or programmes that stem from all island cohesion will be subject to appropriate environmental assessment.

Chapter Ref.	Proposed Mitigation Measures / Recommendations
Chapter 12: Implementation and Monitoring	▪ A regional working group should be established to improve the coherence of European Site protection and management and to address cross-boundary site and species protection. ▪ A repository for NIS and NIR documents should be established to facilitate data sharing and exchange on transboundary sites. ▪ Consideration should be given to requiring planning permissions, particularly for large infrastructure in the region, to provide raw data in a readily searchable format to improve the evidence base available for decision makers at planning authority level.

9 NEXT STEPS

This Natura Impact Report has considered the potential of the draft EMR RSES to adversely affect the integrity of any European site. The assessment to date has included both iterative discussion with the RSES team and assessment of the emerging draft RSES with a view to including policies and text to mitigate potential for adverse effects on the integrity of any European site. Key changes have been identified in **Table 7.1**.

The next step in the process is the consideration of the draft by the representatives of the EMRA and then a wider public consultation. The draft RSES will be accompanied by this draft NIR. Where changes are proposed to the draft RSES as a result of consultation, these will be assessed and this NIR will be updated to reflect the draft proposed for adoption.

Prior to adoption, the Competent Authority for the EM RSES must consider the updated NIR and any other relevant information and, for the purposes of Article 6(3) of the Habitats Directive and its application through the Planning and Development Act 2000 (as amended), must determine whether the RSES either individually or in combination with any other plan or project would adversely affect the integrity of any European Site. Only having ascertained this can the strategy be adopted.

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APPENDIX A

Summary of Statutory Consultation Responses (Prior to Draft RSES)

Statutory Consultee	Summary of Issues Raised
EPA **General** *Also attached are to the Submission:-* *1. NPF Issues and Choices and SEA Scoping (31st Mar 2017) and 2. Draft NPF and associated SEA ER (10th Nov 2017)*	**General Comments** ▪ EPA welcomes the common approach to the SEA process being adopted for all 3 RSESs and welcome participation in workshop. ▪ Merit in considering adopting a similar standardised approach in preparing the Strategies. ▪ The RSES and the SEA should consider (and make a commitment to) the relevant aspects of the 7 Key Actions of *Ireland's Environment – An Assessment 2016* (SoER) which are linked to the 17 UN's Sustainable Development Goals. Suggest inclusion of these goals in the RSES. ▪ *Draft River Basin Management Plan* and *Cleaning our Air – A National Clean Air Strategy for Ireland* (currently being prepared) should be reflected in the environmental commitments in the RSES. ▪ Flood Risk Management Plans currently being finalised should feed in to the RSES. ▪ Aligning the implementation and governance aspects of the RSES with the approach to governance and implementation outlined in NPF. ▪ Considering support for the development of integrated and robust planning enforcement and cooperation mechanisms in association with the DHPLG, relevant Government Departments, and the proposed Office of the Planning Regulator, other Regional Assemblies and local authorities. ▪ The RSES has significant potential to contribute to support Ireland's ambition to become a carbon-neutral, climate-resilient and sustainably competitive society. ▪ A commitment to preparing an RSES Implementation Programme alongside the RSES should be considered. This could potentially set out key responsibilities (including lead /partner Departments/Authorities etc.), priorities and where appropriate, timescales, alongside each of the objectives/ commitments in the RSES. ▪ Refer to EPA SEA Guidance and information sources in carrying out SEA for consideration.
EPA **Appendix I - Comments on the Issues Paper**	**Appendix I - Comments on the RSES Issues Paper (General)** ▪ Suggest having regard to key national environmental commitments. ▪ *With regards the Issues Paper, more detailed responses will be provided as supplementary information to this submission. This will be based on the Technical Working Group Workshops and the detailed Technical Reports provided.* **Appendix I - Comments on the RSES Issues Paper (Response to Questions)** ▪ In relation to 'Our Rural Areas' list a number of plans and strategies for consideration. ▪ EPA annual reports on water quality, drinking water and wastewater detail the status of infrastructure and should be reviewed to determine the areas needing remediation / increased capacity so as to meet population growth and economic development. ▪ Irish Water's Tier I and Tier II Plans (Water Services Strategic Plan, Capital Investment Plan, Wastewater sludge management plan, Lead in Drinking Water Mitigation Plan and their National Water Resources Plan should be reviewed with regards to identifying water treatment infrastructure requirements and investment prioritisation are proposed. Also suggest referring to EPA's *Ireland's Environment - An Assessment 2016, our State of the Environment Report*.

Statutory Consultee	Summary of Issues Raised
	▪ Should promote integration of climate related plans at county level (as listed). Merit in the Regional Authority convening a workshop to see how the various sectors within the region can implement and monitor implementation of the measures and policies required to reduce greenhouse gas emissions. ▪ DCCAE are considering the preparation of an on-line portal to serve as a database of information on climate policies and measures that can be used for Ireland's EU and UNFCCC reporting purposes. ▪ In relation to the bio-economy sector, areas of competing land use should be identified early in the process particularly if those areas are marked for expansion or development of bio economy related developments/land uses. A commitment to the bio-energy plan should be given. ▪ In relation to marine and coastal areas a number of plans and strategies should be consulted including draft National River Basin Management Plan for Ireland etc. (as listed). ▪ In relation to regional measures which would ensure the monitoring and implementation of the objectives/policies of the NPF and the RSES there would be merit in considering a database of the various national policy objectives in the NPF and include the related policies/objectives for the region required to advance these national objectives. ▪ A commitment should be included in the RSES for reporting on the ongoing environmental performance of the RSES. This should be published alongside a report of RSES implementation. **Guidance for Integration of Environmental Considerations:** separate document provided listing key significant environmental aspects to consider.
EPA Submission **Appendix II – Comments on the Scoping Report**	**Appendix II – Comments on the Scoping Report** *5.3.1 – Population and Human Health* ▪ There is also merit from a population perspective to include a specific reference to the *National Planning Framework*. *5.3.2 – Biodiversity, Flora and Fauna* ▪ In relation to the Opportunities, bullet 2 "*More Coherent protection and enhancement of biodiversity as a whole on a regional and local level*", could also consider including a reference to 'monitoring' and 'management' also. Could also amend this bullet to "*Support national level policies at a regional level to protect and enhance natural heritage assets*". ▪ Opportunities Bullet 7 could also be amended to recognise the opportunity to establish a coordinated regional approach to habitat mapping, ecosystem services and river basin catchment management. *5.3.4 – Water* ▪ In relation to Opportunities for the 'Water' topic, the wording of bullet 2 should be amended 'addressing its impacts' is vague in detail. ▪ Under 'Challenges', additional challenges could include: o ensuring leisure activities do no adversely impact on the aquatic environment

Statutory Consultee	Summary of Issues Raised
	○ dredging and dumping at sea activities should also be considered here *Drinking Water* ▪ Remedial Action List and the Priority Areas (EPA) set out deficiencies for drinking water and wastewater. These priority areas should be taken into consideration in the RSES and the SEA making process. *Waste Water* ▪ Consideration in the RSES and the associated environmental assessments of the following: ▪ An assessment carried out by Irish Water on wastewater indicates that many plants are not capable of taking additional capacity as they are not meeting the discharge conditions and this situation will not change in many of them in the near future (i.e. by 2021). If additional development occurs in these areas, it is likely to push the discharge over the licence limits and therefore potentially impact on water quality. ▪ EPA identified 148 urban areas where improvements in the collection and treatment of waste water are necessary to resolve these six priority issues. The 148 areas are shown on the map at https://gis.epa.ie/EPAMaps/SewageTreatment. ▪ The European Commission is taking Ireland to the Court of Justice of the European Union because of the failure to comply with the requirements of the Urban Waste Water Treatment Directive. It is essential that Ireland improves waste water treatment at non-compliant areas, to ensure that waste water is treated to the required standards. ▪ A lack of treatment capacity may constrain development in some urban areas, until such time as discharges from these areas meet the necessary environmental standards. ▪ Compliance with the requirements of Waste Water Discharge Authorisations is the key to reducing the environment impact of waste water on the receiving environment. *5.3.5 Air Quality* ▪ Amending Opportunity Bullet 4 for clarity "Encourage modal shift away from private vehicular transport to more sustainable options, especially in towns and cities"; ▪ Under 'Challenges', an additional challenge could relate to 'emissions from industry' within the region. *Road Transport* ▪ Note road transport is highly fossil fuel dependant which is a key challenge to maintain good air quality. Identifies the need to promote a reduction in travel demands, increase alternatives to private car and improvements in motorised transport and need to promote incentives to move to electric vehicles. Recommend inclusion of commitment to reduce transport related emissions. *Noise* ▪ Available Noise Action Plans should be considered and reviewed as required, to reflect the Plan period and associated development proposals. ▪ Consideration should be given to protect, where relevant, any designated quiet areas in open country. Quiet Areas are defined as "an

Statutory Consultee	Summary of Issues Raised
	area in open country, substantially unaffected by anthropogenic noise." ▪ Useful for the RSES to acknowledge and support the need for a National-level Noise Policy / Strategy. 5.3.6 Climatic Factors ▪ The relevant transport-related actions and measures in the *National Mitigation Plan* (DCCAE, 2017) should be considered and addressed as appropriate in the RSES. ▪ Note obligation to meet 10% transport energy from renewable sources by 2020 and NPF target to reduce carbon dioxide emissions which should be addressed in RSES. ▪ The RSES should consider the impacts on local and regional exposure and vulnerability to weather and climate events, and projected changes to these due to climate change. ▪ Traffic flows, preferred commuter transport mode and associated impact on traffic volume/congestion is strongly influenced by weather conditions, and not just weather extremes, which should also be considered. ▪ The inclusion of commitment to preparation of a Regional Climate Adaptation Strategy should be considered for inclusion in the RSES. 5.3.7 Material Assets ▪ The first Opportunity bullet could include a reference to modern communications infrastructure. ▪ Refer to national policy on alternative fuels. ▪ *Bullet 1 - Plan for settlement to be aligned with required transport, water, energy infrastructure.* *5.3.9 Landscape* ▪ Opportunity could also include coordination of protection of sensitive and high landscape character areas in inter-county and inter regional context. ▪ Coordinated regional approach should be adopted to identifying and protection, regional LCA's opportunity. ▪ A commitment should be included in the RSES to the preparation Regional Landscape Character Assessment (RLCA). ▪ SEA Environmental Objectives should be set in the context of the environmental objectives set in the NPF to ensure consistency, while also expanding on the regional specific variation and issues/challenges that exist. *Table 7.1 – Draft SEA Environmental Objectives* ▪ Under the 'Water' topic, a sub-objective should be included for ensuring the Floods Directive and National CFRAMS programme is implemented, and supporting implementation of relevant actions and measures set out in the final FRMP's once adopted. ▪ Effecting Coastal Zone Management and associated implications for land use zoning should also be considered for inclusion. ▪ Noise considerations should be considered specifically. ▪ In relation to 'Climate', suggest to support and facilitate local authority climatic adaption strategies.

Statutory Consultee	Summary of Issues Raised
	▪ Under' Landscape', aspects such as protecting streetscapes, seascapes of recognised quality and enhancing provision of and access to green space in urban areas. ▪ *In relation to Material Assets (Waste):-* o Opportunity to support RWMP recommendations to establish buffer areas between industrial/commercial areas and residential areas. o The RSES should also take into consideration the need to provide for adequate separation between sensitive receptors and industrial activities in order to minimise the potential for nuisance issues. *Section 7.3 Outline of Alternatives* ▪ Merit in considering a tiered approach to the consideration of alternatives in the SEA for the RSES, to align with the new national planning hierarchy. ▪ Suggest the convening of alternatives workshops would be useful with key stakeholders participating to inform the development, consideration and environmental appraisal of the RSES options nard combinations of RSES options.
DCHG – Comments on SEA Scoping Report	▪ The EPA's Integrated Biodiversity Impact Assessment Practitioner's Manual is of particular relevance for integration of biodiversity issues ▪ The scope of the SEA should include data gathering, analysis and assessment of the implications for each of the elements listed, paying particular attention to the likely and realistic effects of the plan. ▪ List of data sources provided, including GIS data; list of important NPWs publications provided; List of relevant SEA Guidance documents provided. ▪ Where a plan requires an appropriate assessment, any changes or alterations of that plan (after the draft plan stage) should be 'assessed' rather than 'screened'. ▪ Strategic Environmental Objectives should be included for all nature conservation sites (not only European sites), protected species, and ecological corridors and stepping stones as outlined in this submission (Appendix 1) ▪ Although MASP is to operate at a strategic level it shall also take into consideration various environmental constraints and challenges in the wider metropolitan areas including but not only European sites and other nature conservation sites. All such land use planning issues have the potential to impact on biodiversity and designated sites and these issues need to be considered in the SEA. ▪ In addition to benefits of heritage and landscape for tourism, employment and economic growth, the strategy should also acknowledge the high quality of the environment associated with nature conservation sites, as well as their international scientific importance and educational values. ▪ Interrelationships between BFF and other topics should be assessed and identify significant effects. ▪ BFF section of SEA should be prepared by or in conjunction with suitably qualified ecologist and other specialists and should have regard for EPA's Integrated Biodiversity Impact Assessment best practice guidance. ▪ SEOs should refer to international and national environmental objectives. Refer to the National Biodiversity Action Plan 2017- 2021 which

Statutory Consultee	Summary of Issues Raised
	seeks to 'mainstream biodiversity into decision making' and move towards 'no net loss to biodiversity'. ▪ Welcome that the biodiversity flora and fauna SEO also covers protected species. Such species, which can be protected under national and/or European legislation, can occur anywhere, including outside of designated sites. ▪ While it may be considered efficient to use monitoring programmes that are already in place and run by other authorities, it is important to establish that these are in fact designed in such a way that they will identify the effects anticipated from the particular strategy in question. As such, it is important to understand the objectives, methodologies, parameters, assumptions, etc. of any existing monitoring programme that is proposed to be used in such a way. ▪ It is advisable to set out clearly where responsibilities for monitoring programmes lie, and their frequency and reporting/publication arrangements, as well as the procedures that will be put in place to ensure that there is a response mechanism to any unforeseen or undesirable negative effects/results, and that remedial action will be taken, if necessary. ▪ Refers to the use of Irish SEA and AA Guidance documentation for use and various ecological data references for use as key sources as part of the process (pages 4 and 5). ▪ Appropriate assessment guidance is included in Appendix 2. Where the NIR/NIS identifies that plan-level mitigation is necessary this must amend and be reflected in the content and objectives of the final strategy wherever necessary. Specific and repeated cross referencing to mitigation measures in other sections or reports may be used but should be done clearly, consistently and unambiguously. Particular attention should be paid to environmental monitoring of previous or related plans where this is producing 'evidence-based' monitoring results. ▪ Public authorities are obliged, when exercising their functions, to take appropriate steps to avoid in European sites the deterioration of natural habitats and the habitats of species, 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. Advised to incorporate such obligation into strategy. Suggest inclusion of the development of systems that will monitor and ensure the compliance of "downstream" projects with these obligations, as well as any internal mechanisms that may be needed to ensure compliance. **Integration of Biodiversity, Flora and Fauna, and associated obligations into the Strategy:** General provisions described **Key requirements and clarifications concerning Natura Impact Statements:** General provisions described **Appropriate Assessment Guidance:** General provisions described and list of jurisprudence provided. **Appendix 1: Key elements of biodiversity of relevance to SEA:** A list of the key elements of biodiversity, flora and fauna of relevance to SEA is provided. **Appendix 2: Overview of 2013 Article 17 and Article 12 summary data:** Presents findings of report on status of Ireland's Habitats and Species Report which refers to the status of Ireland's birds, and reports on the implementation of the Habitats and Birds Directives. It also refers to the Department's Prioritised Action Framework which requires consideration as part of the environmental assessments.
DCHG - Comments on the Issues Paper	▪ **Legislation:** The Strategy and SEA should take account of the Biodiversity Convention, the Ramsar Convention, the EC Habitats Directive (Council Directive 92/43/EEC), the EC Birds Directive (Directive 2009/147 EC), the Wildlife Acts of 1976 to 2012, and the European

Statutory Consultee	Summary of Issues Raised
	Communities (Birds and Natural Habitats) Regulations 2011 to 2015. The Regional Assembly should also refer to the relevant circular letters which have been circulated to Local Authorities. ▪ **Designated Sites:** The Strategy should include a natural heritage section and refer to all designated sites within or adjoining the Strategy area, which should be listed and mapped. ▪ **Protected Species:** The proposed Strategy should recognise that protected species also occur outside designated sites and should ensure the protection of such species. ▪ **Biodiversity:** The Strategy should be developed to integrate biodiversity considerations in a positive, proactive and precautionary way, and this should be reflected in the text and content of the plan, including its aims, objectives and policies, as well as in maps. ▪ **Article 10 of the Habitats Directive:** the Strategy should include provisions to encourage the management of features of the landscape which are of major importance to wild fauna and flora. ▪ **Pollinators:** It is recommended that the natural heritage section of the Strategy should also contain a policy on implementing the All Ireland Pollinator Plan 2015-2020. ▪ **Implications of the Strategy for Biodiversity, Flora and Fauna**: Plans and programmes may significantly affect nature conservation, biodiversity, flora and fauna in a number of ways, depending on the measures to be included within the Strategy and the methods of implementation. ▪ **Cumulative Impacts**: When drafting the Strategy, cumulative and in combination effects with existing plans and projects and with known upcoming plans and projects, should be assessed. Eastern & Midland Region noted to have many areas of nature conservation importance, both designated and undesignated, ecological corridors and stepping stones, and biodiversity in general. The following issues should be considered when drafting the Strategy and carrying out the assessment: ▪ **Land Use Planning:** No areas to be identified or targeted for future development or changes in land use without the availability of basic constraints map. ▪ **Water Services:** The provision of water services has the potential to impact on the natural heritage. Such impacts include those on water quality and quantity as well as physical disturbance of habitats and species and habitat loss. Noted that some major projects are currently underway in the Region including plans to pipe water from the River Shannon, for a new waste water treatment plant (WWTP) in north County Dublin, and the upgrading of the Poolbeg WWTP. Consultation is ongoing with DCHG regarding these current proposals ▪ **Infrastructure:** Broadband/electricity/wind farms/solar farms require the laying of cables, underground or in some cases over ground and other ancillary infrastructure. Overhead cables can also pose a flight hazard to migrating birds and therefore need to be sensitively sited. Laying of cables has the potential to impact on habitats and species through habitat loss and disturbance. ▪ **Roads and Rail:** Modifications to existing road and rail routes, and the building of any new routes, have potential to impact negatively on biodiversity. Any potential impacts of on-going or proposed road or rail projects should be considered. Key projects include proposed road projects in the Region and an aspiration for the future twin tracking of the rail line both north and south from Dublin with the DART

Statutory Consultee	Summary of Issues Raised
	extension involving electrification of part of it. As the rail line runs adjacent to, and in some cases through, European sites, such projects will require appropriate assessment. In addition to loss of annexed habitat there is potential for bird collisions with overhead cables for the DART where it crosses estuaries such as at Malahide and Rogerstown. ▪ **Ports and Airports:** Any modifications or expansion of ports and airports may impact on biodiversity and designated sites, either directly or indirectly. Projects in the Region which the DCHG has been consulted about include a second runway proposal for Dublin Airport and the implementation of Dublin Port Masterplan ▪ **Climate Change, Flooding and CFRAM:** Flood barriers such as walls can impact on the structure and function of rivers, including river SACs, and can lead to changes in the patterns of erosion and deposition and the loss of flood plains and associated habitats. ▪ **Coastal Protection:** Coastal flood protection measures can lead to changes in the erosion and deposition and although considered a natural process and could have implications on sites some distance away should be considered in the Strategy. ▪ **Air and Water Quality Including NOx Emissions:** Air quality including emissions from vehicles (NOx) and farms (ammonia) can lead to atmospheric nitrogen deposition resulting in changes in flora and vegetation types. ▪ **Tourism and Greenways/Cycleways, Amenity Parks:** The Strategy should address the issue of creating new amenity parks and not rely on using existing natural biodiversity rich areas of countryside and designated sites for amenity purposes. The Strategy should ensure it is compliant with the National Greenway Strategy currently in preparation. Potential impacts of on-going or proposed greenways and similar developments should be considered including the potential for cumulative impacts at both a Regional and a National level including habitat loss and disturbance. ▪ There are many greenways and similar developments or development proposals in the Region, including the Barrow Blueway, the Royal and Grand Canal Greenways, the S 2 S and the Dodder Greenway from source to sea. These all have the potential to impact on European sites habitats and species including habits and species listed on the annexes of the Birds and Habitats Directives ▪ **Green Infrastructure:** Green Infrastructure should involve creating new green areas in existing built infrastructure and creating a green network. It should not be confused and be interpreted as putting built infrastructure into green areas. Although there is an inter-relationship between natural heritage and green infrastructure ▪ Department recommends that the Strategy should have separate natural heritage/biodiversity and green infrastructure chapters. ▪ Link provided to EU Commission's document on Green Infrastructure (2013) ▪ It is recommended that the natural heritage section of the Strategy should also contain a policy on implementing the All Ireland Pollinator Plan 2015-2020 ▪ When drafting the Strategy, cumulative and in combination effects with existing plans and projects and with known upcoming plans and projects, should be assessed
Inland Fisheries Ireland	▪ RSES must address not only water quality but also include the protection of the physical environment, hydrological processes and biodiversity. Protection of the aquatic environment must imply a greater commitment than merely to prevent fish mortality or protect water quality. Consideration should be given to potential significant impacts on:

Statutory Consultee	Summary of Issues Raised
	▪ Water quality ▪ Aquatic and associated riparian habitats ▪ Biological Diversity ▪ Ecosystem structure and functioning ▪ Fish spawning and nursery areas ▪ Surface water hydrology ▪ Passage of migratory fish ▪ Areas of natural heritage importance including geological heritage sites ▪ Sport and commercial fishing and angling ▪ Amenity and recreational areas RSES should: ▪ be consistent with WFD and RBMP ▪ Preclude development where infrastructure is under-capacity. ▪ Support river corridor preservation. ▪ Promote integration of natural watercourses in development proposals and encourage local participation and consultation with IFI. ▪ Support National Strategy for Angling Development ▪ Have regard to IFI Guidelines. ▪ **Protect aquatic environment**: RSES….protection of the quality of the aquatic environment…water quality…include the protection of the physical environment, hydrological processes and biodiversity ▪ Maintenance of habitat is a particularly important objective of fisheries authorities, protection of the food chain ▪ WFD - Protection of aquatic ecosystems requires that river systems be protected on a catchment basis and protection and maintenance of physical habitat and hydrological processes and regimes. ▪ **Water Quality & Municipal WWTP Infrastructure**: Sufficient treatment capacity must be available both within the receiving sewerage systems locally and downstream of waste water treatment plants over the full duration of the plan in order that the ecological integrity of the ultimate receiving waters is protected. ▪ Capacity must be coupled with an effective sludge management strategy/policy. ▪ Build a comprehensive and robust assessment of both local infrastructural needs and IW/LA capacity to meet those needs into the plan the risk of associated significant environmental impacts which may result from local development. ▪ **Water Quality and Integrated Constructed Wetlands**: precautionary approach, from a policy perspective; required by WFD to

Statutory Consultee	Summary of Issues Raised
	protect/improve ecological status and water quality of all waters. ▪ **Aquatic Habitat Protection** (incl. riparian habitat): essential to maintain watercourses in an environmentally and aesthetically sensitive manner; IFI provide guidance on site specific measures to protect riparian and aquatic habitats; Opposed to development on floodplain lands. ▪ **Invasive Species**: policies aimed at ensuring that developments do not spread invasive species; prohibit invasive species from inclusion in landscape design proposals… require use of native, local stock ▪ **River Crossing Structures**: policy for use of clear span structures where possible on fisheries waters. ▪ **Stream Fragmentation:** Refers to the Adaptive Management of Barriers in European Rivers 'AMBER Project' raising awareness of stream fragmentation and need for innovative solutions encouraging connectivity. ▪ **Water Conservation:** Reduce water use, enhance water supply reliability, restore ecosystems, and respond to climate change and changing demographics. ▪ Best practice, rainwater harvesting, regulation of agricultural abstraction and SUDS. ▪ **Climate Change:** Native fish vulnerable to climate change and requires mitigation incl. planting of trees. Flooding and high flows causing nutrient enrichment and fine sediment. ▪ **Management Policies: Seek inclusion if river management policies in the form of:-** ▪ River Corridor Management Areas protecting against development in urban areas. ▪ Special Preservation Orders provided for specific habitats in need of protection e.g. an Aquatic Protection Order. ▪ Special Amenity Areas, identified for their potential as Linear Parklands along waterways. **National Strategy for Angling Development:** Seek support for this strategy.
NIEA – DAERA	The Environmental Report should consider if there will be any transboundary effects. Provide the following links: • Details of the features of designated sites both terrestrial and marine are available at https://www.daera-ni.gov.uk/topics/biodiversity-land-and-landscapes/protected-areas. • An Air Pollution Information System is available at http://www.apis.ac.uk/srcl. 'Site Relevant Critical Loads' tool provides critical loads for acidity and nitrogen for designated features within every SAC, SPA or ASSIin the UK. Critical loads are assigned to each sensitive feature for either nutrient nitrogen or acidity. In addition, deposition data for nitrogen and sulphur at each site are provided, apportioned to major sources, and include transboundary sources.

Note: SEA Scoping Consultation responses were also provided by a number of non-statutory SEA Consultees. While not included in this table, the responses have been reviewed and considered in the preparation of the draft Eastern & Midland Regional Spational and Economic Strategy, SEA Environmental Report and the Natura Impact Report.

APPENDIX B

Special Areas of Conservation (SACs)
Eastern & Midland Region

SAC Site Name	Site Code
Killyconny Bog (Cloghbally) SAC	000006
Baldoyle Bay SAC	000199
Howth Head SAC	000202
Lambay Island SAC	000204
Malahide Estuary SAC	000205
North Dublin Bay SAC	000206
Rogerstown Estuary SAC	000208
South Dublin Bay SAC	000210
River Shannon Callows SAC	000216
Ballynafagh Bog SAC	000391
Pollardstown Fen SAC	000396
Red Bog, Kildare SAC	000397
Slieve Bloom Mountains SAC	000412
Lough Ree SAC	000440
Fortwilliam Turlough SAC	000448
Carlingford Mountain SAC	000453
Dundalk Bay SAC	000455
All Saints Bog And Esker SAC	000566
Charleville Wood SAC	000571
Clara Bog SAC	000572
Ferbane Bog SAC	000575
Fin Lough (Offaly) SAC	000576
Mongan Bog SAC	000580
Moyclare Bog SAC	000581
Raheenmore Bog SAC	000582
Sharavogue Bog SAC	000585
Garriskil Bog SAC	000679
Lough Ennell SAC	000685
Lough Owel SAC	000688
Scragh Bog SAC	000692
Ballyman Glen SAC	000713
Bray Head SAC	000714
Carriggower Bog SAC	000716
Deputy's Pass Nature Reserve SAC	000717
Glen Of The Downs SAC	000719
Knocksink Wood SAC	000725
Buckroney-Brittas Dunes And Fen SAC	000729
Vale Of Clara (Rathdrum Wood) SAC	000733
Slaney River Valley SAC	000781
Cullahill Mountain SAC	000831

SAC Site Name	Site Code
Clonaslee Eskers And Derry Bog SAC	000859
Lisbigney Bog SAC	000869
Ridge Road, SW of Rapemills SAC	000919
The Long Derries, Edenderry SAC	000925
Glenasmole Valley SAC	001209
Ballynafagh Lake SAC	001387
Rye Water Valley/Carton SAC	001398
Clogher Head SAC	001459
Kilpatrick Sandhills SAC	001742
Holdenstown Bog SAC	001757
Magherabeg Dunes SAC	001766
Pilgrim's Road Esker SAC	001776
White Lough, Ben Loughs And Lough Doo SAC	001810
Lough Forbes Complex SAC	001818
Split Hills And Long Hill Esker SAC	001831
Boyne Coast And Estuary SAC	001957
Lough Bane And Lough Glass SAC	002120
Lough Lene SAC	002121
Wicklow Mountains SAC	002122
Mountmellick SAC	002141
Lisduff Fen SAC	002147
River Barrow And River Nore SAC	002162
Ireland's Eye SAC	002193
Derragh Bog SAC	002201
Mount Jessop Bog SAC	002202
Girley (Drewstown) Bog SAC	002203
Wooddown Bog SAC	002205
Island Fen SAC	002236
The Murrough Wetlands SAC	002249
Ballyprior Grassland SAC	002256
Wicklow Reef SAC	002274
River Boyne And River Blackwater SAC	002299
Carlingford Shore SAC	002306
Ballymore Fen SAC	002313
Mouds Bog SAC	002331
Coolrain Bog SAC	002332
Knockacoller Bog SAC	002333
Carn Park Bog SAC	002336
Crosswood Bog SAC	002337
Moneybeg And Clareisland Bogs SAC	002340
Ardagullion Bog SAC	002341
Mount Hevey Bog SAC	002342

SAC Site Name	Site Code
Brown Bog SAC	002346
Clooneen Bog SAC	002348
Rockabill to Dalkey Island SAC	003000
Codling Fault Zone SAC	003015

APPENDIX C

Special Protection Areas (SPAs)
Eastern & Midland Region

SPA Site Name	Site Code
Puffin Island SPA	004003
Cliffs of Moher SPA	004005
Blasket Islands SPA	004008
Lady's Island Lake SPA	004009
The Raven SPA	004019
Ballyteigue Burrow SPA	004020
Old Head of Kinsale SPA	004021
Ballycotton Bay SPA	004022
Ballymacoda Bay SPA	004023
Tramore Back Strand SPA	004027
Blackwater Estuary SPA	004028
Castlemaine Harbour SPA	004029
Cork Harbour SPA	004030
Inner Galway Bay SPA	004031
Dungarvan Harbour SPA	004032
Bannow Bay SPA	004033
Killarney National Park SPA	004038
Ballyallia Lough SPA	004041
Lough Derg (Shannon) SPA	004058
The Bull and The Cow Rocks SPA	004066
Wexford Harbour and Slobs SPA	004076
River Shannon and River Fergus Estuaries SPA	004077
Clonakilty Bay SPA	004081
River Little Brosna Callows SPA	004086
Tacumshin Lake SPA	004092
Blackwater Callows SPA	004094
Kilcolman Bog SPA	004095
Middle Shannon Callows SPA	004096
Eirk Bog SPA	004108
The Gearagh SPA	004109
Illaunonearaun SPA	004114
Keeragh Islands SPA	004118
Loop Head SPA	004119
Sovereign Islands SPA	004124
Magharee Islands SPA	004125
Cahore Marshes SPA	004143
Dingle Peninsula SPA	004153
Iveragh Peninsula SPA	004154
Beara Peninsula SPA	004155
Sheep's Head to Toe Head SPA	004156
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161

SPA Site Name	Site Code
Mullaghanish to Musheramore Mountains SPA	004162
Slievefelim to Silvermines Mountains SPA	004165
Slieve Aughty Mountains SPA	004168
Deenish Island and Scariff Island SPA	004175
Mid-Clare Coast SPA	004182
Tralee Bay Complex SPA	004188
Kerry Head SPA	004189
Galley Head to Duneen Point SPA	004190
Seven Heads SPA	004191
Helvick Head to Ballyquin SPA	004192
Mid-Waterford Coast SPA	004193
Courtmacsherry Bay SPA	004219
Corofin Wetlands SPA	004220
River Nore SPA	004233

APPENDIX D

Special Areas of Conservation (SACs)
Northern Ireland

Special Area of Conservation (SAC)	*Site Code*	*Special Area of Conservation (SAC)*	*Site Code*
Cuilcagh Mountain *	UK0016603	Bann Estuary	UK0030084
Pettigoe Plateau *	UK0016607	Binevenagh	UK0030089
Fairy Water Bogs	UK0016611	Cladagh (Swanlinbar) River	UK0030116
Magilligan	UK0016613	Moneygal Bog	UK0030211
Upper Lough Erne	UK0016614	Moninea Bog	UK0030212
Eastern Mournes	UK0016615	Owenkillew River	UK0030233
Monawilkin	UK0016619	Rostrevor Wood	UK0030268
Derryleckagh	UK0016620	Slieve Gullion	UK0030277
Magheraveely Marl Loughs *	UK0016621	West Fermanagh Scarplands	UK0030300
Slieve Beagh	UK0016622	River Foyle and Tributaries *	UK0030320
Largalinny	UK0030045	River Roe and Tributaries	UK0030360
Lough Melvin *	UK0030047	River Faughan and Tributaries	UK0030361
Fardrum and Roosky Turloughs	UK0030068	Skerries and Causeway	UK0030383
Ballynahone Bog	UK0016599	Rea's Wood and Farr's Bay	UK0030244
Garron Plateau	UK0016606	Turmennan	UK0030291
Teal Lough	UK0016608	Upper Ballinderry River	UK0030296
Black Bog	UK0016609	Wolf Island Bog	UK0030303
Garry Bog	UK0016610	Aughnadarragh Lough	UK0030318
Murlough	UK0016612	Ballykilbeg	UK0030319
Strangford Lough	UK0016618	Cranny Bogs	UK0030321
Rathlin Island	UK0030055	Curran Bog	UK0030322
Banagher Glen	UK0030083	Dead Island Bog	UK0030323
Breen Wood	UK0030097	Deroran Bog	UK0030324
Carn – Glenshane Pass	UK0030110	Tonnagh Beg Bog	UK0030325
Hollymount	UK0030169	Tully Bog	UK0030326
Lecale Fens	UK0030180	Red Bay	UK0030365
Main Valley Bogs	UK0030199	The Maidens	UK0030384
Montiaghs Moss	UK0030214	Pisces Reef Complex	UK0030379
North Antrim Coast	UK0030224	North Channel	UK0030399
Peatlands Park	UK0030236	-	-

APPENDIX E

Special Protection Areas (SPAs)
Northern Ireland

Special Protection Area (SPA)	Site Code
Lough Foyle	UK9020031
Pettigoe Plateau	UK9020051
Upper Lough Erne	UK9020071
Slieve Beagh-Mullaghfad-Lisnaskea	UK9020302
Carlingford Lough	UK9020161
Belfast Lough	UK9020101
Larne Lough	UK9020042
Strangford Lough	UK9020111
Rathlin Island	UK9020011
Killough Bay	UK9020221
Outer Ards	UK9020271
Belfast Lough Open Water	UK9020290
Sheep Island	UK9020021
Antrim Hills	UK9020301
Copeland Islands	UK9020291
Lough Neagh and Lough Beg	UK9020091
East Coast (Marine)	UK9020320
Carlingford Lough (proposed marine extension)	UK9020161

APPENDIX F

Screening for Appropriate Assessment

RPS

Eastern and Midland Regional Assembly (EMRA)

Appropriate Assessment Screening Report

22 May 2018





rpsgroup.com/ireland

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 Legislative Context for Appropriate Assessment 1

1.2 Purpose of Screening for AA 2

1.3 Overlap with the Strategic Environmental ASSESSMENT (SEA) 2

2 OVERVIEW OF THE RSES 3

2.1 Background 3

2.2 The Eastern and Midland Region Overview 4

2.3 Purpose of the Eastern and Midland RSES 4

3 ASSESSMENT METHODOLOGY 6

3.1 Guidance Documents on Appropriate Assessment 6

3.2 Guiding Principles and Case Law 7

3.3 Stages of Appropriate Assessment 7

3.4 Information Sources Consulted 8

4 SCREENING FOR APPROPRIATE ASSESSMENT 10

4.1 Description of the Plan 10

4.2 Identification of European Sites 10

4.3 Assessment of Likely Effects 11

5 CONCLUSION 15

6 REFERENCES 16

APPENDICES

Appendix A1 and A2 **Eastern and Midland Region SAC and SPA**

Appendix B1 and B2 **Northern and Western Region SAC and SPA**

Appendix C1 and C2 **Southern Region SAC and SPA**

Appendix D1 and D2 **Northern Ireland SAC and SPA**

LIST OF FIGURES

Figure 2.1 - Regional Assemblies and the Eastern and Midland Region 3
Figure 2.2 – Overview of Irelands Planning System 5
Figure 4.1 – European sites within the EMR 14

LIST OF TABLES

Table 4.1 – Number of European Sites by Region, and Northern Ireland 11
Table 4.2 – European Sites Nationally 11

1 INTRODUCTION

The Eastern and Midland Regional Assembly (EMRA) is currently preparing a Regional Spatial and Economic Strategy (RSES) for the region. The main purpose of the RSES is to support the implementation of the National Planning Framework (NPF), and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the three regions: Eastern and Midland; Southern; and Northern and Western. The Eastern and Midland Region RSES (hereafter referred to as EM RSES) will be a strategic plan which identifies assets, opportunities and pressures for this region and will provide appropriate policy, objective and target responses. It will put policies and recommendations in place that will better manage regional planning and economic development throughout the region.

The purpose of this screening document is to provide information on the potential for the EM RSES to give rise to likely significant effects on any European Site and to support a screening decision by the EMRA on whether full Appropriate Assessment, including the preparation of a Natura Impact Report (NIR) will be required in accordance with EU and national legislation.

1.1 LEGISLATIVE CONTEXT FOR APPROPRIATE ASSESSMENT

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as the "Habitats Directive" provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 Network. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC (the Birds Directive), collectively referred to as European Sites.

Article 6 of the Directive obliges member states to undertake an 'appropriate assessment' (AA) for any plan or project, *individually or in combination with other plans or projects is likely to have a significant effect on* any European Site. The outcome of such AA fundamentally affects the decisions that may lawfully be made by competent national authorities in relation to the approval of plans or projects.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European Sites (Annex 1.1).

Article 6(3) states:

> *Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

Article 6(4) states:

> *If, in spite of a negative assessment of the implications for the [European] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

The Habitats Directive has been transposed into Irish law principally through Part XAB of the Planning and Development Act 2000 (as amended) in relation to land use planning; and also the European Communities (Birds and Natural Habitats) Regulations (S.I. No. 477/2011) legislation.

The Screening for the Appropriate Assessment is being undertaken by RPS on behalf of EMRA.

1.2 PURPOSE OF SCREENING FOR AA

The purpose of the screening for AA is to assess, in view of the best scientific knowledge and in view of the conservation objectives of the sites, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the site.

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- Whether a plan or project is directly connected to or necessary for the management of the site, and
- Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European Site in view of its Conservation Objectives.

It is the responsibility of the public authority to carry out AA screening and record their AA screening determination. The stages of AA screening are given in **Section 3.3** of this document.

1.3 OVERLAP WITH THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

An SEA is being carried out concurrently with the AA process. The purpose of the SEA is to evaluate at an early stage, the range of environmental consequences that may occur as a result of implementing the EM RSES and to give interested parties an opportunity to comment upon the perceived or actual environmental impacts of the proposal. There is a degree of overlap between the requirements of both the SEA and AA and in accordance with best practice, an integrated process of sharing gathered data, such as that potentially affecting the integrity (threats and sensitivities) of European Sites has been carried out. These processes together have informed and shaped the early issues identification for the EM RSES.

It is also noted that there are issues relevant to the Habitats Directive that are not strictly related to AA. These include Article 10 and 12 of the Directive. In these cases, the issues have been brought forward to the biodiversity, flora and fauna section of the SEA and have been addressed in that context as part of the wider environmental assessments informing the EM RSES.

2 OVERVIEW OF THE RSES

2.1 BACKGROUND

Under the 2012 Government's policy paper "*Putting People First*", and the Local Government Reform Act 2014, the former two Regional Assemblies (RAs) and former eight Regional Authorities were reconfigured into three new RAs, namely the Eastern and Midland Regional Assembly (EMRA), the Southern Regional Assembly (SRA), and the Northern and Western Regional Assembly (NWRA). The main strategic planning functions of the RAs include the preparation, adoption and delivery of Regional Spatial and Economic Strategies (RSESs). These strategies must be consistent with the NPF and deliver its objectives at a regional level. **Figure 2.1** outlines the regional assembly areas.

The NPF replaces the National Spatial Strategy, first published in November 2002, and will form Ireland's long-term strategy for the next 20 years which will set the groundwork for the spatial and economic development of Ireland. The NPF will lay the groundwork for a better quality of life for all and a basis for balanced and sustainable economic growth. It provides a focal point for spatial plans throughout the planning hierarchy, including the RSESs at the regional tier, and will assist in the achievement of more effective regional development. It will also coordinate the strategic planning of urban and rural areas in a regional development context to secure overall proper planning and development as well as co-ordination of the RSESs. **Figure 2.2** outlines Ireland's planning hierarchy.

The current Regional Planning Guidelines (RPGs) have been a key aspect of the Government's programme for spatial planning to date. New planning legislation under the Planning and Development Act 2000 (as amended) allows for the RSESs to replace the RPGs. The regional planning function will therefore be enhanced under the new RSESs through the inclusion of a significant economic strategy. The combined spatial and economic elements will establish a broad framework to allow for integrated local authority policy development and associated actions, outline the roles of government departments and other agencies, and to strengthen and clarify the role of local authorities in economic development and enterprise support/ promotion.

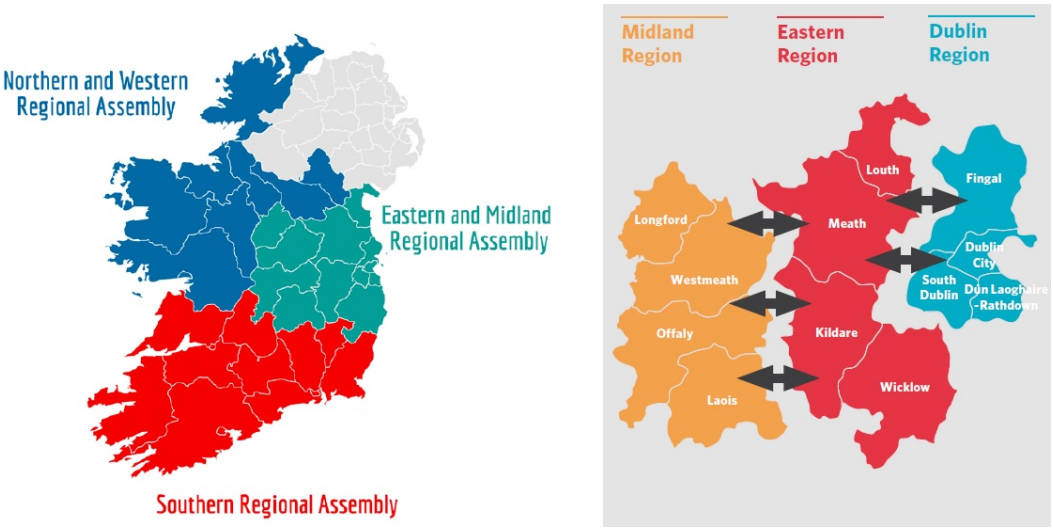


Figure 2.1 - Regional Assemblies and the Eastern and Midland Region

2.2 THE EASTERN AND MIDLAND REGION OVERVIEW

The Eastern and Midland Region was established in January 2015 by the Local Government Act 1991 (Regional Assemblies) (Establishment) Order 2014 (SI 573 of 2014). The region has an area of 14,463 km^2 covering nine counties and 12 local authorities, with a total of 2.3 million inhabitants. It is divided into the administrative Strategic Planning Areas of the Midland Region (Longford, Westmeath, Offaly and Laois), Eastern Region (Louth, Meath, Kildare and Wicklow) and Dublin Region (Fingal, Dublin City, South Dublin, Dun Laoghaire-Rathdown)[1]. The region contains the Wicklow Mountains National Park, 120 EU designated protected sites (82 SACs, 38 SPAs) and spans 20 catchments.

2.3 PURPOSE OF THE EASTERN AND MIDLAND RSES

One of the principle functions of the EM RSES will be to practically support and advance the delivery of the national policy objectives contained in the NPF. The EM RSES will bring forward the NPF in a manner which best reflects the challenges and opportunities of the region. It has been anticipated by the NPF that each of the three regional assemblies will begin to fill out the national policy objectives, in some cases giving them geographic or temporal context and in other cases elaborating on project concepts. The EM RSES will support the delivery of the NPF removing the top-down perception and replacing it with a shared responsibility and understanding. The Issues Paper for the EM RSES sets out its core functions, which includes:

- Placing strategic planning as its core function;
- Meeting the needs of the EMRA's citizens e.g. meeting the need to access employment opportunities, services, travel options and well-being;
- Taking account of national policy i.e. the NPF;
- Support, reflect and link economic policies/ government objectives with spatial planning objectives;
- Consider the qualities, population size, service offering and location of towns and cities in the region;
- Support balanced economic development building on the strengths of the region;
- Strengthen links between planning policy and economic trends; and
- Identifying important regional attributes to improve economic performance, the quality of the environment, and other assets/ amenities.

[1] EMRA (2017) Regional Spatial & Economic Strategy Initial Public & Stakeholder Consultation Issues Paper. Retrieved: http://emra.ie/dubh/wp-content/uploads/2017/11/EMRA_IssuesPaper_Nov17.pdf

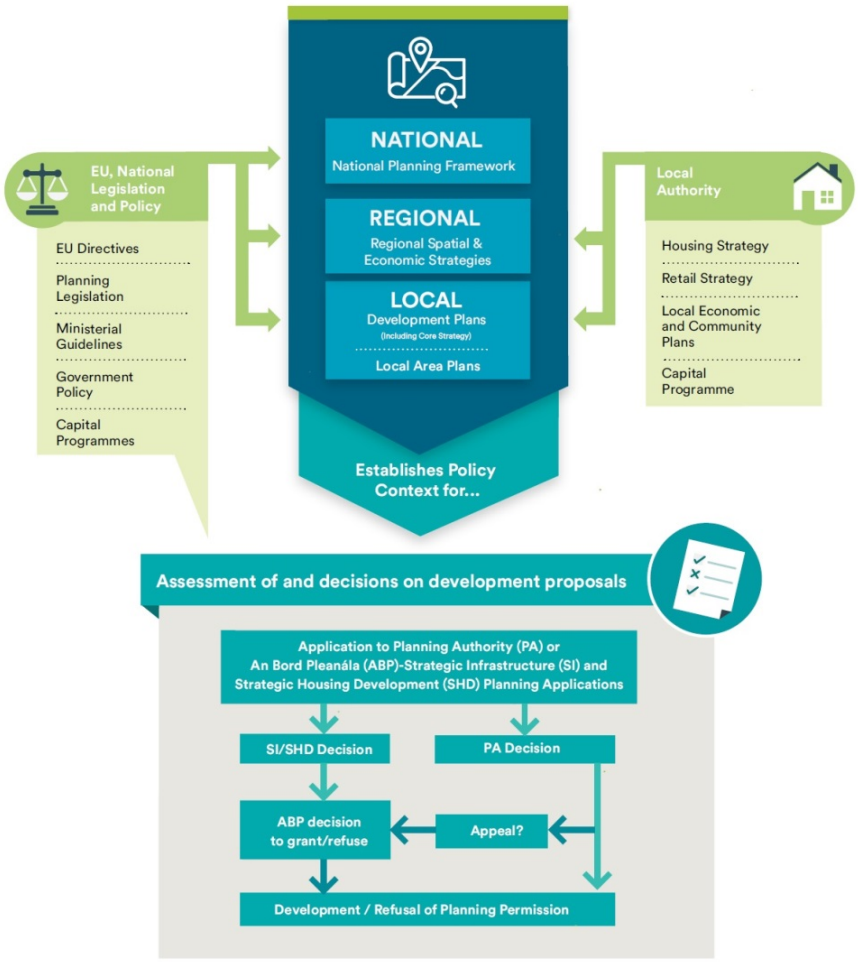


Figure 2.2 – Overview of Irelands Planning System[2]

The NPF has also introduced a strategic focus on the five cities in Ireland and their metropolitan areas. Following direction from the Department of Housing, Planning and Local Government, Metropolitan Area Strategic Plans (MASPs) will be prepared for each of the five cities. In the case of the EM RSES, a MASP will be developed for Dublin. This MASP will be provided with statutory underpinning to act as a twelve-year strategic planning and investment framework for city metropolitan areas addressing high level and long term strategic development issues including:

- Physical development patterns and strategic growth areas.
- Strategic infrastructure, particularly in the transportation and water service area.
- Large scale regeneration and the location of housing and employment.
- Metropolitan scale amenities such as regional parks and walking and cycling networks.

It is intended that the Dublin MASP will align with and inform national level sectoral investment plans to guide and coordinate investment within the metropolitan area, coordinating land use planning and strategic infrastructure.

[2] DHPLG (September 2017) Ireland 2040 Our Plan – Draft National Planning Framework

3 ASSESSMENT METHODOLOGY

3.1 GUIDANCE DOCUMENTS ON APPROPRIATE ASSESSMENT

The AA requirements of Article 6 of the Habitats Directive 92/43/EEC follow a sequential approach as outlined in the following legislation and guidance documents/ Departmental Circulars, namely:

European and National Legislation

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (also known as the 'Habitats Directive');
- Council Directive 2009/147/EC on the conservation of wild birds, codified version (also known as the 'Birds Directive');
- European Communities (Birds and Natural Habitats) Regulations 2011 as amended; and
- Planning and Development Act 2000 as amended.

Guidance

- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Local Authorities* (revision 10/02/10) (DEHLG, 2009);
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* European Commission (2001);
- *Communication from the Commission on the Precautionary Principle* (European Commission, 2000b);
- *EC study on evaluating and improving permitting procedures related to Natura 2000 requirements under Article 6.3 of the Habitats Directive 92/43/EEC* (European Commission, 2013);
- *Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission* (European Commission, 2007);
- *Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*[3] (European Commission, 2000a); and
- *Marine Natura Impacts Statements in Irish Special Areas of Conservation*. A working Document (DAHG, 2012).

Departmental/NPWS Circulars

- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular NPWS 1/10 and PSSP 2/10.
- *Appropriate Assessment of Land Use Plans*. Circular Letter SEA 1/08 & NPWS 1/08.
- *Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments*. Circular L8/08.

[3] The Commission has notified its intent to revise this guidance and a draft revised document was published in April 2015. It would appear that this has not been finalised to date, with no revised guidance document available on the Commissions website.

- *Guidance on Compliance with Regulation 23 of the Habitats Directive*. Circular Letter NPWS 2/07.
- *Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites*. Circular Letter PD 2/07 and NPWS 1/07.

3.2 GUIDING PRINCIPLES AND CASE LAW

Over time legal interpretation has been sought on the practical application of the legislation concerning AA as some terminology has been found to be unclear. European and National case law has clarified a number of issues and some aspects of the published guidance documents have been superseded by case law. Case law has been considered in the preparation of the screening of the RSES.

3.3 STAGES OF APPROPRIATE ASSESSMENT

The AA process progresses through four stages. If at any stage in the process it is determined that there will be no adverse effect on the integrity of a European Site in view of the sites' Conservation Objectives, the process is effectively completed. The four stages are as follows:

- Stage 1 – Screening of the proposed plan or project for AA;
- Stage 2 – An AA of the proposed plan or project;
- Stage 3 – Assessment of alternative solutions; and
- Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI)/ Derogation.

Stage 1: Screening for AA

The aim of screening is to assess firstly if the plan or project is directly connected with or necessary to the management of European Site(s); or in view of best scientific knowledge, if the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on a European site. This is done by examining the proposed plan or project and the Conservation Objectives of any European Sites that might potentially be affected. If screening determines that there is a likelihood of significant effects or there is uncertainty regarding the significance of effects then it will be recommended that the plan is brought forward to the next stage of the AA process.

Stage 2: Appropriate Assessment

The aim of Stage 2 of the AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European Sites. As part of the assessment, a key consideration is 'in combination' effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project should then be amended accordingly, thereby avoiding the need to progress to Stage 3.

Stage 3: Alternative Solutions

If it is not possible during Stage 2 of the AA process to conclude that there will be no adverse effects on site integrity, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. Explicitly, this means alternative solutions that do not have adverse impacts on the integrity of a European Site. It should also be noted that EU guidance on this stage of the process states that, 'other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria' (EC, 2002). In other words, if alternative solutions exist that do not have adverse impacts on European Sites, they should be adopted regardless of economic considerations. This stage of the AA process should result in the identification of the least damaging options for the plan or project.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

This stage of the AA process is undertaken when it has been determined that a plan or project will have adverse effects on the integrity of a European Site, but that no alternatives exist. At this stage of the AA process, it is the characteristics of the plan or project itself that will determine whether or not the competent authority can allow it to progress. This is the determination of 'over-riding public interest'. It is important to note that in the case of European Sites that include in their qualifying features 'priority' habitats or species (Special Areas of Conservation), as defined in Annex I and II of the Habitats Directive, the demonstration of 'over-riding public interest' is not sufficient and it must be demonstrated that the plan or project is necessary for 'human health or public safety considerations'. Where plans or projects meet these criteria, they can be allowed, provided adequate compensatory measures are proposed. Stage 4 of the process defines and describes these compensation measures.

3.4 INFORMATION SOURCES CONSULTED

The following sources of information have been consulted:

- Department of Housing, Planning, Community and Local Government online land use mapping – www.myplan.ie/en/index.html;
- GeoHive online mapping – http://map.geohive.ie/mapviewer.html;
- Ordnance Survey of Ireland online mapping and aerial photography – www.osi.ie;
- CORINE (Co-ORdinated INformation on the Environment) data series was established by the European Community (EC) http://www.epa.ie/soilandbiodiversity/soils/land/corine/;
- Forest Cover Datasets https://www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/foreststatisticsandmapping/forestcoverdatasets/;
- National Parks and Wildlife Service online European Site information – www.npws.ie;
- Northern Ireland Environment Agency online European Site information – https://www.doeni.gov.uk/;
- National Parks and Wildlife Service – Article 17 Status of EU protected habitats in Ireland reporting (NPWS 2013a & 2013b);
- Ireland's Article 12 submission to the EU Commission on the Status and Trends of Bird Species (2008-2012);
- Environmental Protection Agency ENVision maps and water data – www.epa.ie;
- Geological Survey of Ireland geology, soils and hydrogeology – www.gsi.ie;

- *Format for a Prioritised Action Framework (PAF) for Natura 2000* (DAHG, 2014) www.npws.ie/sites/default/files/general/PAF-IE-2014.pdf; and
- *Actions for Biodiversity 2011-2016*: *Irelands National Biodiversity Plan* (DAHG, 2011).[4]

[4] Ireland's third National Biodiversity Action Plan 2017 – 2021 is currently undergoing consultation. The draft plan can be found at https://www.npws.ie/sites/default/files/files/Draft%20NBAP%202017-2021(1).pdf (as at 23/01/2017).

4 SCREENING FOR APPROPRIATE ASSESSMENT

In line with best practice guidance the AA Screening involves the following:

1. Description of the plan;
2. Identification of relevant European Sites;
3. Assessment of likely significant effects;
4. Screening statement/determination with conclusions.

4.1 DESCRIPTION OF THE PLAN

An overview of the EM RSES, including background and context are provided in **Chapter 2** of this document.

4.2 IDENTIFICATION OF EUROPEAN SITES

European Sites comprise (a) Special Areas of Conservation (SACs) that are designated under the Habitats Directive as requiring the conservation of important, rare or threatened habitats and species (other than birds) and (b) Special Protection Areas (SPAs), which are designated under the Birds Directive to conserve certain migratory or rare birds and their habitats. Collectively these sites form the Natura 2000 Network. In accordance with DEHLG Guidance (2009), the AA also takes into account transboundary impacts where it is identified that the implementation of the plan has the potential to impact on European Sites e.g. in Northern Ireland.

Current guidance on the zone of influence (ZoI) to be considered during the AA process states the following:

> *A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*

The zone of influence (ZoI) of the EM RSES will be determined based on the connectivity with the surrounding areas. Therefore, it can be said that in the first instance the ZoI is considered to include all European Sites within the Eastern and Midland Region (**Figure 4.1**, **Appendix A1 and A2**). Proposals within the EM RSES will involve collaboration and coordination with the other two regional assemblies and also Northern Ireland in terms of spatial planning issues, environmental management and provision of infrastructure. As such, all European sites within the other two regions and those in Northern Ireland have also been included (**Appendix B, C and D**).

Figures for European Sites falling completely within or partially within each region are presented in **Table 4.1**. The figures in each region include all sites which intersect with the administrative boundary. Therefore sites which straddle two regions have been included in both regional counts. National figures are presented for completeness in **Table 4.2**.

Table 4.1 – Number of European Sites by Region, and Northern Ireland

European Sites*	Eastern and Midland	Southern	Northern and Western	Northern Ireland**
SAC	86	144	217	59
SPA	39	55	80	18

** NPWS data revision as of April 2018.*

*** NIEA/JNCC data revision as of January 2018 (includes newly proposed/ candidate sites).*

Table 4.2 – European Sites Nationally

Republic of Ireland*	Northern Ireland**
433 SACs + 6 offshore SACs	59 SACs
165 SPAs	18 SPAs

**NPWS data revision as of August 2017. Checked 26th March 2018*

***NIEA/ JNCC data revision as of March 2017 (includes newly proposed/candidate sites).*

It is acknowledged that the number of European Sites designated, and their boundaries, are subject to change over time and must therefore be verified on an ongoing basis.

4.3 ASSESSMENT OF LIKELY EFFECTS

The main objectives of the EM RSES are to:

- Support the implementation of the emerging National Planning Framework (NPF) - Ireland 2040 Our Plan, and the economic policies and objectives of the Government;
- Provide a long-term strategic planning and economic framework for the development of the regions; and
- Address Employment, Retail, Housing, Transport, Water services, Energy and communications, Waste management, Education, health, sports and community facilities, Environment and heritage, Landscape, Sustainable development and climate change.[5]"

The spatial dimension of the EM RSES has the potential to give rise to direct and indirect effects on biodiversity, flora and fauna in European Sites in Ireland and Northern Ireland through habitat loss, destruction, fragmentation or degradation; disturbance to species; species mortality; alternations to water quality and hydrology; alteration to air quality, introduction and transfer of invasive species among other issues. However, it also offers the opportunity to integrate nature into decision-making and allow the benefits of biodiversity to be appreciated, and where appropriate harnessed. In the absence of detail with regards to finalised controls or mitigation measures at this early stage as well as the unknowns in relation to the potential effects on water, air and sensitive habitats, it is considered that there is a likelihood of significant effects occurring on one or more European Sites.

[5] EMRA (2017) Regional Spatial & Economic Strategy Initial Public & Stakeholder Consultation Issues Paper. Retrieved: http://emra.ie/dubh/wp-content/uploads/2017/11/EMRA_IssuesPaper_Nov17.pdf

4.3.1 Conservation Objectives

Site-specific conservation objectives (SSCO) aim to define favourable conservation condition for a particular habitat or species at a Natura 2000 site. Maintaining habitats and species in a favourable conservation condition then contributes to the wider objective to maintain those most vulnerable habitats and species at favourable status throughout their range within the Natura 2000 network.

At an individual site level, SSCOs specify whether the objective is to maintain or to restore favourable conservation condition of the habitat or species, and they set out attributes and targets that define the objectives. It is the aim of the DCHG to produce SSCOs for all European sites in due course[6]. Qualifying interests (QI) and Special conservation Interests (SCIs) are annexed habitats and annexed species of community interest for which an SAC or SPA has been designated. The SSCOs for European Sites are set out to ensure that the QIs/ SCIs of that site are maintained or restored to a favourable conservation condition / conservation status.

A full listing of the COs and QIs/ SCIs that each European Site is designated for, as well as the attributes and targets to maintain or restore the QIs/ SCIs to a favourable conservation condition are available from the NPWS website www.npws.ie.

It is noted that the existing conservation condition of some habitats and species is unfavourable at present for various reasons, including because of exceedance in environmental quality parameters. This is discussed further in the next section.

4.3.2 In-combination Effects

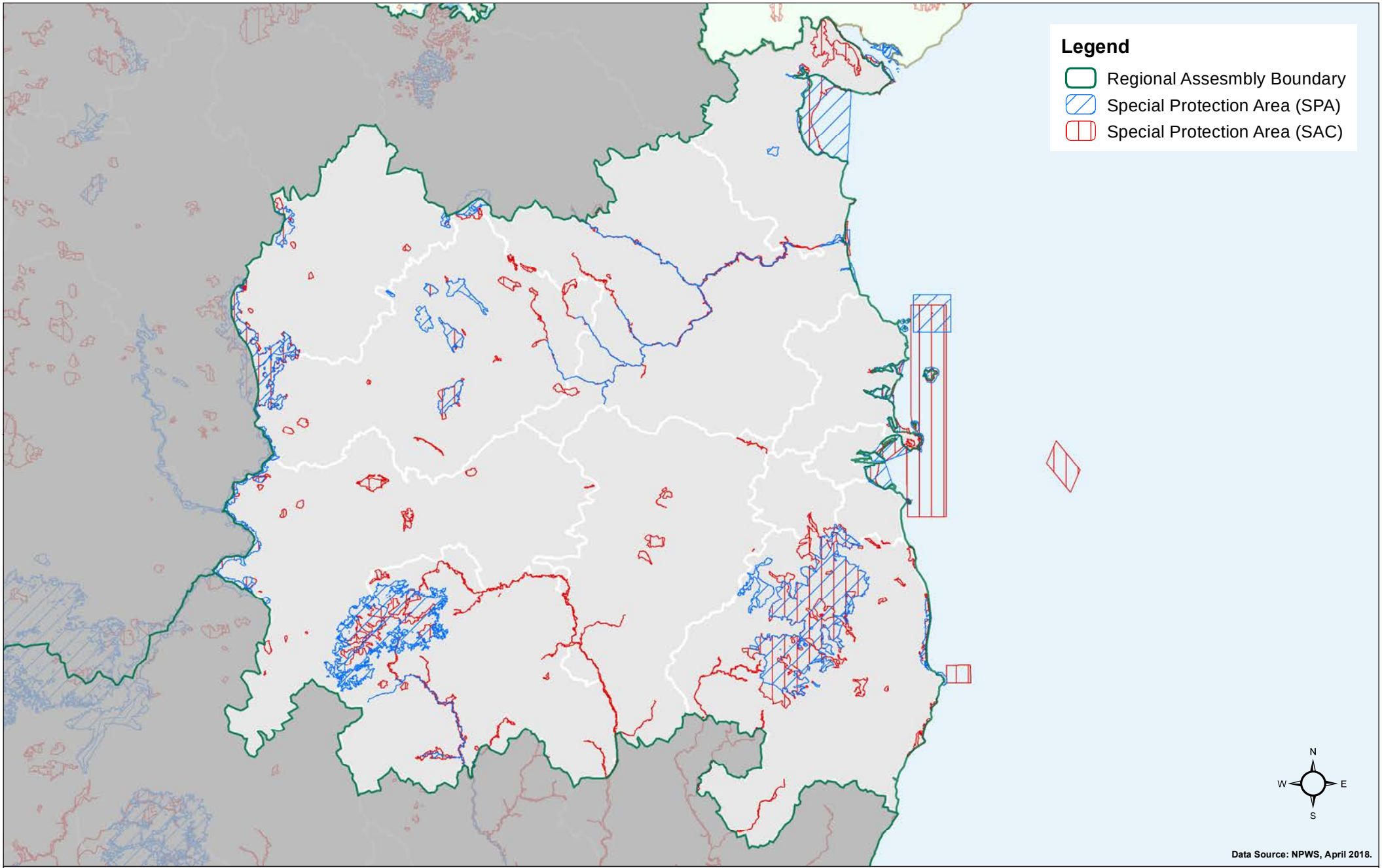
It is a requirement of Article 6(3) of the Habitats Directive that the in-combination effects with other plans or projects are considered. Consideration has been given, at this stage of the EM RSES, to other relevant plans on a similarly strategic level that have clear potential to have a cumulative impact upon European Sites.

Given the level of detail currently available for the EM RSES, and that potential likely significant effects cannot currently be ruled out as a result of implementation of the plan, it is considered that the EM RSES has the potential to result in in-combination effects with other plans. Some of the key plans considered to date are listed below.

Key Relevant Plans and Programmes	
National Planning Framework	National Development Plan
Southern RSES	Northern and Western RSES
National Climate Mitigation Plan	National Climate Change Adaptation Framework
Bioenergy Plan	Renewable Electricity Plan
Water Services Strategic Plan	National Water Resources Plan
Lead in Drinking Water Mitigation Plan	National Wastewater Sludge Management Plan

[6] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/

Key Relevant Plans and Programmes	
Seafood Operation Programme	Aquaculture Plan
The National Biodiversity Plan	Regional Waste Management Plans
Construction 2020	National Landscape Strategy for Ireland
NPWS Conservation Plans and/or Conservation Objectives for SACs and SPAs	Rural Development Programme
Forestry Programme	Foodwise 2025
National Renewable Energy Action Plan (NREAP)	Strategy for Renewable Energy
Smarter Travel 'A New Transport Policy for Ireland'	Offshore Renewable Energy Development Plan
National Cycle Policy Framework	National Ports Policy
National Aviation Policy	Greater Dublin Area (GDA) Transport Strategy
Social Housing Strategy	



Regional Spatial & Economic Strategies SEA, AA & RFRA

File Ref: MDR1402Arc0002F01

Figure 4.1 – European Sites in the Eastern & Midland Region

RPS

5 CONCLUSION

The RSES is not directly connected with or necessary to the management of a European site. Furthermore, having regard to the following:

- The strategic nature of the plan;
- The current stage of preparation;
- Potential for impact pathway; and
- Uncertainties relating to the implementation and zone of influence of the plan going forward,

It cannot be excluded, on the basis of objective scientific information, that the EM RSES, individually or in combination with other plans and projects will have a significant effect on a European site. As such, it is recommended that an Appropriate Assessment is required and a Natura Impact Report should be prepared.

6 REFERENCES

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APPENDIX A1

Special Areas of Conservation, Eastern and Midland Region

SAC Site Name	Site Code
Killyconny Bog (Cloghbally) SAC	000006
Baldoyle Bay SAC	000199
Howth Head SAC	000202
Lambay Island SAC	000204
Malahide Estuary SAC	000205
North Dublin Bay SAC	000206
Rogerstown Estuary SAC	000208
South Dublin Bay SAC	000210
River Shannon Callows SAC	000216
Ballynafagh Bog SAC	000391
Pollardstown Fen SAC	000396
Red Bog, Kildare SAC	000397
Slieve Bloom Mountains SAC	000412
Lough Ree SAC	000440
Fortwilliam Turlough SAC	000448
Carlingford Mountain SAC	000453
Dundalk Bay SAC	000455
All Saints Bog And Esker SAC	000566
Charleville Wood SAC	000571
Clara Bog SAC	000572
Ferbane Bog SAC	000575
Fin Lough (Offaly) SAC	000576
Mongan Bog SAC	000580
Moyclare Bog SAC	000581
Raheenmore Bog SAC	000582
Sharavogue Bog SAC	000585
Garriskil Bog SAC	000679
Lough Ennell SAC	000685
Lough Owel SAC	000688
Scragh Bog SAC	000692
Ballyman Glen SAC	000713
Bray Head SAC	000714
Carriggower Bog SAC	000716
Deputy's Pass Nature Reserve SAC	000717
Glen Of The Downs SAC	000719
Knocksink Wood SAC	000725
Buckroney-Brittas Dunes And Fen SAC	000729
Vale Of Clara (Rathdrum Wood) SAC	000733
Slaney River Valley SAC	000781
Cullahill Mountain SAC	000831

SAC Site Name	Site Code
Clonaslee Eskers And Derry Bog SAC	000859
Lisbigney Bog SAC	000869
Ridge Road, SW of Rapemills SAC	000919
The Long Derries, Edenderry SAC	000925
Glenasmole Valley SAC	001209
Ballynafagh Lake SAC	001387
Rye Water Valley/Carton SAC	001398
Clogher Head SAC	001459
Kilpatrick Sandhills SAC	001742
Holdenstown Bog SAC	001757
Magherabeg Dunes SAC	001766
Pilgrim's Road Esker SAC	001776
White Lough, Ben Loughs And Lough Doo SAC	001810
Lough Forbes Complex SAC	001818
Split Hills And Long Hill Esker SAC	001831
Boyne Coast And Estuary SAC	001957
Lough Bane And Lough Glass SAC	002120
Lough Lene SAC	002121
Wicklow Mountains SAC	002122
Mountmellick SAC	002141
Lisduff Fen SAC	002147
River Barrow And River Nore SAC	002162
Ireland's Eye SAC	002193
Derragh Bog SAC	002201
Mount Jessop Bog SAC	002202
Girley (Drewstown) Bog SAC	002203
Wooddown Bog SAC	002205
Island Fen SAC	002236
The Murrough Wetlands SAC	002249
Ballyprior Grassland SAC	002256
Wicklow Reef SAC	002274
River Boyne And River Blackwater SAC	002299
Carlingford Shore SAC	002306
Ballymore Fen SAC	002313
Mouds Bog SAC	002331
Coolrain Bog SAC	002332
Knockacoller Bog SAC	002333
Carn Park Bog SAC	002336
Crosswood Bog SAC	002337
Moneybeg And Clareisland Bogs SAC	002340
Ardagullion Bog SAC	002341
Mount Hevey Bog SAC	002342

SAC Site Name	Site Code
Brown Bog SAC	002346
Clooneen Bog SAC	002348
Rockabill to Dalkey Island SAC	003000
Codling Fault Zone SAC	003015

APPENDIX A2

Special Protection Areas, Eastern and Midland Region

SPA Site Name	Site Code
North Bull Island SPA	004006
Rockabill SPA	004014
Rogerstown Estuary SPA	004015
Baldoyle Bay SPA	004016
Mongan Bog SPA	004017
South Dublin Bay and River Tolka Estuary SPA	004024
Broadmeadow/Swords Estuary SPA	004025
Dundalk Bay SPA	004026
Wicklow Mountains SPA	004040
Lough Derravaragh SPA	004043
Lough Ennell SPA	004044
Glen Lough SPA	004045
Lough Iron SPA	004046
Lough Owel SPA	004047
Lough Kinale and Derragh Lough SPA	004061
Poulaphouca Reservoir SPA	004063
Lough Ree SPA	004064
Lough Sheelin SPA	004065
Lambay Island SPA	004069
Carlingford Lough SPA	004078
Boyne Estuary SPA	004080
River Little Brosna Callows SPA	004086
Stabannan-Braganstown SPA	004091
Middle Shannon Callows SPA	004096
River Suck Callows SPA	004097
Ballykenny-Fisherstown Bog SPA	004101
Garriskil Bog SPA	004102
All Saints Bog SPA	004103
Howth Head Coast SPA	004113
Ireland's Eye SPA	004117
Skerries Islands SPA	004122
Wicklow Head SPA	004127
Dovegrove Callows SPA	004137
River Nanny Estuary and Shore SPA	004158
Slieve Bloom Mountains SPA	004160
Dalkey Islands SPA	004172
The Murrough SPA	004186
River Boyne and River Blackwater SPA	004232
River Nore SPA	004233

APPENDIX B1

Special Areas of Conservation, Northern and Western Region

SAC Site Name	Site Code
Killyconny Bog (Cloghbally) SAC	000006
Lough Oughter And Associated Loughs SAC	000007
Aran Island (Donegal) Cliffs SAC	000111
Ballintra SAC	000115
Ballyarr Wood SAC	000116
Croaghonagh Bog SAC	000129
Donegal Bay (Murvagh) SAC	000133
Durnesh Lough SAC	000138
Fawnboy Bog/Lough Nacung SAC	000140
Gannivegil Bog SAC	000142
Horn Head And Rinclevan SAC	000147
Inishtrahull SAC	000154
Lough Eske And Ardnamona Wood SAC	000163
Lough Nagreany Dunes SAC	000164
Lough Nillan Bog (Carrickatlieve) SAC	000165
Magheradrumman Bog SAC	000168
Meenaguse/Ardbane Bog SAC	000172
Meentygrannagh Bog SAC	000173
Rathlin O'Birne Island SAC	000181
Sessiagh Lough SAC	000185
Slieve League SAC	000189
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	000190
St. John's Point SAC	000191
Tranarossan And Melmore Lough SAC	000194
West Of Ardara/Maas Road SAC	000197
Inishmaan Island SAC	000212
Inishmore Island SAC	000213
River Shannon Callows SAC	000216
Coolcam Turlough SAC	000218
Barroughter Bog SAC	000231
Caherglassaun Turlough SAC	000238
Castletaylor Complex SAC	000242
Cloonmoylan Bog SAC	000248
Coole-Garryland Complex SAC	000252
Croaghill Turlough SAC	000255
Derrycrag Wood Nature Reserve SAC	000261
Galway Bay Complex SAC	000268
Inishbofin And Inishshark SAC	000278
Kilsallagh Bog SAC	000285
Kiltartan Cave (Coole) SAC	000286

SAC Site Name	Site Code
Levally Lough SAC	000295
Lisnageeragh Bog and Ballinastack Turlough SAC	000296
Lough Corrib SAC	000297
Lough Cutra SAC	000299
Lough Lurgeen Bog/Glenamaddy Turlough SAC	000301
Lough Rea SAC	000304
Loughatorick South Bog SAC	000308
Peterswell Turlough SAC	000318
Pollnaknockaun Wood Nature Reserve SAC	000319
Rahasane Turlough SAC	000322
Rosroe Bog SAC	000324
Shankill West Bog SAC	000326
Slyne Head Islands SAC	000328
Tully Mountain SAC	000330
Lough Melvin SAC	000428
Lough Ree SAC	000440
Killala Bay/Moy Estuary SAC	000458
Ardkill Turlough SAC	000461
Balla Turlough SAC	000463
Bellacorick Iron Flush SAC	000466
Mullet/Blacksod Bay Complex SAC	000470
Brackloon Woods SAC	000471
Broadhaven Bay SAC	000472
Ballymaglancy Cave, Cong SAC	000474
Carrowkeel Turlough SAC	000475
Carrowmore Lake Complex SAC	000476
Cloughmoyne SAC	000479
Clyard Kettle-Holes SAC	000480
Cross Lough (Killadoon) SAC	000484
Corraun Plateau SAC	000485
Doocastle Turlough SAC	000492
Duvillaun Islands SAC	000495
Flughany Bog SAC	000497
Glenamoy Bog Complex SAC	000500
Greaghans Turlough SAC	000503
Kilglassan/Caheravoostia Turlough Complex SAC	000504
Inishkea Islands SAC	000507
Lackan Saltmarsh And Kilcummin Head SAC	000516
Lough Gall Bog SAC	000522
Shrule Turlough SAC	000525
Moore Hall (Lough Carra) SAC	000527
Oldhead Wood SAC	000532

SAC Site Name	Site Code
Owenduff/Nephin Complex SAC	000534
Skealoghan Turlough SAC	000541
Slieve Fyagh Bog SAC	000542
Cuilcagh - Anierin Uplands SAC	000584
Ballinturly Turlough SAC	000588
Bellanagare Bog SAC	000592
Callow Bog SAC	000595
Carrowbehy/Caher Bog SAC	000597
Cloonchambers Bog SAC	000600
Derrinea Bog SAC	000604
Lough Fingall Complex SAC	000606
Errit Lough SAC	000607
Lisduff Turlough SAC	000609
Lough Croan Turlough SAC	000610
Lough Funshinagh SAC	000611
Mullygollan Turlough SAC	000612
Cloonshanville Bog SAC	000614
Ballysadare Bay SAC	000622
Ben Bulben, Gleniff And Glenade Complex SAC	000623
Bunduff Lough And Machair/Trawalua/Mullaghmore SAC	000625
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627
Lough Hoe Bog SAC	000633
Lough Nabrickkeagh Bog SAC	000634
Templehouse And Cloonacleigha Loughs SAC	000636
Turloughmore (Sligo) SAC	000637
Union Wood SAC	000638
Corratirrim SAC	000979
Ballyness Bay SAC	001090
Coolvoy Bog SAC	001107
Dunragh Loughs/Pettigo Plateau SAC	001125
Gweedore Bay And Islands SAC	001141
Kindrum Lough SAC	001151
Muckish Mountain SAC	001179
Sheephaven SAC	001190
Termon Strand SAC	001195
Aughrusbeg Machair And Lake SAC	001228
Carrownagappul Bog SAC	001242
Cregduff Lough SAC	001251
Dog's Bay SAC	001257
Gortnandarragh Limestone Pavement SAC	001271
Inisheer Island SAC	001275
Kiltiernan Turlough SAC	001285

SAC Site Name	Site Code
Omey Island Machair SAC	001309
Rusheenduff Lough SAC	001311
Ross Lake And Woods SAC	001312
Rosturra Wood SAC	001313
Termon Lough SAC	001321
Arroo Mountain SAC	001403
Clew Bay Complex SAC	001482
Doogort Machair/Lough Doo SAC	001497
Erris Head SAC	001501
Keel Machair/Menaun Cliffs SAC	001513
Lough Cahasy, Lough Baun And Roonah Lough SAC	001529
Mocorha Lough SAC	001536
Urlaur Lakes SAC	001571
Castlesampson Esker SAC	001625
Annaghmore Lough (Roscommon) SAC	001626
Four Roads Turlough SAC	001637
Bricklieve Mountains and Keishcorran SAC	001656
Knockalongy and Knockachree Cliffs SAC	001669
Lough Arrow SAC	001673
Streedagh Point Dunes SAC	001680
Lough Carra/Mask Complex SAC	001774
Kilroosky Lough Cluster SAC	001786
Lough Forbes Complex SAC	001818
Meenaguse Scragh SAC	001880
Unshin River SAC	001898
Cloonakillina Lough SAC	001899
Sonnagh Bog SAC	001913
Glenade Lough SAC	001919
Bellacorick Bog Complex SAC	001922
East Burren Complex SAC	001926
Mweelrea/Sheeffry/Erriff Complex SAC	001932
Croaghaun/Slievemore SAC	001955
Ballyhoorisky Point To Fanad Head SAC	001975
Lough Gill SAC	001976
Tamur Bog SAC	001992
Bellacragher Saltmarsh SAC	002005
Ox Mountains Bogs SAC	002006
Maumturk Mountains SAC	002008
North Inishowen Coast SAC	002012
The Twelve Bens/Garraun Complex SAC	002031
Boleybrack Mountain SAC	002032
Connemara Bog Complex SAC	002034

SAC Site Name	Site Code
Cloghernagore Bog And Glenveagh National Park SAC	002047
Slyne Head Peninsula SAC	002074
Ballinafad SAC	002081
Corliskea/Trien/Cloonfelliv Bog SAC	002110
Kilkieran Bay And Islands SAC	002111
Lough Coy SAC	002117
Barnahallia Lough SAC	002118
Lough Nageeron SAC	002119
Murvey Machair SAC	002129
Tully Lough SAC	002130
Lough Nageage SAC	002135
Newport River SAC	002144
Mulroy Bay SAC	002159
Lough Golagh And Breesy Hill SAC	002164
Leannan River SAC	002176
Lough Dahybaun SAC	002177
Towerhill House SAC	002179
Gortacarnaun Wood SAC	002180
Drummin Wood SAC	002181
Derrinlough (Cloonkeenleananode) Bog SAC	002197
Ballygar (Aghrane) Bog SAC	002199
Aughrim (Aghrane) Bog SAC	002200
Glenloughaun Esker SAC	002213
Killeglan Grassland SAC	002214
Lough Derg, North-east Shore SAC	002241
Clare Island Cliffs SAC	002243
Ardrahan Grassland SAC	002244
Tory Island Coast SAC	002259
Kingstown Bay SAC	002265
Achill Head SAC	002268
Rutland Island And Sound SAC	002283
Lough Swilly SAC	002287
Carrowbaun, Newhall and Ballylee Turloughs SAC	002293
Cahermore Turlough SAC	002294
Ballinduff Turlough SAC	002295
Williamstown Turloughs SAC	002296
River Moy SAC	002298
River Boyne And River Blackwater SAC	002299
River Finn SAC	002301
Dunmuckrum Turloughs SAC	002303
Kildun Souterrain SAC	002320
Drumalough Bog SAC	002338

SAC Site Name	Site Code
Ballynamona Bog And Corkip Lough SAC	002339
Camderry Bog SAC	002347
Corbo Bog SAC	002349
Curraghlehanagh Bog SAC	002350
Monivea Bog SAC	002352
Tullaghanrock Bog SAC	002354
Ardgraigue Bog SAC	002356
West Connacht Coast SAC	002998
Hempton's Turbot Bank SAC	002999

Offshore European Sites

Site Name	Site Code
Belgica Mound Province SAC	002327
Hovland Mound Province SAC	002328
South-West Porcupine Bank SAC	002329
North-West Porcupine Bank SAC	002330
Porcupine Bank Canyon SAC	003001
South-East Rockall Bank SAC	003002

APPENDIX B2

Special Protection Areas, North and Western Region

SPA Site Name	Site Code
Inishkea Islands SPA	004004
Drumcliff Bay SPA	004013
Inner Galway Bay SPA	004031
Trawbreaga Bay SPA	004034
Cummeen Strand SPA	004035
Killala Bay/Moy Estuary SPA	004036
Blacksod Bay/Broadhaven SPA	004037
Derryveagh And Glendowan Mountains SPA	004039
Lough Corrib SPA	004042
Lough Gara SPA	004048
Lough Oughter SPA	004049
Lough Arrow SPA	004050
Lough Carra SPA	004051
Carrowmore Lake SPA	004052
Lough Cutra SPA	004056
Lough Derg (Donegal) SPA	004057
Lough Derg (Shannon) SPA	004058
Lough Fern SPA	004060
Lough Kinale and Derragh Lough SPA	004061
Lough Mask SPA	004062
Lough Ree SPA	004064
Lough Sheelin SPA	004065
Inishmurray SPA	004068
Stags of Broad Haven SPA	004072
Tory Island SPA	004073
Illanmaster SPA	004074
Lough Swilly SPA	004075
Inishbofin, Inishdooey and Inishbeg SPA	004083
Inishglora and Inishkeeragh SPA	004084
Lough Foyle SPA	004087
Rahasane Turlough SPA	004089
Sheskinmore Lough SPA	004090
Termoncarragh Lake and Annagh Machair SPA	004093
Middle Shannon Callows SPA	004096
River Suck Callows SPA	004097
Owenduff/Nephin Complex SPA	004098
Pettigo Plateau Nature Reserve SPA	004099
Inishtrahull SPA	004100
Ballykenny-Fisherstown Bog SPA	004101
Bellanagare Bog SPA	004105
Coole-Garryland SPA	004107
Lough Nillan Bog SPA	004110

SPA Site Name	Site Code
Duvillaun Islands SPA	004111
Inishduff SPA	004115
Inishkeel SPA	004116
Rathlin O'Birne Island SPA	004120
Roaninish SPA	004121
Ballysadare Bay SPA	004129
Illancrone and Inishkeeragh SPA	004132
Aughris Head SPA	004133
Lough Rea SPA	004134
Clare Island SPA	004136
Lough Croan Turlough SPA	004139
Four Roads Turlough SPA	004140
Cregganna Marsh SPA	004142
High Island, Inishshark and Davillaun SPA	004144
Durnesh Lough SPA	004145
Malin Head SPA	004146
Fanad Head SPA	004148
Falcarragh to Meenlaragh SPA	004149
West Donegal Coast SPA	004150
Donegal Bay SPA	004151
Inishmore SPA	004152
Slyne Head To Ardmore Point Islands SPA	004159
Slieve Beagh SPA	004167
Slieve Aughty Mountains SPA	004168
Cruagh Island SPA	004170
Bills Rocks SPA	004177
Connemara Bog Complex SPA	004181
Sligo/Leitrim Uplands SPA	004187
Horn Head to Fanad Head SPA	004194
Cross Lough (Killadoon) SPA	004212
Illaunnanoon SPA	004221
Mullet Peninsula SPA	004227
Lough Conn and Lough Cullin SPA	004228
West Donegal Islands SPA	004230
Inishbofin, Omey Island and Turbot Island SPA	004231
River Boyne and River Blackwater SPA	004232
Ballintemple and Ballygilgan SPA	004234
Doogort Machair SPA	004235

APPENDIX C1

Special Areas of Conservation, Southern Region

SAC Site Name	Site Code
Ballyallia Lake SAC	000014
Ballycullinan Lake SAC	000016
Ballyogan Lough SAC	000019
Black Head-Poulsallagh Complex SAC	000020
Danes Hole, Poulnalecka SAC	000030
Dromore Woods And Loughs SAC	000032
Inagh River Estuary SAC	000036
Pouladatig Cave SAC	000037
Lough Gash Turlough SAC	000051
Moneen Mountain SAC	000054
Moyree River System SAC	000057
Poulnagordon Cave (Quin) SAC	000064
Ballymacoda (Clonpriest and Pillmore) SAC	000077
Glengarriff Harbour And Woodland SAC	000090
Clonakilty Bay SAC	000091
Caha Mountains SAC	000093
Lough Hyne Nature Reserve And Environs SAC	000097
Roaringwater Bay And Islands SAC	000101
Sheep's Head SAC	000102
St. Gobnet's Wood SAC	000106
The Gearagh SAC	000108
Three Castle Head To Mizen Head SAC	000109
Curraghchase Woods SAC	000174
River Shannon Callows SAC	000216
Galway Bay Complex SAC	000268
Loughatorick South Bog SAC	000308
Akeragh, Banna and Barrow Harbour SAC	000332
Ballinskelligs Bay And Inny Estuary SAC	000335
Castlemaine Harbour SAC	000343
Old Domestic Building, Dromore Wood SAC	000353
Kilgarvan Ice House SAC	000364
Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC	000365
Lough Yganavan And Lough Nambrackdarrig SAC	000370
Mount Brandon SAC	000375
Sheheree (Ardagh) Bog SAC	000382
Hugginstown Fen SAC	000404
The Loughans SAC	000407
Barrigone SAC	000432
Tory Hill SAC	000439
Sharavogue Bog SAC	000585
Ballyduff/Clonfinane Bog SAC	000641

SAC Site Name	Site Code
Galtee Mountains SAC	000646
Kilcarren-Firville Bog SAC	000647
Helvick Head SAC	000665
Nier Valley Woodlands SAC	000668
Tramore Dunes And Backstrand SAC	000671
Ballyteige Burrow SAC	000696
Bannow Bay SAC	000697
Cahore Polders And Dunes SAC	000700
Lady's Island Lake SAC	000704
Saltee Islands SAC	000707
Screen Hills SAC	000708
Tacumshin Lake SAC	000709
Raven Point Nature Reserve SAC	000710
Hook Head SAC	000764
Blackstairs Mountains SAC	000770
Slaney River Valley SAC	000781
Cullahill Mountain SAC	000831
Spahill And Clomantagh Hill SAC	000849
Clare Glen SAC	000930
Kilduff, Devilsbit Mountain SAC	000934
Silvermine Mountains SAC	000939
Ballyteige (Clare) SAC	000994
Ballyvaughan Turlough SAC	000996
Glenomra Wood SAC	001013
Carrowmore Point To Spanish Point And Islands SAC	001021
Barley Cove To Ballyrisode Point SAC	001040
Cleanderry Wood SAC	001043
Great Island Channel SAC	001058
Kilkeran Lake And Castlefreke Dunes SAC	001061
Myross Wood SAC	001070
Keeper Hill SAC	001197
Courtmacsherry Estuary SAC	001230
Cloonee And Inchiquin Loughs, Uragh Wood SAC	001342
Mucksna Wood SAC	001371
Glen Bog SAC	001430
Glenstal Wood SAC	001432
Castletownshend SAC	001547
Liskeenan Fen SAC	001683
Kilmuckridge-Tinnaberna Sandhills SAC	001741
Kilpatrick Sandhills SAC	001742
Philipston Marsh SAC	001847
Galmoy Fen SAC	001858
Derryclogher (Knockboy) Bog SAC	001873

SAC Site Name	Site Code
Glanmore Bog SAC	001879
Maulagowna Bog SAC	001881
Mullaghanish Bog SAC	001890
Glendree Bog SAC	001912
East Burren Complex SAC	001926
Comeragh Mountains SAC	001952
Old Domestic Building (Keevagh) SAC	002010
Ballyhoura Mountains SAC	002036
Carrigeenamronety Hill SAC	002037
Old Domestic Building, Curraglass Wood SAC	002041
Tralee Bay And Magharees Peninsula, West To Cloghane SAC	002070
Newhall and Edenvale Complex SAC	002091
Old Domestic Building, Askive Wood SAC	002098
Ballyseedy Wood SAC	002112
Ardmore Head SAC	002123
Bolingbrook Hill SAC	002124
Anglesey Road SAC	002125
Pollagoona Bog SAC	002126
Lower River Suir SAC	002137
Newgrove House SAC	002157
Kenmare River SAC	002158
River Barrow And River Nore SAC	002162
Lower River Shannon SAC	002165
Blackwater River (Cork/Waterford) SAC	002170
Bandon River SAC	002171
Blasket Islands SAC	002172
Blackwater River (Kerry) SAC	002173
Slieve Mish Mountains SAC	002185
Drongawn Lough SAC	002187
Farranamanagh Lough SAC	002189
Scohaboy (Sopwell) Bog SAC	002206
Arragh More (Derrybreen) Bog SAC	002207
Lough Derg, North-east Shore SAC	002241
Old Farm Buildings, Ballymacrogan SAC	002245
Ballycullinan, Old Domestic Building SAC	002246
Toonagh Estate SAC	002247
Carrowmore Dunes SAC	002250
Thomastown Quarry SAC	002252
Moanour Mountain SAC	002257
Silvermines Mountains West SAC	002258
Magharee Islands SAC	002261
Valencia Harbour/Portmagee Channel SAC	002262
Kerry Head Shoal SAC	002263

SAC Site Name	Site Code
Kilkee Reefs SAC	002264
Carnsore Point SAC	002269
Askeaton Fen Complex SAC	002279
Dunbeacon Shingle SAC	002280
Reen Point Shingle SAC	002281
Slieve Bernagh Bog SAC	002312
Old Domestic Buildings, Rylane SAC	002314
Glanlough Woods SAC	002315
Ratty River Cave SAC	002316
Cregg House Stables, Crusheen SAC	002317
Knockanira House SAC	002318
Kilkishen House SAC	002319
Glendine Wood SAC	002324
Tullaher Lough And Bog SAC	002343
Moanveanlagh Bog SAC	002351
Redwood Bog SAC	002353
Blackwater Bank SAC	002953

APPENDIX C2

Special Protection Areas, Southern Region

SPA Site Name	Site Code
Puffin Island SPA	004003
Cliffs of Moher SPA	004005
Blasket Islands SPA	004008
Lady's Island Lake SPA	004009
The Raven SPA	004019
Ballyteigue Burrow SPA	004020
Old Head of Kinsale SPA	004021
Ballycotton Bay SPA	004022
Ballymacoda Bay SPA	004023
Tramore Back Strand SPA	004027
Blackwater Estuary SPA	004028
Castlemaine Harbour SPA	004029
Cork Harbour SPA	004030
Inner Galway Bay SPA	004031
Dungarvan Harbour SPA	004032
Bannow Bay SPA	004033
Killarney National Park SPA	004038
Ballyallia Lough SPA	004041
Lough Derg (Shannon) SPA	004058
The Bull and The Cow Rocks SPA	004066
Wexford Harbour and Slobs SPA	004076
River Shannon and River Fergus Estuaries SPA	004077
Clonakilty Bay SPA	004081
River Little Brosna Callows SPA	004086
Tacumshin Lake SPA	004092
Blackwater Callows SPA	004094
Kilcolman Bog SPA	004095
Middle Shannon Callows SPA	004096
Eirk Bog SPA	004108
The Gearagh SPA	004109
Illaunonearaun SPA	004114
Keeragh Islands SPA	004118
Loop Head SPA	004119
Sovereign Islands SPA	004124
Magharee Islands SPA	004125
Cahore Marshes SPA	004143
Dingle Peninsula SPA	004153
Iveragh Peninsula SPA	004154
Beara Peninsula SPA	004155
Sheep's Head to Toe Head SPA	004156
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161
Mullaghanish to Musheramore Mountains SPA	004162
Slievefelim to Silvermines Mountains SPA	004165

SPA Site Name	Site Code
Slieve Aughty Mountains SPA	004168
Deenish Island and Scariff Island SPA	004175
Mid-Clare Coast SPA	004182
Tralee Bay Complex SPA	004188
Kerry Head SPA	004189
Galley Head to Duneen Point SPA	004190
Seven Heads SPA	004191
Helvick Head to Ballyquin SPA	004192
Mid-Waterford Coast SPA	004193
Courtmacsherry Bay SPA	004219
Corofin Wetlands SPA	004220
River Nore SPA	004233

APPENDIX D1

Special Areas of Conservation, Northern Ireland

Special Area of Conservation (SAC)	*Site Code*	*Special Area of Conservation (SAC)*	*Site Code*
Cuilcagh Mountain *	UK0016603	Bann Estuary	UK0030084
Pettigoe Plateau *	UK0016607	Binevenagh	UK0030089
Fairy Water Bogs	UK0016611	Cladagh (Swanlinbar) River	UK0030116
Magilligan	UK0016613	Moneygal Bog	UK0030211
Upper Lough Erne	UK0016614	Moninea Bog	UK0030212
Eastern Mournes	UK0016615	Owenkillew River	UK0030233
Monawilkin	UK0016619	Rostrevor Wood	UK0030268
Derryleckagh	UK0016620	Slieve Gullion	UK0030277
Magheraveely Marl Loughs *	UK0016621	West Fermanagh Scarplands	UK0030300
Slieve Beagh	UK0016622	River Foyle and Tributaries *	UK0030320
Largalinny	UK0030045	River Roe and Tributaries	UK0030360
Lough Melvin *	UK0030047	River Faughan and Tributaries	UK0030361
Fardrum and Roosky Turloughs	UK0030068	Skerries and Causeway	UK0030383
Ballynahone Bog	UK0016599	Rea's Wood and Farr's Bay	UK0030244
Garron Plateau	UK0016606	Turmennan	UK0030291
Teal Lough	UK0016608	Upper Ballinderry River	UK0030296
Black Bog	UK0016609	Wolf Island Bog	UK0030303
Garry Bog	UK0016610	Aughnadarragh Lough	UK0030318
Murlough	UK0016612	Ballykilbeg	UK0030319
Strangford Lough	UK0016618	Cranny Bogs	UK0030321
Rathlin Island	UK0030055	Curran Bog	UK0030322
Banagher Glen	UK0030083	Dead Island Bog	UK0030323
Breen Wood	UK0030097	Deroran Bog	UK0030324
Carn – Glenshane Pass	UK0030110	Tonnagh Beg Bog	UK0030325
Hollymount	UK0030169	Tully Bog	UK0030326
Lecale Fens	UK0030180	Red Bay	UK0030365
Main Valley Bogs	UK0030199	The Maidens	UK0030384
Montiaghs Moss	UK0030214	Pisces Reef Complex	UK0030379
North Antrim Coast	UK0030224	North Channel	UK0030399
Peatlands Park	UK0030236	-	-

APPENDIX D2

Special Protection Areas, Northern Ireland

Special Protection Area (SPA)	Site Code
Lough Foyle	UK9020031
Pettigoe Plateau	UK9020051
Upper Lough Erne	UK9020071
Slieve Beagh-Mullaghfad-Lisnaskea	UK9020302
Carlingford Lough	UK9020161
Belfast Lough	UK9020101
Larne Lough	UK9020042
Strangford Lough	UK9020111
Rathlin Island	UK9020011
Killough Bay	UK9020221
Outer Ards	UK9020271
Belfast Lough Open Water	UK9020290
Sheep Island	UK9020021
Antrim Hills	UK9020301
Copeland Islands	UK9020291
Lough Neagh and Lough Beg	UK9020091
East Coast (Marine)	UK9020320
Carlingford Lough (proposed marine extension)	UK9020161

APPENDIX G

EU Condition Assessment

Habitat Name*	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Sandbanks	1110	Inadequate	**Favourable** Improvement owing to decline in pressures
Estuary	1130	Inadequate	**Unfavourable-Inadequate** Trend is likely improvement in habitat condition in the future
Mudflats and Sandflats not covered by seawater at low tide	1140	Inadequate	**Unfavourable-Inadequate** Trend is likely improvement in habitat condition in the future
Lagoons *	1150	Bad	**Unfavourable-Bad** No change since previous assessment period
Large Shallow Inlets and Bays	1160	Inadequate	**Unfavourable-Inadequate** Although inadequate, trend is considered to be improvement
Reefs	1170	Inadequate	**Unfavourable-Bad** Declining as there is no indication that current pressures will reduce in the future
Annual vegetation of drift lines	1210	Inadequate	**Unfavourable-Inadequate** Declining owing to loss of area and impairment of structure & functions
Perennial vegetation of drift lines	1220	Inadequate	**Unfavourable-Inadequate** Trend is stable (e.g. no change)
Vegetated sea cliffs of the Atlantic and Baltic coasts	1230	Inadequate	**Unfavourable-Inadequate** Trend is estimated as stable though potential impacts of climate change may pose a more serious threat
Salicornia and other annuals colonising mud and sand	1310	Inadequate	**Unfavourable-Inadequate** Trend is estimated as declining owing to on-going spread of common cordgrass
Spartina Swards (Spartinion)	1320	Bad	No Assessment given owing to the non-native nature (in Ireland) of this habitat
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	1330	Inadequate	**Unfavourable-Inadequate** Trend is stable though grazing levels may impact habitat condition
Mediterranean salt meadows (*Juncetalia maritimi*)	1410	Inadequate	**Unfavourable-Inadequate** Trend is stable though grazing levels may impact habitat condition
Halophlilous Scrub	1420	Bad	**Unfavourable-Bad** Trend is declining owing to habitat vulnerability and losses
Embryonic shifting dunes	2110	Inadequate	**Unfavourable-Inadequate** Trend is Stable (negligible national loss of area)
Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”)	2120	Bad	**Unfavourable-Inadequate** Trend is stable (no real change, owing to differing assessment methodology)
Fixed coastal dunes with herbaceous vegetation	2130	Bad	**Unfavourable-Bad** Trend is stable (no change in recreational

Habitat Name*	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
(grey dunes) *			pressures and grazing levels including undergrazing)
Decalcified *Empetrum* Dunes *	2140	Bad	**Unfavourable-Inadequate** Trend is slight improvement related to change in interpretation criteria
Decalcified dune Heath *	2150	Bad	**Unfavourable-Inadequate** Trend is slight improvement related to change in interpretation criteria
Dunes with Creeping Willow	2170	Inadequate	**Unfavourable-Inadequate** Trend is stable due to no apparent overall change in management pressures
Humid dune slacks	2190	Bad	**Unfavourable-Inadequate** Declining in view of the ongoing pressures and threats
Machair *	21A0	Bad	**Unfavourable-Bad** Trend is stable (negligible national loss of area and habitat compromise due to management regimes)
Oligotrophic soft water Lakes	3110	Bad	**Unfavourable-Bad** Trend is declining owing to eutrophication
Soft water lakes with base-rich influences	3130	Bad	**Unfavourable-Inadequate**. Change to improved ecological analysis.
Hard water lakes	3140	Bad	**Unfavourable-Bad** Trend is declining owing to continued pollution events
Natural eutrophic lakes	3150	Bad	**Unfavourable-Inadequate** Trend is stable, with change in status due to improved ecological analysis
Dystrophic lakes	3160	Bad	**Unfavourable-Inadequate** Trend is declining but change of assessment due to better ecological understanding of the distribution and ecological requirements of this habitat
Turloughs *	3180	Inadequate	**Unfavourable-Inadequate** Trend is stable but threats still remain
Floating river vegetation	3260	Bad	**Unfavourable-Inadequate** Trend is declining but change of assessment due to better ecological understanding of the distribution and ecological requirements of this habitat
Chenopdium rubri	3270	Favourable	**Favourable** Trend is considered stable but further work required to improve understanding
Wet Heath	4010	Bad	**Unfavourable-Bad** Trend is stable owing to stocking reductions compensating for habitat loss

Habitat Name*	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
European dry heaths	4030	Inadequate	**Unfavourable-Bad** Trend is declining owing to differing assessment methodology and greater information
Alpine and subalpine heath	4060	Inadequate (on hindsight the assessment should have been bad)	**Unfavourable-Bad** Trend is improving owing to improvements in management
Juniper scrub	5130	Inadequate	**Unfavourable-Inadequate** Trend is stable owing to no apparent change in circumstances or condition
Calaminarian grassland	6130	Inadequate	**Unfavourable-Inadequate** Trend is stable and better understanding should feed into improved management regimes
Orchid-rich calcareous grassland *	6210	Bad	**Unfavourable-Bad** Trend is stable but no change in pressures in near future
Species-rich *Nardus* upland grassland *	6230	Bad	**Unfavourable-Bad** Trend is declining owing to losses from non-compatible land uses
Molinia Meadows	6410	Bad	**Unfavourable-Bad** Trend is declining owing to abandonment of management scrub encroachment
Hydrophillous tall herb	6430	Inadequate (on hindsight the assessment should have been bad)	**Unfavourable-Bad** Trend is declining despite its marginal extent owing to reclamation
Lowland Hay meadows	6510	Bad	**Unfavourable-Bad** Trend is stable owing to no overall change in extent of management
Raised Bog (active) *	7110	Bad	**Unfavourable-Bad** Trend is declining owing to ongoing extraction and drying out. Limited trials of drain blocking are showing signs of success
Degraded Raised Bog	7120	Inadequate	**Unfavourable-Bad** Trend is declining owing to loss of extent and habitat degradation
Blanket Bog (active) *	7130	Bad	**Unfavourable-Bad** Trend is declining owing to loss of extent and habitat degradation
Transition Mires	7140	Bad	**Unfavourable-Bad** Trend is unconfirmed owing to lack of nationwide scientific data
Rhynchosprion Depressions	7150	Favourable	**Unfavourable-Inadequate**

Habitat Name*	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
			Trend is declining owing to habitat changes and species loss
Cladium Fen *	7210	Bad	**Unfavourable-Bad** Trend is unconfirmed owing to lack of nationwide scientific data
Petrifying Springs *	7220	Bad	**Unfavourable-Inadequate** Trend is stable but pressures and poor management regimes remain
Alkaline Fen	7230	Bad	**Unfavourable-Bad** Trend is unconfirmed owing to lack of nationwide scientific data
Siliceous Scree	8110	Inadequate	**Unfavourable-Inadequate** Trend is improving owing to implementation of commonage framework plans
Eutric Scree	8120	Inadequate	**Unfavourable-Inadequate** Trend is stable with no change
Calcareous rocky slopes	8210	Inadequate	**Unfavourable-Inadequate** Trend is stable although grazing levels can impair quality
Siliceous rocky slopes	8220	Inadequate	**Unfavourable-Inadequate** Trend is stable although grazing, recreation and spread of invasive species continue
Limestone Pavement *	8240	Inadequate	**Unfavourable-Inadequate** Trend is stable owing to management measures to control losses
Caves	8310	Favourable	**Favourable** Additional research required to understand structure and subterranean climatic conditions
Sea Caves	8330	Favourable	**Favourable** Trend is stable as no significant pressures
Old Oak Woodlands	91A0	Bad	**Unfavourable-Bad** Trend is improving due in part to considerable management effort to rehabilitate habitat
Bog Woodland *	91D0	Inadequate	**Favourable** Trend is improving owing to better understanding of, and subsequent increase in extent
Residual Alluvial Forests *	91E0	Bad	**Unfavourable-Bad** Trend is improving owing to level of rehabilitation to date
Taxus baccata woods*	91J0	Bad	**Unfavourable-Bad** Trend is improving to increase area and curtail threatening impacts
Submarine structures made by leaking gases	1180	N/A	Natura 2000 dataform suggests Good

* Indicates priority habitat under the Habitats Directive

Species	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Killarney Fern (*Trichomanes speciosum*)	1421	Favourable	**Favourable** Trend is stable with no significant impact
Marsh Saxifrage (*Saxifaga granulata*)	1528	Favourable	**Favourable** Trend is stable with no significant impact
Slender Naiad (*Najas flexilis*)	1833	Inadequate	**Unfavourable-Inadequate** Trend is stable but eutrophication remains an issue
Slender Green Feather Moss (*Hamatocaulis vernicosus*)	1393	Favourable	**Favourable** Trend is stable with no significant impact
Petalwort (*Petalophyllum ralfsii*)	1395	Favourable	**Favourable** Trend is stable with no significant impact
Maërl (*Lithothamnion corralloides*)	1376	Inadequate	**Unfavourable-Inadequate** Trend is improving due to genuine improvement. Fishing and aquaculture related activities are not considered to be a threat to these species in the future
Maërl (*Phymatolithon calcareum*)	1377	Inadequate	**Unfavourable-Inadequate** Trend is improving due to genuine improvement. Fishing and aquaculture related activities are not considered to be a threat to these species in the future
White cushion moss (*Leucobryum glaucum*)	1400	Inadequate	**Favourable** No genuine change but it is widespread, occurs in many habitat types and is not under pressure or threat directly
Sphagnum genus	1409	Inadequate	**Unfavourable-Inadequate** No change in trend. Condition of habitats considered to be poor due to peat extraction, drainage, eutrophication and ecologically unsuitable grazing
Lycopodium group	1413	Inadequate	**Unfavourable-Inadequate** No change in trend. Condition of habitats considered to be poor due to peat extraction, drainage, eutrophication and ecologically unsuitable grazing
Cladonia subgenus cladina	1378	Inadequate	**Unfavourable-Inadequate** No change in trend. Condition of habitats considered to be poor due to peat extraction, drainage, eutrophication and ecologically unsuitable grazin
Geyers whorl snail (*Vertigo geyeri*)	1013	Inadequate	**Unfavourable-Inadequate** Genuine decline in trend with losses not fully understood. Sites for species fragile and easily damaged
Narrow-mouthed whorl snail (*Vertigo angustoir*)	1014	Inadequate	**Unfavourable-Inadequate** Genuine decline in trend due to changes in grazing and wetland drainage

Species	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Desmoulins Whorl Snail (*Vertigo moulinsiana*)	1016	Bad	**Unfavourable-Inadequate** Decline in trend. Genuine losses of population in the last assessment period through succession and drying out of wetlands have not been recovered
Kerry Slug (*Geomacalus maculosus*)	1024	Favourable	**Favourable** Trend stable. No evidence of decline, habitats remain in good condition
Freshwater Pearl Mussel (*Margaritifera margaritifera*)	1029	Bad	**Unfavourable-Bad** Decline in trend. Wide variety of sources of sediment and nutrients entering mussel rivers. Direct impacts from in-stream works
Irish Freshwater Pearl Mussel (*Margaritifera durrovensis*)	1990	Bad	**Unfavourable-Bad** Decline in trend. Despite significant conservation efforts it is unlikely that the habitat will be restored before the extinction of the wild population
White-Clawed Crayfish (*Austropotambius pallipes*)	1092	Inadequate	**Unfavourable-Inadequate** Trend is stable. Threat from disease introduction is severe and unlikely to disappear
Marsh Fritillary (*Euphydryas aurinia*)		Inadequate	**Unfavourable-Inadequate** Decline in trend. Appropriate measures need to be taken to reduce pressures
Sea Lamprey (*Petromyzon marinus*)	1095	Inadequate	**Unfavourable-Bad** Trend is stable. Decline in status due to improved knowledge. Low number of juveniles due to barriers to migration
River Lamprey (*Lampetra fluviatilis*)	1099	Favourable	**Favourable** No change. Extensive areas of suitable habitat and no significant pressures
Brook Lamprey (*Lampetra planeri*)	1096	Favourable	**Favourable** No change. Extensive areas of suitable habitat and no significant pressures
Killarney Shad (*Alosa fallax killarnensis*)	5046	Favourable	**Favourable** No change. Species maintaining robust population and habitat favourable
Twaite Shad (*Alosa fallax fallax*)	1103	Bad	**Unfavourable-Bad** Trend stable, approach refined. Concerns about habitat quality at spawning sites and hybridisation with Allis Shad
Pollan (*Coregonus autumnalis*)	5076	Bad	**Unfavourable-Bad** No change in trend. Pressures identified include depletion of oxygen through enrichment, introduced species competing for food and the presence of Zebra mussels and Asian clams

Species	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Atlantic Salmon (*Salmo salar*)	1106	Bad	**Unfavourable-Inadequate** Trend stable, no genuine change. This is due to threats to habitat quality and low populations compared to previous years
Natterjack Toad (*Bufo calamita*)	1202	Bad	**Unfavourable-Bad** Trend improved due to investment in pond creation increasing available habitat
Common Frog (*Rana temporaria*)	1213	Inadequate	**Favourable** No trend change but improved status due to better understanding of how frogs use the Irish landscape
Leatherback Turtle (*Dermochelys coriacea*)	1223	Inadequate	**Unknown** Full assessment not possible due to significant difficulties associated with studying the species
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	1303	Favourable	**Favourable** Trend is stable. Significant proportion of summer and winter roosts protected within SACs. Increased population
Common Pipistrelle (*Pipistrellus pipistrellus*)	1309	Favourable	**Favourable** Trend is stable. Population stable, possibly increasing
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	5009	Favourable	**Favourable** Trend is stable. Population increasing
Nathusius' Pipistrelle (*Pipistrelle nathusii*)	1317	Favourable	**Unknown** Unknown due to uncertain data
Natterer's Bat (*Myotis nattereri*)	1322	Favourable	**Favourable** Trend is stable. Area of suitable habitat increasing
Daubenton's Bat (*Myotis daubentonii*)	1314	Favourable	**Favourable** Trend is stable. Stable populations
Whiskered Bat (*Myotis mystacinus*)	1330	Favourable	**Favourable** Trend is stable. Area of suitable habitat increasing
Brown Long-Eared Bat (*Plecotus auritus*)	1326	Favourable	**Favourable** Trend is stable. Population increasing
Leisler's Bat (*Nyctalus leisleri*)	1331	Favourable	**Favourable** Trend is stable. Population increasing
Mountain Hare (*Lepus timidus*)	1334	Inadequate	**Favourable** Change due to improved knowledge. Hare is widespread with broad habitat niche
Otter (*Lutra lutra*)	1355	Inadequate	**Favourable** Trend improved. Previous concerns about population decline have been allayed
Pine Marten (*Martes martes*)	1357	Favourable	**Favourable** Trend is stable. Ample habitat available

Species	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Grey Seal (*Halichoerus grypous*)	1364	Favourable	**Favourable** Trend is stable (owing to improved knowledge)
Common Seal (*Phoca vitulina vitulina*)	1365	Favourable	**Favourable** Trend is stable (owing to improved knowledge)
Humpback Whale (*Megaptera novaeangliae*)	1345	Unknown	**Unknown** No change
Bottle-Nosed Dolphin (*Tursiops truncatus*)	1349	Favourable	**Favourable** Trend is stable. Improved knowledge
Common Dolphin (*Delphinus delphis*)	1350	Favourable	**Favourable** Trend is stable. Improved knowledge
Harbour porpoise (*Phocoena phocoena*)	1351	Favourable	**Favourable** Trend is stable
Killer Whale (*Orcinus orca*)	2027	Unknown	**Unknown** No change
Long-Finned Pilot Whale (*Globicephala melas*)	2029	Unknown	**Favourable** No trend. Improved status due to improved knowledge
Risso's Dolphin (*Grampus griseus*)	2030	Unknown	**Unknown** No change
White-Sided Dolphin (*Lagenorhynchus acutus*)	2031	Favourable	**Favourable** Trend is stable
White-Beaked Dolphin (*Lagenorhynchus albirostris*)	2032	Unknown	**Favourable** No trend. Improved status due to improved knowledge
Striped Dolphin (*Stenella coeruleoalba*)	2034	Unknown	**Favourable** No trend. Improved status due to improved knowledge
Cuvier's Beaked Whale (*Ziphius cavirostris*)	2035	Unknown	**Unknown** No change
Sowerby's Beaked Whale (*Mesoplodon bidens*)	2038	Unknown	**Unknown** No change
Minke Whale (*Balaenoptera acutorostrata*)	2618	Favourable	**Favourable** Trend is stable
Fin Whale (*Balaenoptera physalus*)	2621	Favourable	**Favourable** Trend is stable
Blue Whale (*Balaenoptera musculus*)	5020	Unknown	**Unknown** No change
Sperm Whale (*Physeter catodon*)	5031	Unknown	**Unknown** No change
Northern Bottlenose Whale (*Hyperoodon ampullatus*)	5033	Unknown	**Unknown** No change
Sei Whale (*Balaenoptera borealis*)	2619	Unknown	**Unknown** No change

Species	Code	Conservation Status 2007	Conservation Status 2013 (and Trend)
Vagrants (Species which have previously been recorded but are not assessed owing to infrequent nature of records)			
Northern Right Whale (*Eubalaena glacialis*)	1348	Unknown	**Unknown** Vagrant
False Killer Whale (*Pseudorca crassidens*)	2028	Unknown	**Unknown** Vagrant
True's Beaked Whale (*Mesoplodon mirus*)	2037	Unknown	**Unknown** Vagrant
Pygmy Sperm Whale (*Kogia breviceps*)	2622	Unknown	**Unknown** Vagrant
Beluga/White Whale (*Delphinapterus leucas*)	5029	Unknown	**Unknown** Vagrant
Gervais' Beaked Whale (*Mesoplodon europaeus*)	5034	Unknown	**Unknown** Vagrant
Allis Shad (*Alosa alosa*)	1102	Unknown	**Unknown** Vagrant
Brandt's (*Myotis brandtii*)	1320	Unknown	**Unknown** Vagrant

Bird Species	Code	Status BoCCI2 2007-2013*	Status BoCCI3 2014-2019*
Red-throated Diver (*Gavia stellata*)	A001	Amber (breeding)	**Amber** (breeding)
Great Northern Diver (*Gavia immer*)	A003	Green (wintering)	**Amber** (wintering)
Little Grebe (*Tachybaptus ruficollis*)	A004	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Great Crested Grebe (*Podiceps cirstatus*)	A005	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Fulmar (*Fulmarus glacialis*)	A009	Green (breeding)	**Green** (breeding)
Manx Shearwater (*Puffinus puffinus*)	A013	Amber (breeding)	**Amber** (breeding)
Storm Petrel (*Hydrobates pelagicus*)	A014	Amber (breeding)	**Amber** (breeding)
Leach's Storm-petrel (*Oceanodroma leucorhoa*)	A015	Amber (breeding)	**Red** (breeding)
Gannet (*Morus bassanus*)	A016	Amber (breeding)	**Amber** (breeding)
Cormorant (*Phalacrocorax carbo*)	A017	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Shag (*Phalacrocorax aristotelis*)	A018	Amber (breeding)	**Amber** (breeding)
Grey heron (*Ardea cinerea*)	A028	Green (breeding/wintering)	**Green** (breeding/wintering)
Bewick's Swan (*Cygnus columbianus bewickii*)	A037	Red (wintering)	**Red** (wintering)

Bird Species	Code	Status BoCCI2 2007-2013*	Status BoCCI3 2014-2019*
Whooper Swan (*Cygnus cygnus*)	A038	Amber (wintering)	**Amber** (wintering)
Greylag Goose *(Anser anser*)	A043	Amber (wintering)	**Amber** (wintering)
Barnacle Goose (*Branta leucopsis*)	A045	Amber (wintering)	**Amber** (wintering)
Light-bellied Brent Goose (*Branta bernicola hrota*)	A046	Amber (wintering)	**Amber** (wintering)
Shelduck (*Tadorna tadorna*)	A048	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Wigeon (*Anas penelope)*	A050	Amber (wintering)	**Red** (wintering)
Gadwall (*Anas strepera*)	A051	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Teal (*Anas crecca*)	A052	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Mallard (*Anas pyatyrhynchos*)	A053	Green (wintering)	**Green** (wintering)
Pintail (*Anas acuta*)	A054	Red (wintering)	**Red** (wintering)
Shoveler (*Anas clypeata*)	A056	Red (wintering)	**Red** (wintering)
Pochard *(Aythya farina*)	A059	Amber (wintering)	**Red** (wintering)
Tufted Duck (*Aythta fuligula*)	A061	Amber (wintering)	**Red** (wintering)
Scaup (*Aythya marila*)	A062	Amber (wintering)	**Amber** (wintering)
Eider (*Somateria mollissima*)	A063	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Common Scoter (*Melanitta nigra*)	A065	Red (breeding)	**Red** (breeding)
Goldeneye (B*ucephala clangula*)	A067	Amber (wintering)	**Red** (wintering)
Red-breasted Merganser (*Mergus serrator*)	A069	Green (breeding/wintering)	**Green** (breeding/wintering)
Hen Harrier (*Circus cyaneus*)	A082	Amber (breeding)	**Amber** (breeding)
Merlin (*Falco columbarius*)	A098	Amber (breeding)	**Amber** (breeding)
Peregrine (*Falco peregrinus*)	A103	Green (breeding)	**Green** (breeding)
Corncrake (*Crex crex*)	A122	**Red** (breeding)	**Red** (breeding)
Coot (*Fulica atra*)	A125	**Amber** (breeding/wintering)	**Amber** (breeding/wintering)
Oystercatcher (*Haematopus ostralegus*)	A130	Amber (breeding/wintering)	**Amber** (breeding/wintering)
Ringed Plover (*Charadrius hiaticula*)	A137	Amber (wintering)	**Green** (wintering)
Golden Plover (*Pluvialis apricaria*)	A140	Red (breeding/wintering)	**Red** (breeding/wintering)
Grey Plover (*Pluvialis squatarola*)	A141	Amber(wintering)	**Amber** (wintering)
Lapwing (*Vanellus vanellus*)	A142	Red (breeding/wintering)	**Red** (breeding/wintering)
Knot (*Calidris canutus*)	A143	Red (wintering)	**Amber** (wintering)

Bird Species	Code	Status BoCCI2 2007-2013*	Status BoCCI3 2014-2019*
Sanderling (*Calidris alba*)	A144	Green (wintering)	**Green** (wintering)
Purple Sandpiper (*Calidris maritima*)	A148	Green (wintering)	**Green** (wintering)
Dunlin (*Calidris alpina*)	A149	Amber (breeding/wintering)	**Red** (breeding/wintering)
Black-tailed Godwit (*Limosa limosa*)	A156	Amber (wintering)	**Amber** (wintering)
Bar-tailed Godwit (*Limosa lapponica*)	A157	Amber (wintering)	**Amber** (wintering)
Curlew (*Numenius arquata*)	A160	Red (breeding/wintering)	**Red** (breeding/wintering)
Redshank (*Tringa totanus*)	A162	Red (breeding/wintering	**Red** (breeding/wintering)
Greenshank (*Tringa nebularia*)	A164	Amber (wintering)	**Green** (wintering)
(Ruddy) Turnstone (*Arenaria interpres*)	A169	Green (wintering)	**Green** (wintering)
Black Headed Gull (*Chroicocephalus ridibundus*)	A179	Red (breeding)	**Red** (breeding)
Common Gull (*Larus canus*)	A182	Amber (breeding)	**Amber** (breeding)
Lesser Black-backed Gull (*Larus fuscus*)	A183	Amber (breeding)	**Amber** (breeding)
Herring Gull (*Larus argentatus*)	A184	Red (breeding)	**Red** (breeding)
Kittiwake (*Rissa tridactyla*)	A188	Amber (breeding)	**Amber** (breeding)
Sandwich Tern (*Sterna sandvicensis*)	A191	Amber (breeding)	**Amber** (breeding)
Roseate Tern (*Sterna dougallii*)	A192	Amber (breeding)	**Amber** (breeding)
Common Tern (*Sterna hirundo*)	A193	Amber (breeding)	**Amber** (breeding)
Arctic Tern (*Sterna paradisaea*)	A194	Amber (breeding)	**Amber** (breeding)
Guillemot (*Uria aalge*)	A199	Amber (breeding)	**Amber** (breeding)
Razorbill (*Alca torda*)	A200	Amber (breeding)	**Amber** (breeding)
Puffin (*Fratercula arctica*)	A204	Amber (breeding)	**Amber** (breeding)
Kingfisher (*Alcedo atthis*)	A229	Amber (breeding)	**Amber** (breeding)
Chough (*Pyrrhocorax pyrrhocorax*)	A346	Amber (breeding)	**Amber** (breeding)
Greenland White-fronted Goose (*Anser albifrons flavirostric*)	A395	Amber (wintering)	**Amber** (wintering)
Wetland & Waterbirds	A999	---	---

*Taken from *Birds of Conservation Concern* Reports; BOCCI2: Lynas *et. al.* (2007), BOCCI3: Colhoun and Cummins (2013).

Reference has also been made to Irelands (Birds Directive) Article 12 submission to the EU Commission on the *Status and trends of birds species (2008-2012)*[18]

[18] http://ec.europa.eu/environment/nature/knowledge/rep_birds/index_en.htm

APPENDIX H

Generic Threats and Pressures Considered Relevant to the RSES

Code	Description
A	**Agriculture**
A01	Cultivation
A02	Modification of cultivation practices
A02.01	Agricultural intensification
A02.02	Crop change
A02.03	Grassland removal for arable land
A04	Grazing
A04.01	Intensive grazing
A04.02	Non-intensive grazing
A04.03	Abandonment of pastoral systems, lack of grazing
A05	Livestock farming and animal breeding (without grazing)
A05.01	Animal breeding
A05.03	Lack of animal breeding
A06	Annual and perennial non-timber crops
A06.03	Biofuel production
A06.04	Abandonment of crop production
B	**Silviculture, forestry**
B01	Forest planting on open ground
B01.01	Forest planting on open ground (native trees)
B01.02	Artificial planting on open ground (non-native trees)
B02	Forest and Plantation management & use
B02.01	Forest replanting
B02.01.01	Forest replanting (native trees)
B02.01.02	Forest replanting (non-native trees)
B02.02	Forestry clearance
B02.03	Removal of forest undergrowth
B02.04	Removal of dead and dying trees
B02.05	Non- intensive timber production (leaving dead wood/ old trees untouched)
B02.06	Thinning of tree layer
B03	Forest exploitation without replanting or natural regrowth
C	**Mining, extraction of materials and energy production**
C01	Mining and quarrying
C01.01	Sand and gravel extraction
C01.01.01	Sand and gravel quarries
C01.01.02	Removal of beach materials
C01.02	Loam and clay pits
C01.03	Peat extraction
C01.03.01	Hand cutting of peat
C01.03.02	Mechanical removal of peat
C01.04	Mines

Code	Description
C01.04.01	Open cast mining
C01.04.02	Underground mining
C01.05	Salt works
C01.05.01	Abandonment of saltpans (salinas)
C01.05.02	Conversion of saltpans
C01.06	Geotechnical survey
C01.07	Mining and extraction activities not referred to above
C02	Exploration and extraction of oil or gas
C02.01	Exploration drilling
C02.02	Production drilling
C02.03	Jack-up drilling rig
C02.04	Semi-submersible rig
C02.05	Drill ship
C03	Renewable abiotic energy use
C03.01	Geothermal power production
C03.02	Solar energy production
C03.03	Wind energy production
C03.04	Tidal energy production
D	**Transportation and service corridors**
D01	Roads, paths and railroads
D01.01	Paths, tracks, cycling tracks
D01.02	Roads, motorways
D02	Utility and service lines
D02.01	Electricity and phone lines
D02.01.01	Suspended electricity and phone lines
D02.01.02	Underground/submerged electricity and phone lines
D02.02	Pipe lines
D02.03	Communication masts and antennas
D02.09	Other forms of energy transport
D03	Shipping lanes, ports, marine constructions
D03.01	Port areas
D03.01.04	Industrial ports
D03.02	Shipping lanes
D03.02.01	Cargo lanes
D03.02.02	Passenger ferry lanes (high speed)
D03.03	Marine constructions
D04	Airports, flightpaths
E	**Urbanisation, residential and commercial development**
E01	Urbanised areas, human habitation
E01.01	Continuous urbanisation
E01.03	Dispersed habitation
E02	Industrial or commercial areas
E02.01	Factory

Code	Description
E02.02	Industrial stockage
E02.03	Other industrial / commercial area
E03	Discharges
E03.01	Disposal of household / recreational facility waste
E03.02	Disposal of industrial waste
E03.03	Disposal of inert materials
E03.04	Other discharges
E03.04.01	Coastal sand suppletion/ beach nourishment
E04	Structures, buildings in the landscape
E04.01	Agricultural structures, buildings in the landscape
E04.02	Military constructions and buildings in the landscape
E05	Storage of materials
E06	Other urbanisation, industrial and similar activities
E06.01	Demolishment of buildings & human structures
G	**Human intrusions and disturbances**
G01.01	Nautical sports
G01.01.01	Motorised nautical sports
G01.03	Motorised vehicles
G02	Sport and leisure structures
G02.03	Stadium
G02.04	Circuit, track
G02.06	Attraction park
G05.03	Penetration/ disturbance below surface of the seabed
H	**Pollution**
H04	Air pollution, air-borne pollutants
H04.02	Nitrogen-input
H04.03	Other air pollution
H06	Excess energy
H07	Other forms of pollution
I	**Invasive, other problematic species and genes**
I01	Invasive non-native species
I02	Problematic native species
J	**Natural System modifications**
J01	Fire and fire suppression
J02	Human induced changes in hydraulic conditions
J02.01	Landfill, land reclamation and drying out, general
J03	Other ecosystem modifications
J03.01	Reduction or loss of specific habitat features
L	**Geological events, natural catastrophes**
L01	Volcanic activity
L09	Fire (natural)
M	**Climate change**
M01	Changes in abiotic conditions

Code	Description
M01.01	Temperature changes (e.g. rise of temperature & extremes)
M01.02	Droughts and less precipitations
M01.03	Flooding and rising precipitations
M01.04	pH-changes
M01.05	Water flow changes (limnic, tidal and oceanic)
M01.06	Wave exposure changes
M01.07	Sea-level changes
M02	Changes in biotic conditions
M02.01	Habitat shifting and alteration
M02.02	Desynchronisation of processes
M02.03	Decline or extinction of species
M02.04	Migration of species (natural newcomers)
XO	**Threats and pressures from outside the Member State**