NI Rural Development Programme 2014 - 2020

Strategic Environmental Assessment

Final Environmental Report

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1 Introduction

1.1 Purpose of this Report

1.1.1 ADAS has been instructed by the Department of Agriculture and Rural Development (DARD) to carry out a Strategic Environmental Assessment (SEA) of the Northern Ireland Rural Development Programme (NIRDP) 2014 - 2020.

1.1.2 SEA is a systematic process for evaluating the environmental consequences of proposed plans or programmes to ensure environmental issues are fully integrated and addressed at the earliest appropriate stage of decision making, with a view to promoting sustainable development. The process of SEA was introduced under European Directive 2001/42/EC12 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive), and came into force in 2001. The requirements of the SEA Directive are transposed into Northern Irish domestic law through the Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (SR 280/2004).

1.1.3 The purpose of this report is to carry out an evaluation of the likely environmental effects of implementation and non-implementation of the NIRDP as per the requirements of the Directive and Regulations. This includes an assessment of realistic strategic alternative approaches and options, as well as the suggestion of mitigation and enhancement measures to prevent, reduce and offset any significant adverse effects on the environment of implementing the Programme.

1.2 Background to this Report

1.2.1 A draft version of this report was issued to the statutory consultation bodies by DARD and was made available to view and comment on by other interested organisations and members of the public for a period of fourteen weeks during July to October 2013.

1.2.2 Following amendments made to NIRDP after the consultation, the Environmental Report was updated. Submission versions of the NIRDP, Ex-Ante Evaluation, SEA Environmental Report and Equalities Impact Assessment (EQIA) Report were submitted to the European Commission in October 2014.

1.2.3 In March 2015 the European Commission issued an Observation letter on the NIRDP, pursuant to Article 29(3) of Regulation (EU) No 1303/2013. DARD was asked to provide to the Commission additional information and to revise the NIRDP. In terms of the SEA, the European Commission made the following comments:

9. Regarding point 3.2.2 of the RDP and Chapter 6 of the Final Environmental Report concerning mitigation, it is necessary to identify clearly what is considered in the SEA recommendations and included in the RDP, and what has been excluded.

10. Regarding Section 3.3.26, monitoring environmental sustainability is an essential element to ensure that the benefits of funding provided can be described in terms of

RDP indicators, such as financial outlay and hectares covered, but also in terms of environmental policy targets and outcomes. It is necessary to ensure that it is clear what this monitoring will encompass, and how, and that it is closely related to RDP and environmental policy targets and outcomes.

1.2.4 This amended Final Environmental Report addresses the Commission's comments regarding mitigation and monitoring measures, however, no re-assessment of the revised NIRDP has taken place. The conclusions of this report are therefore correct as at October 2014.

1.2.5 It should be noted that the changes made to the NIRDP following the European Commission's Observations have had additional environmental benefits to those reported in later chapters of this Report. DARD felt that addressing the environmental impact of projects, particularly relating to drainage and forestry, were of particular importance. This has been addressed by changes to Measure 4 (Investments in Physical Assets), changes to the General Conditions for the Measures (Section 8.1 of the NIRDP), and inclusion in the NIRDP of a number of mitigation and enhancement measures (Section 3.2.2) as well as environmental monitoring (Section 3.2.26).

1.3 Structure of this Report

1.3.1 The areas considered in this Final Environmental Report, and their location in the document, are as follows:

- Summary of the NIRDP – Section 1.3;
- SEA Objectives and assessment methodology – Chapter 2;
- Summary of scoping consultation responses – Section 3.1 and Appendix A;
- Relationship with other plans, programmes and conservation objectives – Sections 3.2 and 5.3 and Appendix B;
- Relevant aspects of the current state of the environment – Section 3.3 and Appendix C;
- Existing environmental problems and the likely evolution of the environment without the NIRDP – Section 3.4;
- Summary of public and statutory consultation responses – Section 3.5 and Appendix D;
- Consideration of alternatives – Chapter 4;
- Identification and assessment of likely significant effects on the environment – Chapter 5 and Appendix E;
- Mitigation and enhancement measures – Chapter 6; and

- Proposed monitoring programme and next steps regarding the adoption process – Chapter 7.

1.4 The Northern Ireland Rural Development Programme

1.4.1 The European Union has set out six Priorities for Rural Development, each of which comprises a number of Focus Areas. DARD has looked at the rationale for intervening in each of these areas and has identified those of most relevance to Northern Ireland (NI). Following an assessment of the Strengths, Weaknesses, Opportunities and Threats (SWOT) and the identification of NI's development needs, DARD has developed a number of measures, sub-measures and schemes. These are set out in Table 1.1 below (more detail on the measures and schemes can be found in the publication version of the NIRDP[1]).

[1] Changes have been made to the NIRDP following comments received from the European Commission. These are not reflected in this Final Environmental Report, but can be viewed in the publication version of the NIRDP.

Table 1.1: Measures, Sub-Measures and Schemes of the NIRDP

Description of Measure	Sub-Measures	Schemes	EU Focus Areas	Allocation (£m)
Measure 1: Knowledge Transfer and Information Actions				31.832
The Measure is designed to support knowledge transfer and innovation through actions which enhance the application of results of agri-food research and to improve the exchange of information between researchers and agri-food actors and between Member States.	1.1 Support for vocational training and skills acquisition actions	Business Development through Knowledge Transfer (BDKT)	2A	22.698
		Farm Family Key Skills (FFKS)	2A	2.724
		General training for scheme implementation (GT)	4A, 6B	2.050
	1.2 Support for demonstration projects/information actions	Innovation and Technology Evaluation Demonstration Scheme (ITED)	2A	2.270
		Environmental Advisory Support Scheme (EAS)	4A, 4B, 4C	1.090
	1.3 Support for short term farm and forest management exchange as well as farm and forest visits	Farm Exchange Visits (FEV)	2A	1.000
Measure 4: Investments in Physical Assets				228.827
This Measure will provide the majority of the investment support required to the agriculture, food and forestry	4.1 Support for investments in agricultural holdings	Business Investment Scheme (BIS) (inc. METS and NES)	2A	199.747
	4.2 Support for investments in processing/marketing and/or development of agricultural products	Agri-food Processing Investment Scheme (AfPI)	3A	27.238

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Description of Measure	Sub-Measures	Schemes	EU Focus Areas	Allocation (£m)
industries. This will simplify the grant funding available for the beneficiary through a 'one stop shop' approach for the delivery of capital investment to the agri-food and forestry industries.	4.3 Support for investments in infrastructure related to development, modernisation or adaptation of agriculture and forestry	Forestry Competitiveness Scheme (FComp)	2A	0.480
	4.4 Support for non-productive investments linked to the achievement of agri-environment climate objectives	Agri-environment Non-productive Investments (AeNpI)	4A, 4B, 4C	1.362
Measure 6: Farm and Business Development				27.000
The Measure will provide investment support for the creation and development of small and medium enterprises in rural areas. It will primarily provide capital grants with some resource funds towards bespoke training and marketing.	6.4 Support for investments in creation and development of non-agricultural activities	Rural Business Investment Scheme (RBI)	6A	27.000
Measure 7: Basic Services and Village Renewal in Rural Areas				36.000
This measure will support capacity building of the rural communities to encourage social cohesion and enable communities to identify the issues affecting them and to suggest suitable solutions. The measure will	7.1 Support for drawing up and updating of plans for the development of municipalities and villages and N2000/HNV area management plans / preparation of Natura 2000 Management Plans	Village Renewal Scheme (VR)	6B	8.000
		Natura 2000 (N2K) Conservation Management Plans	4A, 4B, 4C	1.000
	7.3 Support for investments in broadband infrastructure	Rural Broadband Scheme (RB)	6C	2.000

Description of Measure	Sub-Measures	Schemes	EU Focus Areas	Allocation (£m)
support activities which aim to protect and enhance the rural landscape and cultural heritage and ensure access is improved for both rural dwellers and visitors.	7.4 Support for investments in the setting-up, improvement or expansion of local basic services for the rural population	Rural Basic Services Scheme (RBS)	6B	15.000
	7.5 Support for investments for public use in recreational infrastructure, tourist information and small scale tourism infrastructure	Rural Tourism Scheme (RT)	6B	10.000
Measure 8: Investments in Forest Area Development and Viability of Forests				16.573
The measure will support a range of actions which increase the woodland cover in Northern Ireland and support the Forest Strategy 2006. The strategy is to increase the area of forest to 12% by the middle of this century, to be led largely by the private sector.	8.1 Support for afforestation/ creation of woodland establishment cost and maintenance/ income foregone premium per ha	Woodland Expansion Scheme (WE)	4A, 4B, 4C	5.429
		Forest Expansion Scheme (FE)	5E	2.824
		Forestry Schemes (historical)	5E	7.620
	8.3 Support for prevention and restoration of damage to forests from forest fires and natural disasters and catastrophic events	Forest Protection Scheme (FP)	4A, 4B, 4C	0.070
	8.5 Support for investments improving the resilience and environmental value as well as the mitigation potential of forest ecosystems	Woodland Investment Grant (WIG)	4A, 4B, 4C	0.630
Measure 10: Agri-Environment Climate				157.886
This measure will build upon the investment in agri-environment schemes since 1992. The measure will support a range of actions	10.1 Payment for agri-environment climate commitments	Environmental Farming Scheme (EF)	4A, 4B, 4C	95.278
		Land Management Programme (LMP)		3.178

Description of Measure	Sub-Measures	Schemes	EU Focus Areas	Allocation (£m)
which will be tailored to the specific needs of the individual farm.		Agri Environment Schemes (historical)		58.930
	10.2 Support for the conservation and sustainable use and development of genetic resources in agriculture	Support for indigenous Irish Moiled Cattle (IMC)	4C	0.500
Measure 13: Payments to Areas Facing Natural or Other Specific Constraints				65.000
A compensation measure to support those who farm in naturally disadvantaged areas (almost 70% of all farms in NI) has been in place since the 1970's.	13.2 Compensation payment for other areas affected by specific constraints	Less Favoured Areas (2015) Areas of Natural Constraint (2016 and 2017) (LFA/ANC)	4A, 4B, 4C	65.000
Measure 16: Cooperation				4.926
Providing support for co-operation will provide new opportunities to bring potential beneficiaries together to overcome fragmentation and to maximise the benefits from the support.	16.1 (and 16.2) Support for establishment of operational groups of the EIP for agricultural productivity and sustainability	Agri-food and Forestry Innovation Scheme (AfFI)	2A	0.770
	16.3 (and 16.4) Co-operation among small operators in organising joint work processes and sharing facilities and resources, and for developing/marketing tourism	Agri-food Cooperation Scheme (AfC)	3A	1.543
	16.5 Support for joint action undertaken with a view to mitigating or adapting to climate change / support for joint approaches to environmental projects and ongoing environmental practices	Agri-environment Climate Cooperation Scheme (AeCC)	4A, 4B, 4C	1.000

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Description of Measure	Sub-Measures	Schemes	EU Focus Areas	Allocation (£m)
	16.8 Support for drawing up of forest management plans or equivalent instruments	Forestry Cooperation Scheme (FCoop)	5E	0.070
	16.9 Others	General Cooperation (GC)	2A, 3A	1.543
Measure 19: Support from CSF Funds for Local Development (CLLD)				18.000
This aims to improve the quality of life and diversify the economy in rural areas through the implementation of a locally developed Local Rural Development Strategy.	19.1 Preparatory support 19.2 Support for implementation of operations under the community-led local development strategy 19.3 Preparation and implementation of cooperation activities of the local action group 19.4 Support for running costs and animation	All island co-operation scheme LEADER administration (CLLD)	6B	18.000
Technical Assistance				37.296

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1.5 Characterisation of the NIRDP Area

1.5.1 Northern Ireland is one of four administrative regions of the UK. It is a predominantly rural region, with 80% of the landmass in agricultural and forestry use. Almost two fifths of the urban population live within the Belfast Metropolitan Area with another sizeable concentration of population around Derry/Londonderry. The region has distinctive cultural heritage and retains strong rural dimensions through the importance of agriculture, tourism and their interactions with the landscape.

1.5.2 The Nomenclature of Territorial Units for Statistics (NUTS) is a geocode2 standard for referencing the subdivisions of member states of the European Union. The NUTS standard is instrumental in delivering the European Union's Structural Funds; a hierarchy of three levels – NUTS 1, 2 and 3 – is established by Eurostat. Northern Ireland itself is classed as both a NUTS 1 and 2 region. Thereafter it is divided into the following five NUTS 3 regions: Belfast (UKN01), Outer Belfast (UKN02), East of Northern Ireland (UKN03), North of Northern Ireland (UKN04) and West and South of Northern Ireland (UKN05).

1.5.3 The geographic area covered by the NIRDP comprises the whole of Northern Ireland. The five NUTS 3 regions can be seen below.

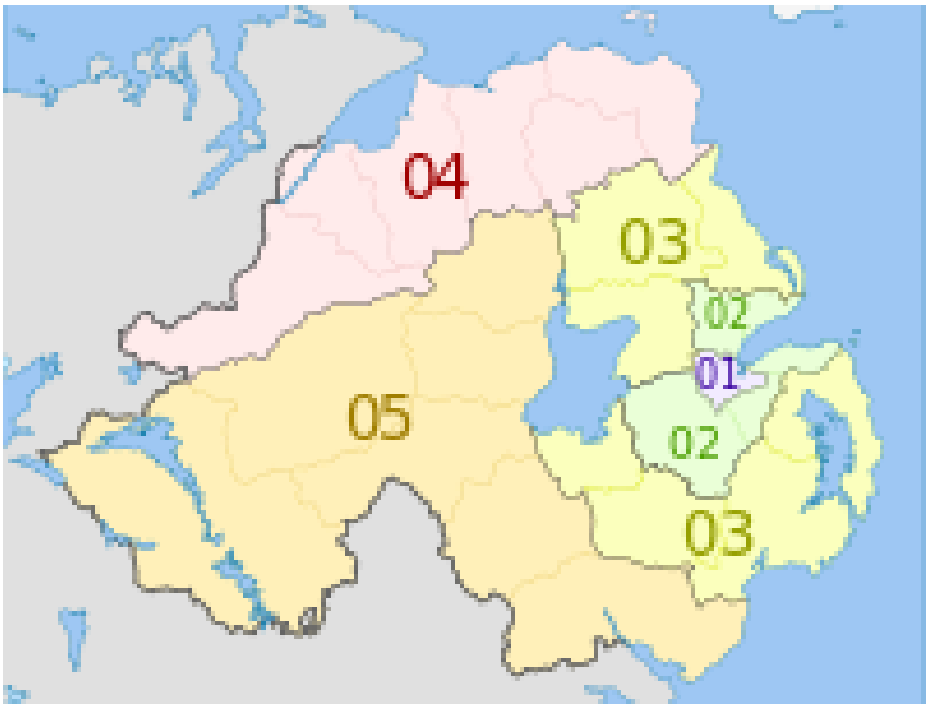

Figure 1.1: Geographic Coverage of the NIRDP

[2] Geocoding is the process of finding geographic coordinates (often expressed as latitude and longitude) that can be mapped in GIS systems from other geographic data such as postal addresses.

1.5.4 Table 1.2 provides statistics on the area and population of the NUTS 3 regions included in the NIRDP as well as for Northern Ireland as a whole.

Table 1.2: Area and Population of the NIRDP

Region	Area (km2)	Population (2011 MYE)	Population Density (people/km2)
Belfast (UKN01)	110	267,551	2,432
Outer Belfast (UKN02)	846	389,959	461
East of NI (UKN03)	3,422	442,472	129
North of NI (UKN04)	3,220	288,469	90
West and South of NI (UKN05)	6,552	418,422	64
Northern Ireland	14,150	1,806,873	128

1.5.5 There are a number of nature conservation, landscape and cultural heritage designations in Northern Ireland. These are designated as either statutory (protected by law) or non-statutory (a material planning consideration), and can be of international, national or local importance. Those of statutory / national importance are listed in Table 1.3 (see Section 3.3 for more detail).

Table 1.3: Designated Sites in Northern Ireland

Statutory / Nationally Designated Sites	Number	Area (ha)
Special Protection Areas (SPA)	16	114,052
Special Areas of Conservation (SAC)	54 (+3 not yet designated)	85,903
Ramsar sites	21	88,258
Marine Conservation Zone	1	16,500
Areas of Special Scientific Interest (ASSI)	360	104,414
National Nature Reserves (NNR)	8	5,403
Local Nature Reserves (LNR)	25	822
Sites of Local Nature Conservation Interest (SLNCI)	209	n/a
Scheduled Monuments	1,901	n/a

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Monuments in State Care	190	n/a
Listed Buildings	8,497	n/a
Historic Parks, Gardens and Demesnes	248	21,014
Conservation Areas	60	n/a
Areas of Townscape Character and Areas of Village Character	100 (+109 proposed)	n/a
World Heritage Sites (WHS)	1	236
Areas of Outstanding Natural Beauty (AONB)	8	341,180
Country Parks	7	n/a

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2 SEA Framework and Assessment Methodology

2.1 The SEA Process

2.1.1 The SEA Guide produced by ODPM (now DCLG), the Welsh Assembly Government and DOE in 2005, in common with other SEA guidance documents, sets out a five stage process for carrying out SEA. These stages are summarised in Table 2.1 below.

Table 2.1: Stages in the SEA Process

Stage	Tasks
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	A1: Identifying other relevant plans, programmes and environmental protection objectives
	A2: Collecting baseline information
	A3: Identifying environmental problems
	A4: Developing SEA objectives
	A5: Consulting on the scope of SEA
Stage B: Developing and refining alternatives and assessing effects	B1: Testing the plan or programme objectives against the SEA objectives
	B2: Developing strategic alternatives
	B3: Predicting the effects of the plan or programme, including alternatives
	B4: Evaluating the effects of the plan or programme, including alternatives
	B5: Mitigating adverse effects
	B6: Proposing measures to monitor the environmental effects of plan or programme implementation
Stage C: Preparing the Environmental Report	C1: Preparing the Environmental Report
Stage D: Consulting on the draft plan or programme and the Environmental Report	D1: Consulting the public and Consultation Bodies on the draft plan or programme and the Environmental Report
	D2: Assessing significant changes
	D3: Making decisions and providing information
	E1: Developing aims and methods for monitoring

Stage E: Monitoring the significant effects of implementing the plan or programme on the environment	E2: Responding to adverse effects

2.1.2 This Final Environmental Report is the main output of Stage D of the SEA process presented above, incorporating Stages B and C. Chapter 9 discusses in more detail the subsequent stages and outputs of the SEA process.

2.2 Sustainability Topics and SEA Objectives

2.2.1 The baseline data, key environmental issues and SEA Objectives have been presented through a series of sustainability topics derived from Annex I(f) of the SEA Directive, namely: biodiversity, flora and fauna; population; human health; soil; water; air; climatic factors; material assets; cultural heritage (including architectural and archaeological heritage); landscape; and the inter-relationship between these.

2.2.2 The topics considered in the SEA will be in accordance with these requirements, updated to align more closely with the requirements of the NIRDP, and expanded for clarity (see Table 2.2 below). In order to address recently highlighted concerns on the effects that human activities have had on the world's ecosystems, and on the public benefits that ecosystems provide, we have included an additional sustainability topic as part of our ecosystems approach to this SEA.

2.2.3 The purpose of the SEA Objectives is to ensure that the assessment process is transparent and robust and that the NIRDP considers and addresses potential environmental effects. SEA Objectives (including more detailed sub-objectives) have been set for each of the eleven sustainability topics.

Table 2.2: SEA Objectives

SEA Objective	Sub-objective (Will the NIRDP…?)
1. Ecology and Nature Conservation – Protect, enhance and manage biodiversity assets and ecosystems	a. Maintain and enhance internationally and nationally designated sites b. Maintain and enhance locally designated sites c. Maintain and enhance the amount, variety and quality of ecosystems d. Maintain and enhance priority habitats and species e. Benefit protected species
2. Socio-Economics – Reduce	a. Improve accessibility to education, employment, housing and community facilities/services

deprivation and improve social cohesion of the community	b. Reduce deprivation, inequality and social exclusion c. Improve crime rates and road safety d. Help achieve a balanced population in terms of size, density and structure
3. Health and Quality of Life – Improve health and quality of life	a. Improve long-term health and wellbeing b. Encourage walking, cycling and other physical activity c. Reduce health deprivation d. Minimise the number of people and species exposed to and levels of noise and vibration pollution
4. Soil and Land Use – Protect and enhance soil quality	a. Safeguard and improve the highest quality soil and agricultural land b. Reduce soil pollution and degradation c. Encourage local production of food and fuel d. Encourage use of previously developed land e. Remediate contaminated land
5. Water – Protect, enhance and manage water resources and flood risk	a. Protect water resources from over-abstraction b. Protect water resources from pollution c. Improve the quality of surface water, groundwater and the sea d. Minimise exposure to flood risk
6. Air Quality – Reduce air pollution and ensure continued improvements to air quality	a. Improve air quality b. Minimise nitrogen deposition on designated sites and priority habitats c. Reduce the need to travel d. Encourage use of sustainable transport
7. Climate Change – Minimise contribution to climate change and adapt to its predicted effects	a. Improve energy conservation and efficiency b. Encourage use of renewable energy c. Minimise emissions from transport, industry and agriculture d. Encourage land management that protects and captures carbon e. Improve resilience of habitats and the water environment to climate change impacts e. Minimise and adapt to flood risk, storms and changing rainfall patterns f. Minimise and adapt to varying / more extreme temperatures

8. Material Assets – Conserve natural resources and reduce waste production	a. Safeguard natural resources (including minerals) and minimise unsustainable use b. Increase recycling rates and re-use of materials c. Minimise production of waste d. Improve waste management in terms of its financial costs and environmental and health impacts
9. Cultural Heritage – Protect, enhance and manage archaeological and cultural heritage	a. Preserve and enhance designated and non-designated built heritage b. Preserve and enhance designated and non-designated archaeological sites and areas c. Preserve and enhance the settings of archaeological and architectural assets d. Encourage urban renewal and improve the quality and character of the townscape / villagescape
10. Landscape and Seascape – Protect, enhance and manage the character and quality of the landscape	a. Maintain and enhance the quality and character of landscape, seascape and coastal areas b. Maintain and enhance designated sites c. Create, maintain and enhance public open space and green infrastructure assets d. Improve visual aesthetics e. Minimise light pollution and light spill
11. Green Infrastructure and Ecosystem Services	a. Preserve and enhance the ability of an area to provide ecosystem services b. Encourage multifunctionality of greenspace to provide numerous ecosystem services simultaneously c. Encourage biophysical changes such as restoration of degraded land and enhanced connectivity of habitats and greenspace d. Strengthen positive natural connections and interactions between different areas and regions e. Encourage cultural and outdoor recreational tourism that is landscape and nature based f. Improve knowledge and understanding of the environment

2.3 Assessment Methodology

2.3.1 This stage of the SEA process involves the identification and evaluation of the likely significant effects on the environment of implementing the NIRDP and its reasonable alternatives. This follows a matrix approach and has been carried out in several stages

to include high level and detailed matrix assessments, and a descriptive cumulative effects assessment.

High Level Matrix Assessment

2.3.2 The first step of the assessment process, the high level assessment, is used to identify the likely adverse, beneficial, neutral and uncertain effects of the NIRDP on the environment. Presented in matrix format, the assessment ascertains how well each of the schemes meet each of the SEA Objectives. A descriptive summary of the likely effects is provided alongside the matrix.

2.3.3 The high level matrix assessment is not a conclusive tool or model; its purpose is to identify those schemes for which uncertainties or potential adverse effects may arise. These particular schemes can then undergo further scrutiny at the detailed matrix assessment stage.

2.3.4 The key used in the high level matrices is as follows:

Key for Likely Effects	
++	Likely strong beneficial effect
+	Likely beneficial effect
0	Neutral / no effect
-	Likely adverse effect
- -	Likely strong adverse effect
+/-	Uncertain effect

Detailed Matrix Assessment

2.3.5 The second step of the assessment process is used to scrutinise the potential adverse or uncertain effects that have been identified by the high level assessment. Each scheme identified as potentially having such effects has been analysed against each of the SEA Objectives in more detail. In order to determine the likely significance of effects, this process addresses the range of criteria identified in Annex II of the SEA Directive (reproduced below).

Characteristics of the effects and of the area likely to be affected, having regard, in particular, to

- the probability, duration, frequency and reversibility of the effects,
- the cumulative nature of the effects,
- the transboundary nature of the effects,
- the risks to human health or the environment (e.g. due to accidents),

- the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected),
- the value and vulnerability of the area likely to be affected due to:
  - *special natural characteristics or cultural heritage,*
  - *exceeded environmental quality standards or limit values,*
  - *intensive land-use,*
- the effects on areas or landscapes which have a recognised national, Community or international protection status.

2.3.6 The detailed SEA matrices include consideration of the duration, frequency, permanence and geographic extent of effects (including transboundary effects) which feed into the consideration of magnitude (i.e. the degree of change that the proposed scheme would have on the environment). This is then correlated with the value and vulnerability of the receiving environment, which includes consideration of the protected status of the area. Table 2.3 below shows how significance of effect is determined.

Table 2.3: Significance of Effects Matrix

		MAGNITUDE OF CHANGE			
		High	Medium	Low	Negligible
VALUE / VULNERABILITY	High	Major	Major/ Moderate	Moderate	Moderate/ Minor
	Medium	Major/ Moderate	Moderate	Moderate/ Minor	Minor
	Low	Moderate	Moderate/ Minor	Minor	Minor/ Negligible
	Negligible	Moderate/ Minor	Minor	Minor/ Negligible	Negligible

2.3.7 The significance of effect can be either adverse or beneficial. The key used in the detailed matrices is therefore as follows:

Key for Significance of Effect
Major or Major/Moderate beneficial effect
Moderate or Moderate/Minor beneficial effect
Minor or Minor/Negligible beneficial effect
Negligible beneficial/adverse effect or neutral effect
Minor or Minor/Negligible adverse effect

	Moderate or Moderate/Minor adverse effect
	Major or Major/Moderate adverse effect
	Uncertain beneficial/adverse effect

2.3.8 A descriptive summary of the significance of likely effects for each SEA Objective and an overall verdict on the priority scheme assessed is provided alongside each detailed matrix.

Cumulative Effects Assessment

2.3.9 The SEA Directive (in Annex I) also requires identification and evaluation of likely secondary, cumulative and synergistic effects of the NIRDP. Cumulative effects are best considered by looking at the NIRDP as a whole, as the insignificant effects of schemes under possibly different priorities may combine with one another to create a significant effect. Synergistic effects go beyond this, producing a total effect that is greater than the sum of the individual effects. Secondary effects are those that are not a direct result of the NIRDP, but where, over time the original effects lead to additional impacts. These terms are not mutually exclusive, and often the term 'cumulative effects' is taken to include secondary and synergistic effects.

2.3.10 In order to ensure that cumulative effects are considered throughout the SEA and NIRDP preparation process, some consideration has be given through the SEA Objective 'Green Infrastructure and Ecosystem Services', which is a broad topic that looks at the inter-relationship between all of the other sustainability topics. Such effects have also been considered through the review of other plans and programmes carried out during the scoping process.

2.3.11 The main purpose of the cumulative effects assessment is to report on the identified significant cumulative effects in a transparent and accessible way. This is done in descriptive format, with particular focus on analysis of effects on selected environmental resources; past impacts and future impacts relating to these resources; cumulative impact pathways (including cause-effect relationships); uncertainties and assumptions; and in-combination effects (of NIRDP schemes identified as having potentially adverse effects in the high level or detailed matrix assessments) with the plans and programmes identified in Section 3.2.

2.4 Uncertainties, Data Gaps and Technical Deficiencies

2.4.1 It is recognised that with a programme of this nature, the precise environmental impacts will often depend on the specific projects funded under the NIRDP. These will emerge over the duration of the Programme, and hence at this stage full details, particularly regarding project locations, are not available. For schemes thought likely to have uncertain or adverse effects, a more detailed project level assessment such as Environmental Impact Assessment (EIA) screening and/or Habitats Regulations

Assessment (HRA) screening may be required depending on the size and location of the developments and the sensitivity of the surrounding areas.

2.5 Habitats Regulations Assessment

2.5.1 The process of HRA was introduced under European Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), transposed into NI domestic law through The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, as amended. These Regulations also transpose Council Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the Birds Directive).

2.5.2 The obligation to undertake HRA derives specifically from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. Each step in the four stage assessment process precedes and provides a basis for other steps. The results at each stage must be documented and recorded carefully so there is full traceability and transparency of the decisions made. Brief descriptions of the four stages are set out below:

Stage 1 – HRA Screening

2.5.3 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 Natura 2000 site in view of its conservation objectives.

Stage 2 - Appropriate Assessment

2.5.4 If the effects identified at Stage 1 are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2. Any possible implications for the affected site(s) in view of the site(s)' conservation objectives will be identified and characterised and mitigation measures set out to avoid, reduce or offset any negative effects. If the final assessment following the inclusion of mitigation is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 3, or the plan or project should be abandoned.

Stage 3 - Alternative Solutions

2.5.5 Stage 3 examines any alternative solutions or options that could enable the plan to proceed without adverse effects on the integrity of a Natura 2000 site. Demonstrating

that no viable alternative solutions exist, or that all reasonable alternatives have been considered and assessed, and that the least damaging option is the one that has been selected, is necessary to progress to Stage 4, otherwise the plan or project should be abandoned.

Stage 4 - IROPI

2.5.6 Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI, i.e. relating to human health or public safety reasons) for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. Compensatory measures are required in this case.

2.5.7 The purpose of HRA is to protect sites designated as Special Areas of Conservation (SACs; under the Habitats Directive) and Special Protection Areas (SPAs; under the Birds Directive) – collectively known as Natura 2000 sites – including maintaining the integrity of the European important species and habitats for which they were designated. HRA is not a prohibition on new development or activities but involves a case-by-case examination of the implications for each Natura 2000 site, its qualifying features and its conservation objectives. In general terms, implicit in Article 6(3) is an obligation to put concern for potential effects on Natura 2000 sites at the forefront of every decision made in relation to plans and projects at all stages, including decisions to provide funding or other support.

2.5.8 An HRA of the NIRDP was not commissioned by DARD and has not been carried out at strategic level. However Section 6.2 of this Environmental Report sets out the need for HRA Screening to be undertaken by DARD at project level, i.e. when applications are being made for funding under the NIRDP Measures and Schemes. Project level HRA is thought to be particularly effective at determining and mitigating potential impacts on Natura 2000 sites as the scale of assessment allows specific Natura 2000 sites that could be affected to be identified.

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3 Findings of the Scoping and Consultation Processes

3.1 Scoping Consultation Responses

3.1.1 A Scoping Report outlining the proposed approach and key issues to be considered in the SEA was prepared and submitted to DARD on 14th May 2013. In accordance with the requirements of the SEA Directive and NI SEA Regulations, this was then passed for comment to the Northern Ireland Environment Agency (NIEA) on behalf of the Department of Environment (DoE), the statutory consultee on SEA in NI. Due to the possibility of transboundary effects in the Republic of Ireland, the Scoping Report was also issued to statutory consultees across the border, including the Environment Protection Agency, the Department of the Environment, Heritage and Local Government, and the Department for Communications, Energy and Natural Resources

3.1.2 In accordance with the SEA Regulations, NIEA is required to provide a formal consultation response within five weeks of receipt of the Scoping Report, and this was received on 18th June 2013. Comments were also received from other interested parties, including members of the Rural Development Programme Monitoring Committee Environment Sub-Group3, both before and during the consultation period. Consultation responses on the Scoping Report are reproduced in Appendix A, along with a comment on how they have been accounted for in the preparation of this Environmental Report.

3.2 Other Plans, Programmes and Environmental Protection Objectives

3.2.1 Assessing the relationship of the NIRDP with the existing International, European and National framework of plans and programmes and identifying gaps and conflicts is a key part of the SEA process. This includes the consideration of statutory and non-statutory environmental protection objectives.

3.2.2 The scoping process involved an initial review of plans and programmes; in the majority of cases the NIRDP is expected either to support these through similar objectives or to have no relationship with them.

3.2.3 Plans and programmes containing environmental protection objectives which are relevant to the NIRDP are listed below in Table 3.1. An indication is given as to whether the plan or programme directly supports (or is supported by), indirectly supports, or has potential conflicts with the NIRDP. Further information on how these objectives will be supported through the Programme is given in Appendix B.

[3] A meeting was held between DARD, ADAS and the Environment Sub-Group on 2nd May 2013 in order to discuss the SEA process and current issues related to NI's environment and agricultural sector. These comments have been included in Appendix A.

Table 3.1: Relationship with other plans and programmes

Plan or Programme directly supports / is supported by the NIRDP	
DARD (2013) Greenhouse Gas Reduction Strategy and Action Plan	NIEA (2012) Strategic Priorities 2012-2022
DARD (2011) Nitrates Action Programme 2011-2014	NIEA (2009) Neagh Bann International River Basin Management Plan
DARD (2010) Renewable Energy Action Plan	NIEA (2009) North Eastern River Basin Management Plan
DARD (2006) Northern Ireland Forestry – A Strategy for Sustainability and Growth	NIEA (2009) North Western International River Basin Management Plan
DETI (2012) Sustainable Energy Action Plan 2012-2015 and beyond	Northern Ireland Executive (2010) Sustainable Development Strategy
DETI (2011) Draft Onshore Renewable Electricity Action Plan	Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland
DOE (2013) Prioritised Action Framework for Natura 2000	DCENR (2012) Strategy for Renewable Energy: 2012-2020
DOE (2012) Northern Ireland Greenhouse Gas Emissions Reduction Action Plan	EC (2010) Europe 2020 Economic Strategy
DOE (2006) Water Framework Directive Monitoring Plans	EC (2009) Sustainable Development Strategy
DOE (2002) Biodiversity Strategy	
Plan or Programme *in*directly supports / is supported by the NIRDP	
DARD (2012) Rural White Paper Action Plan	HMSO (2005) Sustainable Development Strategy
DARD (2012) Strategic Plan 2012-2020	DAFM (2012) Our Ocean Wealth: An Integrated Marine Plan for Ireland
DARD (2012) Tackling Rural Poverty and Social Isolation	DCENR (2010) Draft Offshore Renewable Energy Development Plan (OREDP) for Ireland
DARD (2007) Flood Mapping Strategy for Northern Ireland	EPA (2009) Shannon International River Basin Management Plan

DOE (2013) Draft Strategy for Marine Protected Areas in the Northern Ireland Inshore Region	NPWS (2011) Actions for Biodiversity 2011-2016 - Ireland's National Biodiversity Action Plan
DOE (2013) PPS2: Natural Heritage	EC (2013) Action Plan for a Maritime Strategy in the Atlantic Area
DOE (2010) PPS21: Sustainable Development in the Countryside	EC (2011) Biodiversity Strategy
Plan or Programme has potential conflicts with the NIRDP	
Defra and DOE (2012) A Climate Change Risk Assessment for Northern Ireland	EC (2013) Adaptation Strategy
DOE (2006) PPS15 Planning and Flood Risk	EC (2007) EU Floods Directive
Forestry Commission (2011) The UK Forestry Standard: The governments' approach to sustainable forest management	

3.2.4 Plans and programmes (without environmental protection objectives) identified through the scoping process as potentially likely to have adverse in-combination effects with the NIRDP (which are assessed in Section 5.3 of this report where relevant), are:

- Agri-Food Strategy Board (2013) Going for Growth Strategic Action Plan;
- DETI (2010) A Draft Tourism Strategy for Northern Ireland;
- DRD (2010) Regional Development Strategy 2035;
- Northern Ireland Executive (2012) Northern Ireland Economic Strategy;
- DAFM (2014) Rural Development Programme 2014-2020;
- DAFM (2010) Food Harvest 2020; and
- Tourism Ireland (2011) Corporate Plan 2011-2013.

3.3 Summary of Baseline Data

3.3.1 Schedule 2 of the Northern Ireland SEA Regulations specifies that the Environmental Report must contain the following information in respect of baseline conditions:

"2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.

3. The environmental characteristics of areas likely to be significantly affected.

4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive."

3.3.2 Analysis of baseline information has been carried out to provide an evidence base for current and likely future environmental conditions without the Programme. (It must be noted that DARD does not have lead responsibility for environmental issues, and some lie entirely outwith the Department's remit). Key environmental and sustainability issues for Northern Ireland have also been identified. Relevant information has been obtained from the Department for Environment (DoE), Northern Ireland Environment Agency (NIEA), Environment and Heritage Service (EHS), and Northern Ireland Statistics and Research Agency (NISRA) websites. Information has also been drawn from the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis carried out by DARD and a range of other documents, including the 2013 NI Environmental Statistics Report.

3.3.3 A detailed baseline description of the current state of the environment in Northern Ireland, in respect of each of the sustainability topics, is provided in the Scoping Report and consultation draft Environmental Report (dated May 2013 and July 2013 respectively). A summary of this information is provided in Table 3.2 below; maps are provided in Appendix C.

Table 3.2: Summary of the Current State of the NI Environment

Strengths and Opportunities	Weaknesses and Threats
Ecology and Nature Conservation	
• Large area of land of international and national nature conservation value • Good representation of peatland, grassland and hedgerows. • Much agricultural land is high nature value • Agri-environment schemes have helped increase populations of farmland birds and improve habitat condition	• Continued loss and degradation of semi-natural habitat by agricultural conversion and building and intensification • Intermediate-value habitats less well protected and thus more vulnerable • Significant proportion of habitats and species in unfavourable condition • Significant decline in bee and wetland bird species • Lack of forward-thinking management for protected sites • Increasing trend of problematic pests, diseases and invasive species • Substantial degradation of peatland • Lowest forest cover in UK and Europe • Increasing risk of wildfires as climate warms

Strengths and Opportunities	Weaknesses and Threats
	• Nitrogen deposition caused by agricultural ammonia emissions are threatening sensitive habitats • Deterioration in marine environment affecting rock and sediments, fish stocks, seabirds and bottom dwelling marine life
Socio-Economics	
• Agri-food is a large, successful and growing industry • Strong businesses and communities in rural areas • Good provision of telecommunications but opportunity to improve broadband speed • Opportunity to boost the 'blue economy' through offshore renewable energy and maritime industries • Increased investment for economic development	• Small wood industry poorly developed compared to UK as perceived as unviable • Loss of honey/bumblebees has implications for food production industry as reliant on pollination • One of UK's most economically deprived regions with high levels of poverty, economic inactivity and (long term) unemployment • Lack of access to and provision of services, facilities and public transport in rural areas affecting vulnerable groups such as elderly, young and low income • Lowest level of formal education of all UK regions and lack of environmental knowledge • Northern Ireland is still suffering from bombings, shootings, punishment attacks, sectarian incidents, terrorist attacks and the threat of dissidence
Health and Quality of Life	
• Good staffing levels for hospital and community health services • Surgeries better equipped in terms of IT than in rest of UK • Less difference in life expectancy between the most and least deprived areas of NI compared to the rest of the UK	• Higher infant mortality than UK and much of Europe • Higher rates of obesity than most of Europe, though lower than rest of UK • Low levels of physical activity (through better than UK average) and woodlands in particular under-used
Soil and Land Use	
• Significant natural resources including peaty soils, grassland and biomass	• Loss of soil organic matter and fertility due to intensification of agriculture

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Strengths and Opportunities	Weaknesses and Threats
• Good quality soil and less erosion compared to UK • Good proportion of land under agri-environment schemes • Very geologically diverse	• Woodlands typically unmanaged, inaccessible, small and fragmented with limited new planting • Land under agri-environment schemes is fragmented • Economic viability of many farms in Northern Ireland dependent on Less favoured Areas funding
Water	
• Chemical quality of rivers has improved in last decade • Good quality of marine, drinking and groundwater • Farm Waste Management Plans and Nitrates Action Programme improving quality of agricultural run-off • Intact peatlands have good water storage potential	• Few rivers classed as good ecological quality with no improvement in recent years – unlikely to meet targets of EU Water Framework Directive • Historically poor manure management and fertiliser use has polluted many lakes and rivers, though improving due to Nitrates Action Programme • Some concerns regarding quality of bathing and shellfish growing waters in Irish Sea • Predicted reductions in summer rainfall may reduce river flows, affecting water supply and quality
Air Quality	
• Standards for sulphur dioxide, lead and particulate matter (dust) being met • Ammonia emissions reduced slightly in past decade	• Ammonia emissions from agriculture affecting sensitive habitats (eutrophication) • Though better than rest of UK, nitrogen dioxide levels exceeded standards at three monitoring sites • Burning of coal due to poor availability of natural gas causing exceedance of hydrocarbon (PAH) standards • 12 Local Authorities have declared Air Quality Management Areas for nitrogen dioxide or particulate matter, mainly due to road transport emissions • High dependency on cars in rural areas
Climate Change	

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Strengths and Opportunities	Weaknesses and Threats
• Carbon dioxide and total greenhouse gas emissions have fallen by 16% and 17.5% respectively since 1990 • Good opportunities to develop low carbon technology • Good natural resource availability for renewable energy production • 14.3% of electricity produced from renewable energy • Peatland and grassland act as substantial carbon stores • Grass, wheat and forestry productivity expected to rise as climate warms	• Greenhouse gas emissions falling more slowly than rest of UK (29% reduction since 1990) • Greenhouse gas emissions have increased much more than in rest of UK from transport (25%) and land use change (83%) since 1990 • Agriculture and infrastructure (e.g. transport, water, waste and energy) prone to disruption from increasing intensity/frequency of floods, drought and snow • Lack of understanding of climate change issues at grass roots levels • Seas around Northern Ireland are warming more quickly than around the rest of the UK • Intensively farmed landscapes restrict the ability of people and wildlife to adapt to climate change
Material Assets	
• Significant natural resources including water, carbon rich soils, high quality grassland, and renewable energy • Substantial mineral resources • Levels of waste produced and sent to landfill are falling • Recycling targets being met	• Recycling rates lower than in rest of UK, particularly for electronics, textiles, plastics and food
Cultural Heritage	
• Evidence of human activity for 9,000 years and rich heritage of archaeological sites, monuments and buildings • 1,400 farms protecting ancient monuments through sensitive farming • Heritage assets comparatively well preserved compared to more developed/urban nations	• Lack of coordination across rural tourism sector, with opportunities for sharing and promoting cultural heritage being missed • Cultural heritage may be at risk from coastal flooding and erosion related to climate change • Other pressures include development, changing land use, agricultural practices, vandalism/theft, renewable energy, funding and resources, visitors, skills and awareness, materials and maintenance

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Strengths and Opportunities	Weaknesses and Threats
Landscape	
• Giant's Causeway and Causeway Coast is a World Heritage Site • Substantial land area designated as Areas of Outstanding Natural Beauty • Major rural tourism attractions include the Giant's Causeway, the Mourne Mountains, the Glens of Antrim, and the Antrim (Causeway) coast	• Neither the World Heritage Site nor the Areas of Outstanding Natural Beauty are protected by law in Northern Ireland, and have not been adequately protected against inappropriate development • Landscapes have been degraded by rural development (particularly single dwellings and their associated infrastructure), wind turbines and agricultural intensification
Green Infrastructure and Ecosystem Services	
• Substantial coastline provides critical natural defences against storms, floods and erosion as well as productive and biologically diverse ecosystems • Substantial grassland and peatland are excellent carbon stores • Extensive hedgerow networks provide connectivity across the landscape whilst helping to minimise soil erosion • Social use of woodland is increasing • Ecological, carbon and greenhouse gas footprints are lower than the UK	• No mechanism for co-operation of landowners or advice on where to direct funding regarding the creation of multi-functional networks of green infrastructure • Lack of environmental knowledge transfer and integration of environmental skills amongst agriculture and forestry sectors and rural communities • Environmental management can sometimes be considered a separate rather than integral part of production systems, whilst integration of environmental issues into all sectors and cross-sector support are lacking • Ecosystem services are not fully recognised or understood by Northern Ireland's politicians or communities • The economic importance of Northern Ireland's tourism sector is the lowest of all the UK regions

3.4 Key Issues and Likely Future Trends

3.4.1 The NI Chapter of the 2011 UK National Ecosystem Assessment revealed the following key findings and recommendations of relevance to the current state of the environment and decision-making at a national level:

- The ecosystem services approach should be integrated into all decision making, including a fully integrated cross-departmental and inter-sectoral approach.

- The role of ecosystem services in mitigating all human impacts, including biodiversity conservation, carbon storage and climate change adaptation, must be considered in all land and sea management. Encouraging and facilitating resilience to change is critical.
- An integrated network of high value land and marine sites is core to maximising service delivery. Effective ecosystem management requires consideration at biologically appropriate scales such as river catchment, island of Ireland or North West Atlantic.

3.4.2 From analysis of the baseline data and discussions with environmental stakeholders, the key sustainability issues facing NI, along with likely future trends if the NIRDP is not implemented (though many of these are outwith DARD's remit), are thought to be:

- Unprotected habitats that provide essential ecosystem services are vulnerable to land use change, disturbance and pollution, whilst in lowland areas there is an ongoing trend of habitat loss and fragmentation due to rural development and agricultural intensification.
- There has been a lack of improvement in the condition of habitat and species features at protected sites classed as unfavourable.
- Rural biodiversity is being threatened by a move towards more intensive food production, whilst cases of biological pests, pesticides, diseases and invasive species affecting crops and native species are becoming more numerous (bee species have been particularly affected in recent years, resulting in the recent EU-wide ban on the use of pesticides containing neonicotinoid).
- NI has the lowest rates of economic activity and employment among the UK's 12 regions, and is one of the most economically deprived regions.
- Poor access to services and public transport is affecting rural dwellers throughout NI, particularly vulnerable and low income groups such as the elderly, people with disabilities and children and young people.
- Though obesity rates have levelled off in recent years, they are significantly higher than average European rates, putting pressure on the health service and reducing productivity.
- NI has the lowest woodland cover in Europe, declining rates of planting and an undeveloped (perceived as unviable) wood industry. Woodlands are typically unmanaged, small and fragmented, whilst access to woodland for exercise, mental health and educational purposes is poor in NI.
- Agricultural land under environmental stewardship is fragmented.
- Poor nutrient management on farms in the past has contributed to the poor ecological quality of many of NI's rivers, and it is unlikely that WFD targets will be

met despite good rates of compliance with the NAP (72% of NI's river waterbodies must reach 'good' ecological quality by 2015; the rate in 2011 was 23%).

- Agriculture is becoming increasingly affected by extreme weather events caused by climate change, e.g. the late frosts and floods in 2012 caused apple yields to plummet to half their normal levels.
- DARD's SWOT analysis of the NIRDP suggested that there is a lack of understanding of the impacts of climate change issues at grass roots level, with the DOE public perceptions data revealing only 50% of people are concerned about climate change in NI.
- Natural and cultural heritage based tourism is uncoordinated, whilst tourism in NI overall contributes proportionately less to its economy than in the 11 other UK regions.
- There is no coordinated approach to the provision of green infrastructure in NI (particularly where to direct funding).
- There remains a lack of understanding worldwide about the importance of ecosystem services.
- NI is also susceptible to transboundary effects with the Republic of Ireland, particularly in relation to water bodies, biodiversity, landscape and climate for activities taking place in the Border region. Conversely, NI may cause similar transboundary effects in Ireland.

3.5 Consultation on the Draft Environmental Report

3.5.1 The consultation draft version of this Environmental Report was presented for public and statutory consultation during 16th July to 21st October 2013 (the same period as the draft NIRDP 2014-2020 and EQIA documents). As noted at the beginning of this chapter, NIEA acts as the statutory Consultation Body for Northern Ireland. No significant adverse transboundary effects were thought likely, however, the draft Environmental Report was also issued to the relevant Consultation Bodies in the Republic of Ireland.

3.5.2 The purpose of this stage is to give the public and the Consultation Bodies an opportunity to express their opinions on the findings of the SEA, and to use it as a reference point in commenting on the NIRDP. Members of the public likely to participate in SEA consultation are those affected or likely to be affected by, or having an interest in the decision-making, including relevant non-governmental organisations, such as those promoting environmental protection.

3.5.3 In line with the Northern Ireland SEA Regulations, DARD must take account of the Environmental Report and of any opinions which are expressed upon it as it prepares the NIRDP 2014-2020 for adoption. Therefore, comments received during the

consultation process must be considered and, if appropriate, addressed in the final ex ante and NIRDP 2014-2020 documents.

3.5.4 Comments were received from NIEA on 21st October 2013, however no other organisation or member of the public responded to the draft Environmental Report. This final Environmental Report has been modified to reflect the comments received from NIEA; a summary of the comments and how they have been addressed is presented in Appendix D.

4 Consideration of Alternatives

4.1 Alternative Delivery Options

4.1.1 With European funded programmes such as Rural Development Programmes, constraints on what practical alternatives exist are often set by the need to comply with pre-set criteria determined at a European level. This can have the effect of limiting the alternatives that are available to the programme makers. In line with the Europe 2020 strategy, NI must comply with six broad EU-wide priorities for rural development support for 2014-2020.

4.1.2 Consideration of alternatives is a key feature of the SEA process; the SEA Directive requires that the Environmental Report should consider:

'Reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme' and give 'an outline of the reasons for selecting the alternatives dealt with' (Article 5.1 and Annex I (h)).

4.1.3 In practical terms, it refers to possible alternative mechanisms for delivering the NIRDP, and the assessment of the impacts of each of these options against the SEA Objectives. The ODPM guidance on SEA recognises that it is not for the SEA to decide on the options to be considered. Instead this SEA focuses on the alternative delivery options actually considered in the preparation of the NIRDP; these have been identified by DARD, in collaboration with stakeholders and the SEA and ex ante evaluation teams. The SEA has assessed which of the identified options performs the best environmentally.

4.2 Assessment of Alternatives

Do nothing or 'zero' option (Alternative 1)

4.2.1 This possible alternative assumes that the current 2007-2013 Programme will run its course and the new NIRDP 2014-2020 will not be adopted in NI. UK matching funding would also be removed.

Continue with NIRDP 2007-2013 (Alternative 2)

4.2.2 This possible alternative assumes that the NIRDP 2007-2013 will be extended to the period 2014-2020, with the current axes and measures (listed below) continuing.

- EU Axis 1
    a) Vocational Training and Information Actions
    b) Adding Value to Agriculture and Forestry Products Improving Marketing Capability
    c) Modernisation of Agricultural Holdings
    d) Supply Chain Development Programme

- EU Axis 2
    a) Less Favoured Areas Compensatory Allowances
    b) Agri-Environment Programme
    c) First Afforestation
    d) Forest Environments
- EU Axis 3
    a) Diversification into Non-Agricultural Activities
    b) Support for Business Creation and Development
    c) Encouragement of Tourism Activities
    d) Basic Services for the Economy and Rural Population
    e) Village Renewal and Development
    f) Conservation and Upgrading the Rural Heritage

4.2.3 As the EU requirement for 2014-2020 RDPs has changed (under the rural development legislative proposal published in October 2011), certain measures in the 2007-2013 NIRDP may no longer be supported. In some cases, it is not feasible to continue with 2007-2013 measures because they did not perform well enough in NI to justify further funding, whilst others were established due to a need that is no longer there, for example due to changes in the agri-food or farming industry. This option is therefore unrealistic going forward.

Draft proposals as at November 2012 (Alternative 3)

4.2.4 This possible alternative assumes that the new NIRDP will be based upon the following EU Priority support measures, as drafted for discussion with stakeholders on 21st November 2012.

- EU Priority 1
    a) Business Development Groups
    b) Knowledge and Technology Transfer
    c) Study Tours
    d) Mentoring/Putting Learning into Practice
    e) Technology Demonstration Farms
- EU Priority 2
    a) Young Farmers / New Entrants
    b) Farm Business Development

- EU Priority 3
    a) Producer Groups
    b) Logistics and Distribution
    c) Processing and Marketing Grant Scheme
    d) Leaders for Tomorrow Programme
- EU Priority 4
    a) Support for Areas of Natural Constraint
    b) Agri-Environment Programme
- EU Priority 5
    a) Manure Efficiency Technology Scheme
    b) Nutrient Efficiency Scheme
    c) Biomass Processing Challenge Fund
    d) Forest Management
- EU Priority 6
    a) Strategic Rural Economy Growth Scheme
    b) Local Rural Business Support Scheme
    c) Supporting Rural Tourism
    d) Basic Services for Rural Areas
    e) Village Renewal

Draft proposals as at June 2013 (Alternative 4)

4.2.5 Feedback from stakeholders on the November 2012 draft led to changes; e.g. it was felt that the Organic Farming Scheme (within the Agri-Environment Programme) should not continue into the next NIRDP. Various other changes were made during 2013, most notably the proposed scheme on Support for Areas of Natural Constraint was removed due to a lack of certainty over whether this should be funded from Pillar 1 or Pillar 2. This question formed part of the public consultation on the options for Pillar 1. This possible alternative therefore assumes that the new NIRDP will be based upon the following EU Priority schemes, as published for public consultation on 1st July 2013.

- EU Priority 1
    a) European Innovation Partnership (EIP) Operational Groups
    b) Cooperation Groups / Networks / Clusters (other than EIP)

c) Innovation and Technology Evaluation and Demonstration Scheme (ITEDS)

d) Farm Family Key Skills Scheme

e) Farm Exchange Visits

- EU Priority 2

a) Business Development through Knowledge Transfer (BDKT)

b) Business Investment Scheme (BIS)

c) Forestry Competiveness Scheme (FCS)

- EU Priority 3

a) Processing Investment Grant Scheme (PIDGS)

b) Agri-Food Producer Cooperation Scheme (AFPCS)

- EU Priority 4

a) Agri-Environment Scheme (AES)

b) The Woodland Expansion Scheme (WES)

c) Woodland Environment Grant (WEG)

d) Sustainable Forestry Operations Grant (SFOG)

e) Agro-forestry Scheme (AFS)

- EU Priority 5

a) Manure Efficiency Technology Scheme (METS)

b) Nutrient Efficiency Scheme (NES)

c) Capital Support for Renewable Energy Technologies

d) Forestry Plantation Scheme (FPS)

- EU Priority 6

a) Rural Business Development Scheme

b) Rural Business Investment Scheme

c) Rural Tourism Scheme

d) Combating Poverty and Social Isolation (Basic Services) Scheme

e) Village Renewal Scheme

f) All Island Co-operation Scheme

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Draft proposals as at October 2014 (Alternative 5)

4.2.6 This alternative is the one that was provided to ADAS in October 2014, and contains major updates and restructuring compared to the 2012 and 2013 versions. The Measures and Schemes for this alternative are detailed in Section 1.3 of this report.

4.2.7 A high level summary of how well each of these five alternative options performs against the SEA Objectives is provided in the matrix below (Table 4.1).

Table 4.1: Assessment of Alternatives

SEA OBJECTIVES		ALTERNATIVES									
		1		2		3		4		5	
		Do Nothing		Continue with NIRDP 2007-2013		Draft Proposals (November 2012)		Draft Proposals (June 2013)		Draft Proposals (October 2014)	
1	Ecology	-	Decline in biodiversity improvements and environmental conditions as agricultural intensification and general development continues. Pressures on designated areas will increase.	+ / -	Biodiversity gains would continue, including enhancement of species diversity, maintaining semi natural grasslands, emphasis on priority habitats and knowledge transfer. Development could adversely affect habitats and species, however.	+ / -	Biodiversity gains from AES would continue, with particular benefits of Natura 2000 sites, non-protected habitats and woodland creation. Farm diversification and forest expansion could adversely affect habitats and species.	+ / -	As per Alternative 3. Additional benefits from woodland creation (WES/WEG) including contribution to HAPs and SAPs, as well as education and knowledge transfer on environmental sustainability. Farm diversification and forest expansion could adversely affect habitats and species.	+ / -	As per Alternative 4 but with additional benefit of new schemes to provide specialist conservation advice (EAS scheme), restore and manage habitats (AeNpI scheme) and to support the preparation of Natura 2000 Management plans for approximately 20 sites (N2K scheme). Agro-forestry scheme no longer included, however, whilst support for drainage works under the RBI scheme could affect wetland habitats.
2	Socio-Economics	-	Decline in farm numbers will continue and be likely to accelerate. Farms will continue to diversify and it is likely more will leave farming altogether with consequences for employment and communities.	+ +	Support for farm and wider economic diversification, along with tourism linkages will encourage the strengthening of communities.	+ +	Continued support for farm diversification is strengthened with emphasis on education and practical knowledge transfer, as well as improved efficiency.	+ +	Strong emphasis on business support and investment linked to sharing knowledge on competitiveness, efficiency and (environmental) sustainability of new technological advances. Continued benefits for tourism with additional focus on training. Border region in particular to benefit.	+ +	As per Alternative 4 but with additional benefit of clarity of inclusion of support for LFA/ANC. Capital support for renewables has now been withdrawn.
3	Health	0	With less funding for environmental management the natural environment may suffer; combined with intensive pressure for efficiency on farms, employment may also suffer with knock-on effects on health. Service provision will continue to come under pressure.	+	Funding to improve farm efficiency (modernisation), compensate foregone income, for education and employment opportunities should benefit health. General improvements to the environment as a result of the RDP should also have indirect benefits on health.	+	Continued benefits to health from improved education and job opportunities and access to services, but also from improved water, soil and air quality.	+	As per Alternative 3. Additional emphasis on public amenity value of woodlands (WEG) and walking routes (tourism).	+	As per Alternative 4 but with additional benefit of clarity of inclusion of support for LFA/ANC.
4	Soil	-	The rate of growth in organic farming will slow and degradation of peatlands would continue.	+	Minor gains achieved though ESA, CMS, OFS and ELCMS will continue.	+	Continued gains from AES, but additionally through manure nutrient management and associated training (MET/NES).	+ +	As per Alternative 3. Further benefits from woodland creation (WES/WEG) as well as education and knowledge transfer on environmental sustainability.	+ +	As per Alternative 4 but with additional benefit of a scheme that specifically deals with improving the structure, nutrient status and condition of soils (LMP). Agro-forestry scheme no longer included, however.

SEA OBJECTIVES		ALTERNATIVES									
		1		2		3		4		5	
		Do Nothing		Continue with NIRDP 2007-2013		Draft Proposals (November 2012)		Draft Proposals (June 2013)		Draft Proposals (October 2014)	
5	Water	-	Increasing competitiveness of farming may lead to improved management of nutrients to ensure efficiency; however increased concentration of farming in productive areas. Pollution trends are likely to continue or accelerate; WFD targets will not be met.	0	Minor gains achieved through e.g. ELCMS will continue.	+	Continued gains from AES, but additionally through manure nutrient management and associated training (MET/NES).	+	As per Alternative 3. Further benefits from woodland creation (WES/WEG) as well as education and knowledge transfer on environmental sustainability.	+	As per Alternative 4 but with greater reference to improving water management and quality. Agro-forestry scheme no longer included, however, whilst support for drainage works under the RBI scheme could affect wetland habitats.
6	Air	-	Emissions from cars in rural areas may rise.	0	Gaseous emissions from agriculture may continue to reduce.	+	Reduced ammonia pollution from manure nutrient management (MET/NES).	+	As per Alternative 3. Additional benefits from woodland creation (WES/WEG).	+	As per Alternative 4 but with greater reference to reducing ammonia emissions. Agro-forestry scheme no longer included, however.
7	Climate	0	Trends will continue. Less biomass will be planted. Greenhouse gases from agriculture may reduce overall with predicted reductions in stock numbers.	+ / -	Environmental, carbon sequestration and renewable energy gains will continue and will grow as forestry investments become increasingly mature, but tourism and other economic development may cause an increase in transport emissions.	+ / -	Similar impacts as the previous RDP, but additional benefits from energy efficiency drive, knowledge and technology transfer including visits to RE schemes, and biomass.	+	As per Alternative 3 though stronger focus on environmental sustainability. Stronger emphasis on grants for RE and woodland creation (WES/WES & FCS).	+	As per Alternative 4 but with but with greater reference to climate change mitigation and adaptation, e.g. through the new LMP which specifically targets carbon sequestration and extreme weather. However, capital support for renewables has now been withdrawn and sustainable transport is no longer included.
8	Material Assets	0	NI's resources may continue to be under or over used; underinvestment in rural infrastructure.	+	Improvements to rural infrastructure will continue.	+	Improvements to rural infrastructure will continue; processing of biomass will reduce agricultural waste.	+	Improvements to rural infrastructure will continue; additional benefits from manure efficiency and supply chain cooperation making more efficient use of resources/waste.	+	As per Alternative 4; efficiency remains a strong focus of the RDP.
9	Cultural Heritage	-	With pressure for efficiency on farms and less cash for environmental management, cultural assets may suffer.	+ / -	Tourism linkages will help protect cultural heritage. Knowledge of role of cultural assets to food and diversified business will continue. Could be adverse effects from forestry operations.	+ / -	Continued benefits through targeted tourism, AES and village renewal. Could be adverse effects from forestry operations.	+ / -	As per Alternative 3, however woodland creation must consider impacts on heritage. Could be adverse effects from forestry operations.	+ / -	As per Alternative 4 but with additional benefit of specific conservation of small scale built heritage through the RT scheme. AES are developed but limited historic environment focus.

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SEA OBJECTIVES		ALTERNATIVES									
		1		2		3		4		5	
		Do Nothing		Continue with NIRDP 2007-2013		Draft Proposals (November 2012)		Draft Proposals (June 2013)		Draft Proposals (October 2014)	
10	Landscape	-	There will be increasing pressures on the landscape. There is likely to be an increase in rate of decline in linear features and important habitat – landscape interactions.	+	Gains in landscape protection and enhancement will continue and be cumulative as the changes build over time.	+ / -	Increasing rural development is damaging landscapes, however, benefits from landscape enhancement and restoration will continue.	+	As per Alternative 3, however emphasis on improving efficiency of existing developed land. Improvements to public amenity value of woodlands.	+	As per Alternative 4 but with greater reference to the importance of NI's landscapes including restoration of habitats and landscapes and protection of traditional stone walls through the new AeNpI scheme. The risk of adverse effects is also lower with funding for capital investment in renewable energy withdrawn.
11	GI & ES	-	Ecosystem services may decline as unprotected areas are degraded. Existing habitats and landscapes may become increasingly fragmented, with no attempts to enhance multifunctionality.	+	Enhanced environmental sustainability of NI agricultural industry through expansion of the agri-environment programme, LFA support measures, and vocational training for NI farmers and farm families.	+	Continued benefits through environmental education, natural/cultural heritage-based tourism and woodland creation, particularly through AES, but also improved ecosystem performance of rivers from manure/nutrient management.	+ +	As per Alternative 3 though training now specifically targeted at farmers and their families.	+ +	As per Alternative 4 but with additional benefit of improving climate adaptation, soil and water quality through the new LMP and also the new AeCC scheme which focuses on delivering environmental benefits at a landscape scale. Reference to the opportunity to develop an ecosystems services approach for Priority 4 has been removed however.

4.3 Reasons for Selection of Chosen Alternatives

4.3.1 As can be seen in Table 4.1, the 'do nothing' option is the least favourable option as the RDP funds numerous environmental improvements that would not be realised without this or an equivalent scheme. Continuing with NIRDP 2007-2013 would have certain benefits, but is not feasible for the reasons outlined in Section 4.3, i.e. changes to EU funding priorities and appropriateness of certain schemes in NI.

4.3.2 The draft proposals for NIRDP 2014-2020 set out in the November 2012 document have additional benefits for the environment that are missing from the current 2007-2013 programme, whilst the June 2013 draft improves on this. The differences between the two are mainly the focus on woodland creation in the June 2013 draft, which would have particular direct and indirect benefits for biodiversity, human health, soil, water, climate change, and ecosystem services. The June 2013 draft also provides more clarity to certain schemes, whilst there are additional socio-economic benefits through Priority 6. The inclusion of a new Priority 1 scheme focusing on improving the knowledge and skills of farm families regarding environmental sustainability will have benefits across all SEA objectives.

4.3.3 The main differences between Alternatives 4 and 5 in terms of the SEA are that the latter re-introduces a scheme for supporting Less Favoured Areas (LFA) / Areas of Natural Constraint (ANC) until 2017 and no longer includes schemes for agro-forestry or capital investment in renewables. There are also new schemes including Agri-environment Non-productive Investments (AeNpI), Natura 2000 Management Plans (N2K), Land Management Programme (LMP) and Agri-environment Climate Cooperation (AeCC) which will benefit ecology, soil, climate, heritage, landscape, and ecosystem services.

4.3.4 The measures and schemes included within the October 2014 draft of the NIRDP 2014-2020 is therefore the alternative option that is taken forward for further assessment in this final Environmental Report.

5 Assessment of Impacts

5.1 High Level Matrix Assessment

5.1.1 A high level matrix assessment has been carried out on the chosen alternative; this can be seen in Table 5.1 at the end of this section. The majority of schemes proposed to support the six EU priorities and needs of NI are predicted to have either neutral, beneficial or strong beneficial effects. However some schemes were considered to have potential for adverse effects depending on how they are delivered.

5.1.2 The likely beneficial effects are summarised by sustainability topic below. The schemes where effects were considered uncertain/adverse are then explored further through the detailed matrix assessment. This is followed by a discussion on remaining uncertainties and cumulative effects.

Ecology and Nature Conservation

5.1.3 Significant beneficial effects from agri-environment schemes will continue (10.1a EF), with particular benefits for non-protected habitats and those linked to the water environment. Additional benefits will occur for Natura 2000 sites (7.1b N2K) and priority habitats and species (1.2b EAS and 8.5 WIG), as well as from woodland creation (8.1a WE) and support for restoration and management of habitats (4.4 AeNpI). Scheme 1.2b (EAS) is particularly beneficial in that it will provide specialist conservation advice to farmers and land managers, whilst Scheme 8.5 (WIG) seeks to encourage species diversity and improve the resilience of forests to climate change.

Socio-Economics

5.1.4 As with the current 2007-2013 Programme, strong beneficial effects would occur due to business support and investment schemes (4.1 BIS, 4.2 AfPI, 6.4 RBI). Benefits will also continue from sharing knowledge on competitiveness, efficiency and sustainability of new technology (Measure 1, particularly 1.1a BDKT), enhancing the tourism industry (7.5 RT). New initiatives to improve cooperation and innovation through the supply chain (16.3 AfC and 16.9 GC) will benefit productivity as will the new strong focus on training (1.1c GT). Schemes 4.3 (FComp) and 8.1b (FE) will provide a boost to the small wood industry. For those who farm in areas facing natural constraints (e.g. difficult topography, poor soil conditions and difficult climate), support will continue until 2017 (13.2 LFA/ANC).

Health and Quality of Life

5.1.5 Direct benefits to quality of life from improved education (1.1a BDKT, 7.5 RT, 10.1a EF and 16.3 AfC), job opportunities (6.4 RBI and 7.5 RT) and access to services (6.4 RBI, 7.1a VR, 7.3 RB, 7.4 RBS, 7.5 RT and 19 CLLD) will continue, but also indirectly from improved water, soil and air quality (4.1 BIS, 8.1a WE, 8.5 WIG, 10.1a EF and 10.1b LMP). A new emphasis on recreational infrastructure linked to tourism, village renewal and social economy enterprise (6.4 RBI, 7.1a VR, 7.3 RB, 7.4 RBS and 7.5 RT) and

improving the public amenity value of woodlands (8.5 WIG and 8.1b FE) will further improve health and quality of life.

Soil and Land Use

5.1.6 Gains from agri-environment schemes will continue (10.1a EF), whilst tree planting measures (8.1a WE and 8.5 WIG) will improve the quality of soil and reduce erosion. Improving soil, manure and nutrient management (4.1 BIS and 10.1b LMP) and improving bio-security and plant health (1.1b FFKS, 1.2a ITED, 4.1 BIS and 16.9 GC) will have additional benefits due to increased productivity of the land and quality of crops. The Programme encourages local production of food and fuel (16.3 AfC and 8.1b FE), whilst beneficial effects will also result from an emphasis on improving the efficiency and re-use of existing agricultural and developed land (8.1b FE and 7.1a VR).

Water

5.1.7 Gains from agri-environment schemes will continue (10.1a EF) with options related to improving water management and water quality (e.g. riparian buffers), whilst new woodland creation schemes (8.1a WE, 8.1b FE and 8.5 WIG) have improved water quality as a key objective. Overall there is strong reference to improving water management and quality in the draft NIRDP 2014-2020. The scheme to improve the efficiency of manure and nutrient management (4.1 BIS, 10.1b LMP) could have direct benefits for water quality as storm water run-off from farmland contaminated with fertilizers and manure has historically affected the ecological quality of rivers e.g. through eutrophication (there is uncertainty about the effect of drainage works associated with this scheme however). Such measures will also assist the delivery of the Nitrates Action Plan (NAP) as well as helping to meet Water Framework Directive (WFD) targets.

Air Quality

5.1.8 Beneficial effects on air quality are predicted as a result of manure/nutrient management schemes and modern slurry application methods (4.1 BIS, 10.1a EF) reducing ammonia emissions. Additional benefits would arise from woodland creation (8.1a WE) as, depending on the species used, trees can remove air borne pollutants, including ammonia, by intercepting some of these emissions through dry deposition on the leaf and bark surfaces.

Climate Change

5.1.9 Beneficial effects from the current RDP 2007-2013 will continue with similar measures on supporting carbon sequestration and woodland creation, though there is a stronger emphasis on grants for these initiatives in the proposed Programme (4.1 BIS, 8.1a WE, 8.1b FE, 8.5 WIG, 10.1a EF and 10.1b LMP) which should increase take-up. Schemes 1.2a (ITED), 4.2 (AfPI), 4.4 (AeNpI) specifically seek to address climate change adaptation through e.g. habitat restoration, whilst Scheme 8.5 (WIG) seeks to encourage species diversity to improve the resilience of forests to climate change. New Scheme 16.5 (AeCC) aims to support joint action to mitigate or adapt to climate

change at a landscape scale. Additional benefits will arise from the Programme's increased focus on transfer of knowledge regarding innovative, efficient and sustainable technologies (1.1a BDKT, 1.2a ITED, 4.1 BIS, 4.2 AfPI, 6.4 RBI, 7.5 RT, 16.3 AfC and 16.9 GC); resource efficiency and energy storage measures (1.2a ITED, 4.1 BIS and 4.2 AfPI); and improved manure management (4.1 BIS). Feasibility studies to assess the installation of renewable energy technologies will also be funded through Schemes 4.1 (BIS), 4.2 (AfPI), 6.4 (RBI), 7.4 (RBS), 7.5 (RT) and 8.1b (FE).

Material Assets

5.1.10 Beneficial effects from improvements to rural infrastructure and related facilities and services (4.3 FComp, 7.1a VR, 7.4 RBS and 7.5 RT) will continue. Additionally, support for manure and nutrient efficiency (4.1 BIS and 10.1b LMP); resource efficiency and energy storage measures (1.2a ITED, 4.1 BIS and 4.2 AfPI); forestry products (8.1b FE), packaging improvements (4.2 AfPI) and supply chain cooperation (16.3 AfC and 16.9 GC) will result in more efficient use and re-use of resources and waste minimisation. Knowledge exchange on such topics (1.1c GT and 1.2a ITED) should lead to further take-up of the schemes.

Cultural Heritage

5.1.11 As with the current Programme, the proposed tourism scheme (7.5 RT) will continue to promote tourism related to cultural heritage, with support specifically aimed at conservation of small scale built heritage and enhancing cultural heritage assets. The sensitive conservation and re-use / upgrading of built rural cultural heritage assets as part of the continued drive of village renewal (7.1a VR) will benefit the land/townscape. Restoration of heritage features including traditional stone walls may also be addressed through Scheme 4.4 (AeNPI). Indirectly, general environmental education of farmers and landowners could benefit the historic environment through schemes 1.1c (GT), 1.2b (EAS) and 10.1a (EF).

Landscape

5.1.12 Beneficial effects from landscape enhancement and restoration through the agri-environment and tourism schemes (7.5 RT and 10.1a EF) will continue, with the new Scheme 4.4 (AeNpI) adding to this (traditional stone walls, a key landscape feature, are specifically mentioned). Sustainable reforestation and new proposed improvements to the public amenity value of woodlands (8.1a WE, 8.3 FP and 8.5 WIG) will also improve the quality and appearance of the landscape. Through continuing support for areas facing natural constraints until 2017 (13.2 LFA/ANC) the risk of land abandonment is reduced (at least in the short-term) which should prevent the detrimental effects on landscape character of unchecked expansion of scrub, sward and herbage. Indirectly, general environmental education of farmers and landowners could benefit the NI landscape through schemes 1.1c (GT), 1.2b (EAS) and 10.1a (EF).

Green Infrastructure and Ecosystem Services

5.1.13 Significant benefits from agri-environment schemes (10.1a EF) will continue through raising awareness of environmental protection and enhancement measures, and improving the ability of farmed landscapes to provide multiple ecosystem services. This will be enhanced by new Schemes 1.1c (GT) which will provide scheme participants with the knowledge and information required to understand the environmental and forestry commitments undertaken, and 1.2b (EAS) which seeks to provide specialist conservation advice to farmers and land managers to improve the management of priority habitats. The proposed tourism scheme (7.5 RT) will also improve awareness of NI's green infrastructure and ecosystems due to its focus on cultural and outdoor recreation that is landscape and nature based.

5.1.14 Woodlands are particularly good habitats for providing ecosystem services (e.g. pollination, food production, water regulation and purification, soil erosion control, carbon sequestration, climate control, air quality maintenance, and pest regulation), as well as linking up other green infrastructure through provision of stepping stone habitat across the landscape, so schemes for woodland creation and training (8.1a WE, 8.1b FE, 8.3 FP, 8.5 WIG and 16.9 GC) would be particularly beneficial. Furthermore, Scheme 8.5 (WIG) seeks to improve the resilience of forests to climate change.

5.1.15 The new Scheme 16.5 (AeCC) focuses on delivering environmental benefits at a landscape scale, whilst similarly, the restoration and management of habitats outside of protected sites is addressed by schemes 10.1a (EF) and 4.4 (AeNpI). The new Scheme 10.1b (LMP) seeks to improve climate adaptation, soil and water quality whilst manure/nutrient management through Scheme 4.1 (BIS) could potentially leading to improved ecosystem performance of rivers (though this depends on what drainage works will be carried out). Environmental and recreational improvements to villages through Scheme 7.1a (VR) should benefit more urban ecosystem service provision.

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Table 5.1: High Level Matrix Assessment

NIRDP High Level Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
Measure 1: Knowledge Transfer and Information Actions												
1.1a	Business Development through Knowledge Transfer (BDKT)	0	++	0	0	0	0	+	0	0	0	0
1.1b	Farm Family Key Skills (FFKS)	0	+	0	0	0	0	+	0	0	0	0
1.1c	General Training for Scheme Implementation (GT)	+	+	+	+	+	+	+	+	+	+	+
1.2a	Innovation and Technology Evaluation Demonstration Scheme (ITED)	0	+	0	0	0	0	+	+	0	0	0
1.2b	Environmental Advisory Support Scheme (EAS)	++	0	0	0	0	0	0	0	+	+	+
1.3	Farm Exchange Visits (FEV)	0	+	0	0	0	0	0	0	0	0	0
Measure 4: Investments in Physical Assets												
4.1	Business Investment Scheme (BIS) (incl. METS and NES)	+/-	++	+	++	+/-	+	++	+	+/-	+/-	+
4.2	Agri-food Processing Investment Scheme (AfPI)	0	++	+	0	0	0	+	+	0	0	0
4.3	Forestry Competitiveness Scheme (FComp)	+/-	+	0	+/-	+/-	0	0	+	+/-	0	0
4.4	Agri-environment Non-productive Investments (AeNpI)	++	0	+	+	+	0	+	0	+	++	+
Measure 6: Farm and Business Development												
6.4	Rural Business Investment Scheme (RBI)	-	++	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
Measure 7: Basic Services in Village Renewal in Rural Areas												
7.1a	Village Renewal Scheme (VR)	+/-	+	++	+	0	0	+	+	+	+	+

NIRDP High Level Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
7.1b	Natura 2000 Management Plans (N2K)	++	0	0	0	0	0	0	0	0	0	0
7.3	Rural Broadband Scheme (RB)	+/-	+	+	+/-	+/-	0	0	0	+/-	+/-	0
7.4	Rural Basic Services Scheme (RBS)	+/-	+	++	0	0	0	0	0	0	0	0
7.5	Rural Tourism Scheme (RT)	+/-	++	+	0	+/-	+/-	+/-	0	++	+	++
Measure 8: Investments in Forest Area Development and Viability of Forests												
8.1a	Woodland Expansion Scheme (WE)	++	0	+	++	++	+	+	0	-	+	++
8.1b	Forest Expansion Scheme (FE)	-	+	+	0	+/-	+	++	+	-	+/-	+
8.3	Forest Protection Scheme (FP)	+/-	+	0	0	+/-	0	0	0	-	+	+
8.5	Woodland Investment Grant (WIG)	+	0	+	+	+	0	+	0	0	+	+
Measure 10: Agri-Environment Climate												
10.1a	Environmental Farming Scheme (EF)	++	+	+	++	++	++	++	+	0	+	++
10.1b	Land Management Programme (LMP)	+	+	0	++	+	0	++	+	0	0	++
10.2	Support for indigenous Irish Moiled Cattle (IMC)	0	+	0	0	0	0	0	0	0	0	+
Measure 13: Payments to Areas Facing Natural or Other Specific Constraints												
13.2	Less Favoured Areas (2015) Areas of Natural Constraint (2016 and 2017) (LFA/ANC)	+	++	+	+	0	0	0	0	0	+	+
Measure 16: Cooperation												
16.1	Agri-food and Forestry Innovation Scheme (AfFI)	0	+	0	0	0	0	0	0	0	0	0
16.3	Agri-food Cooperation Scheme (AfC)	0	+	0	0	0	0	0	+	0	0	0

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NIRDP High Level Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
16.5	Agri-environment Climate Cooperation (AeCC)	+	+	0	0	+	0	+	0	0	0	+
16.8	Forestry Cooperation Scheme (FCoop)	0	+	0	0	0	0	0	0	0	0	+
16.9	General Cooperation (GC)	0	+	0	+	0	0	0	+	0	0	+
Measure 19: Support from CSF Funds for Local Development (CLLD)												
19	LEADER Local Development (CLLD)	0	++	++	0	0	0	0	0	0	0	0

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5.2 Detailed Matrix Assessment

5.2.1 Where schemes were predicted to have uncertain or adverse effects at the high level assessment stage, they have been analysed further in the detailed matrix assessment to ascertain what the potential adverse effects could be and how these can be avoided. The detailed matrices in Appendix E describe the likely environmental effects (beneficial and adverse) of these by scheme. A summary of the significance of effects of each scheme before mitigation is provided in Table 5.2 below.

5.2.2 The main uncertain or adverse effects that the SEA has identified in the event that the proposed NIRDP 2014-2020 is implemented are related to the construction and operation of new buildings and infrastructure. As can be seen in Table 5.2, the detailed matrix assessment has identified schemes 4.1 (BIS), 6.4 (RBI), 7.3 (RB), 7.5 (RT), 8.1a (WE) and 8.1b (FE) in particular as potentially having effects of moderate, moderate/minor or uncertain significance on habitats and species, water quality, climate and cultural heritage. It should be noted, however, that these levels of significance are prior to any mitigation being implemented (for suitable mitigation measures, including that which is expected at the planning application stage, see Section 6.3).

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Table 5.2: Summary of the Detailed Matrix Assessment

NIRDP Detailed Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
Measure 1: Knowledge Transfer and Information Actions												
1.1a	Business Development through Knowledge Transfer (BDKT)	Negligible beneficial	Major/ Moderate	Neutral	Negligible beneficial	Negligible beneficial	Neutral	Minor/ Negligible	Neutral	Neutral	Neutral	Negligible beneficial
1.1b	Farm Family Key Skills (FFKS)	Negligible beneficial	Moderate/ Minor	Negligible beneficial	Negligible beneficial	Neutral	Neutral	Minor	Neutral	Neutral	Neutral	Neutral
1.1c	General Training for Scheme Implementation (GT)	Minor	Minor/ Negligible	Minor/ Negligible	Minor	Minor	Minor	Minor	Minor/ Negligible	Minor	Minor	Minor
1.2a	Innovation and Technology Evaluation Demonstration Scheme (ITED)	Negligible beneficial	Moderate/ Minor	Neutral	Negligible beneficial	Negligible beneficial	Neutral	Moderate/ Minor	Minor/ Negligible	Neutral	Neutral	Negligible beneficial
1.2b	Environmental Advisory Support Scheme (EAS)	Major/ Moderate	Neutral	Neutral	Negligible beneficial	Negligible beneficial	Negligible beneficial	Negligible beneficial	Neutral	Minor	Minor	Minor
1.3	Farm Exchange Visits (FEV)	Negligible beneficial	Minor	Neutral	Negligible beneficial	Negligible beneficial	Neutral	Negligible beneficial	Neutral	Neutral	Neutral	Negligible beneficial
Measure 4: Investments in Physical Assets												
4.1	Business Investment Scheme (BIS)	Moderate/ Minor	Major	Moderate/ Minor	Moderate/ Minor	Uncertain	Moderate/ Minor	Moderate	Minor	Minor	Minor	Minor

NIRDP Detailed Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
	(incl. METS and NES)											
4.2	Agri-food Processing Investment Scheme (AfPI)	Neutral	Major/ Moderate	Minor/ Negligible	Neutral	Neutral	Neutral	Moderate	Moderate/ Minor	Neutral	Neutral	Neutral
4.3	Forestry Competitiveness Scheme (FComp)	Minor	Moderate/ Minor	Negligible beneficial	Negligible adverse	Negligible adverse	Negligible adverse	Neutral	Negligible beneficial	Minor/ Negligible	Negligible adverse	Negligible beneficial
4.4	Agri-environment Non-productive Investments (AeNpI)	Major/ Moderate	Negligible beneficial	Minor/ Negligible	Moderate/ Minor	Moderate/ Minor	Neutral	Minor	Neutral	Minor	Moderate	Moderate/ Minor
Measure 6: Farm and Business Development												
6.4	Rural Business Investment Scheme (RBI)	Moderate /Minor	Major	Moderate /Minor	Minor	Moderate /Minor	Minor	Minor	Negligible adverse	Minor/ Negligible	Minor	Minor
Measure 7: Basic Services in Village Renewal in Rural Areas												
7.1a	Village Renewal Scheme (VR)	Minor/ Negligible	Moderate	Major	Minor/ Negligible	Negligible adverse	Negligible beneficial	Minor/ Negligible	Minor/ Negligible	Moderate/ Minor	Minor	Minor
7.1b	Natura 2000 Management Plans (N2K)	Major/ Moderate	Neutral	Neutral	Neutral	Negligible beneficial	Neutral	Neutral	Neutral	Neutral	Neutral	Negligible beneficial
7.3	Rural Broadband Scheme (RB)	Moderate/ Minor	Moderate	Minor	Negligible adverse	Negligible adverse	Negligible adverse	Negligible adverse	Negligible adverse	Minor	Minor	Negligible adverse
7.4	Rural Basic Services Scheme (RBS)	Minor	Moderate/ Minor	Major	Negligible adverse	Negligible adverse	Negligible adverse	Negligible adverse	Negligible beneficial	Negligible adverse	Negligible adverse	Negligible adverse

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NIRDP Detailed Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
7.5	Rural Tourism Scheme (RT)	Minor	Major/ Moderate	Moderate /Minor	Negligible adverse	Minor/ Negligible	Minor	Moderate /Minor	Negligible beneficial	Moderate	Moderate /Minor	Major/ Moderate
Measure 8: Investments in Forest Area Development and Viability of Forests												
8.1a	Woodland Expansion Scheme (WE)	Major/ Moderate	Negligible beneficial	Minor	Major/ Moderate	Major/ Moderate	Moderate/ Minor	Moderate/ Minor	Neutral	Moderate/ Minor	Minor	Major/ Moderate
8.1b	Forest Expansion Scheme (FE)	Moderate	Moderate	Minor/ Negligible	Negligible adverse	Negligible beneficial	Minor	Major/ Moderate	Minor	Moderate/ Minor	Negligible beneficial	Moderate
8.3	Forest Protection Scheme (FP)	Minor/ Negligible	Minor	Neutral	Negligible adverse	Minor/ Negligible	Neutral	Neutral	Negligible beneficial	Minor/ Negligible	Minor	Minor
8.5	Woodland Investment Grant (WIG)	Moderate/ Minor	Negligible beneficial	Minor/ Negligible	Minor/ Negligible	Minor	Negligible beneficial	Moderate/ Minor	Negligible beneficial	Neutral	Minor/ Negligible	Moderate/ Minor
Measure 10: Agri-Environment Climate												
10.1a	Environmental Farming Scheme (EF)	Major	Minor	Minor/ Negligible	Major/ Moderate	Major/ Moderate	Moderate	Major/ Moderate	Minor/ Negligible	Neutral	Minor	Major
10.1b	Land Management Programme (LMP)	Moderate/ Minor	Moderate/ Minor	Negligible beneficial	Moderate	Minor	Negligible beneficial	Moderate	Minor	Negligible adverse	Neutral	Moderate
10.2	Support for indigenous Irish Moiled Cattle (IMC)	Neutral	Minor/ Negligible	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Minor/ Negligible
Measure 13: Payments to Areas Facing Natural or Other Specific Constraints												
13.2	Less Favoured Areas (2015)	Moderate	Major	Moderate/ Minor	Moderate/ Minor	Negligible adverse	Negligible adverse	Negligible adverse	Neutral	Neutral	Moderate/ Minor	Moderate

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NIRDP Detailed Matrix		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
Measures and Schemes		Ecology	Socio-Economics	Health	Soil	Water	Air	Climate	Material Assets	Cultural Heritage	Landscape	GI & ES
	Areas of Natural Constraint (2016 and 2017) (LFA/ANC)											
Measure 16: Cooperation												
16.1	Agri-food and Forestry Innovation Scheme (AfFI)	Neutral	Minor	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
16.3	Agri-food Cooperation Scheme (AfC)	Neutral	Minor	Neutral	Minor/ Negligible	Neutral	Neutral	Neutral	Minor/ Negligible	Neutral	Neutral	Minor/ Negligible
16.5	Agri-environment Climate Cooperation (AeCC)	Minor	Minor/ Negligible	Neutral	Minor/ Negligible	Minor/ Negligible	Negligible beneficial	Moderate/ Minor	Neutral	Neutral	Neutral	Moderate/ Minor
16.8	Forestry Cooperation Scheme (FCoop)	Negligible beneficial	Minor/ Negligible	Neutral	Negligible beneficial	Negligible beneficial	Neutral	Negligible beneficial	Neutral	Neutral	Neutral	Minor/ Negligible
16.9	General Cooperation (GC)	Negligible beneficial	Minor	Neutral	Minor/ Negligible	Negligible beneficial	Neutral	Negligible beneficial	Minor	Neutral	Neutral	Minor/ Negligible
Measure 19: Support from CSF Funds for Local Development (CLLD)												
19	LEADER Local Development (CLLD)	Neutral	Major/ Moderate	Major/ Moderate	Negligible beneficial	Neutral	Neutral	Negligible beneficial	Neutral	Neutral	Neutral	Neutral

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5.3 Cumulative Effects Assessment

Cumulative effects within the Programme

5.3.1 The Detailed Assessment predicted similar adverse impacts for some of the schemes, which could have a cumulative (additive or perhaps synergistic) effect on the identified receptors. These potential adverse cumulative effects are considered in Table 5.3 below. (Note that beneficial cumulative effects have not been assessed.)

5.3.2 Overall it is thought that (prior to mitigation) there could be a significant adverse cumulative effect in relation to NI's habitats and species, water management and quality, resilience and adaptation to climate change, and cultural heritage and archaeology assets, particularly from schemes 4.1 (BIS), 6.4 (RBI) and 8.1b (FE).

Table 5.3: Adverse Cumulative Effects of NIRDP Schemes

SEA Objective	Scheme 4.1 (BIS)	Scheme 4.3 (FComp)	Scheme 6.4 (RBI)	Schemes 7.1a (VR) and 7.4 (RBS)	Scheme 7.3 (RB)	Scheme 7.5 (RT)	Scheme 8.1a (WE)	Scheme 8.1b (FE)	Scheme 8.3 (FP)	Adverse Cumulative Effect
1. Ecology	Moderate/Minor - Drainage schemes may change water quality and quantity dynamics with uncertain impacts on wetland habitats. The water effects may also cross over to RoI. The greatest concern is the possible impact of the intensifying of agricultural activities which could degrade or cause loss of habitats and increase methane and ammonia emissions. Also the construction works associated with new or upgraded buildings or structures has the potential for adverse impacts on species.	Minor - Support for infrastructure to facilitate access to forestry land could have an adverse effect where forestry has been located in peatland areas (especially lowland raised bogs), particularly if the infrastructure was to remain after forestry operations have ceased.	Moderate /Minor - Construction works required to facilitate business growth, start-up or diversification may have the potential for adverse effects on habitats and species (including pollinators and farmland birds), especially if farmland is to be lost to other uses. Establishment of permanent infrastructure / buildings or land use change could create habitat loss either directly or through disturbance (increase human access, spread of invasive species). Some farm diversification activities (e.g. those that encourage new visitors) could increase emissions from transport and increase pollutants, affecting sensitive species/habitats.	Minor/ Negligible (7.1a) and Minor (7.4) - Addressing rural dereliction through regenerating existing derelict buildings could adversely impact on protected species such as bats. Brownfield diversity can also be abundant on derelict and vacant sites. Construction and land use change related to installation of new facilities to provide services may cause disturbance to and loss of habitat / species.	Moderate/ Minor - The construction of inappropriately sited broadband infrastructure could adversely affect ecology, through localised habitat destruction/ removal, disturbance/ killing of individuals or spread of invasive species, whilst infrastructure may also impact on ecology during operation (e.g. noise/vibration and collision impacts, though this will be minimal if cables were to be underground only). Focus on more remote sites means disturbance impacts are likely to be more material than elsewhere. The funding to be provided for this scheme is minimal, however.	Overall beneficial effect, however sensitive species and habitats could be adversely affected by an increase in tourist numbers, e.g. disturbance, trampling, litter, fires, NOx emissions and spread of invasive species. This is also likely to impact on wildlife in Ireland. In addition, the construction of small scale infrastructure developments and renovation/expansion of tourist facilities has the potential for adverse effects on individuals, species and habitats.	Overall significant positive effect, however, conversion from farmland needs to be reflective of existing land use context, to avoid loss of species/ecosystems which rely on open, wetland or peatland habitats.	Moderate - Given the focus on carbon sequestration, it is likely the scheme would involve coniferous plantations. These are uniform agro ecosystems that can result in depletion of biological diversity, particularly if planted on priority wetland, peatland and open habitat including peatlands. Moreover, non-native coniferous plantations acidify soils and neighbouring watercourses, resulting in damage to acid-sensitive aquatic species (also transboundary to Ireland). Also, work related to afforestation, access road construction, and forestry operations can have significant disturbance to wildlife.	Minor/ Negligible - the targeted application of pesticides may have wider consequences for biodiversity, especially if they are able to enter watercourses. Moreover, felling/killing/removal work of infected trees and replacement planting works can disturb wildlife and represents a temporary loss of habitat. However, the level of funding is extremely low.	Rural biodiversity, particularly farmland specialists and pollinators, are already under threat from the loss and fragmentation of habitat, intensifying agriculture, the growing threat of invasive species and the impact of agricultural emissions on nitrogen sensitive species – all of which may be exacerbated by the Programme. The construction works associated with new or renovated buildings, structures and infrastructure, and land use change as a result of farm diversification, afforestation and tourism have the potential for significant adverse effects on species and habitats. The cumulative impact of the individual NIRDP schemes on ecology is likely to be synergistic; in a changing climate, the constant nibbling away of suitable habitat throughout rural NI may result in the loss of local populations and thus isolation of others. Whilst standard mitigation will occur for developments requiring EIAs and planning permission, small scale activities under permitted development typically avoid mitigation despite often having adverse effects, and such a cumulative impact is likely to be significant. **Significant cumulative effect: yes.**
4. Soil	Overall positive effect, though construction works may adversely impact on soils, e.g. through compaction or	Negligible - There could be adverse effects relating to soil compaction and pollution from run-off associated with the creation	Minor - Construction works could adversely impact on soils through compaction or pollution from spillages. Land use	Neutral - Construction and land use change related to installation of new facilities to	Negligible - If underground cables are used, the installation could potentially result in soil erosion,	Negligible - The construction of small scale infrastructure developments and renovation/expansion of tourist facilities has the potential for	Significant beneficial effects.	Negligible - Coniferous plantations can modify the structure and composition of soils (fertility, pH	Negligible - Soil erosion, disturbance and sedimentation could occur during restoration activities (felling and replanting),	Soil impacts are expected to be small and localised enough to not have a significant cumulative effect, particularly with best practice construction measures being carried out.

SEA Objective	Scheme 4.1 (BIS)	Scheme 4.3 (FComp)	Scheme 6.4 (RBI)	Schemes 7.1a (VR) and 7.4 (RBS)	Scheme 7.3 (RB)	Scheme 7.5 (RT)	Scheme 8.1a (WE)	Scheme 8.1b (FE)	Scheme 8.3 (FP)	Adverse Cumulative Effect
	pollution from spillages.	of access infrastructure.	changes to industrial/ transport could increase deposition of soil contaminants. Farm diversification to non-agricultural activities could reduce the available land for grazing cattle and sheep and to a lesser extent crop production.	provide services may cause disturbance to soils.	compaction or contamination; there may be some installation challenges depending on the depth to the bedrock if underground cables are used.	adverse effects e.g. through compaction of soil or pollution from spillages.		and carbon/ nitrogen content are known to be lower in than in native broadleaf forests), as well as possible compaction and contamination through forestry activities.	particularly if the original damage occurs on sensitive sites (e.g. acid sensitive, upland and peatland).	**Significant cumulative effect: no.**
5. Water	Uncertain - Drainage schemes may change water quality and quantity dynamics with uncertain impacts. The construction works associated with new / upgraded buildings and infrastructure has the potential for adverse effects on water quality (surface water, ground water and the sea) and flood risk. This scheme may also impact on Ireland due to the drainage pattern of waterbodies in the North Western International River Basin (and to a lesser extent in the Neagh Bann International River Basin).	Negligible - There could be adverse effects relating to pollution and sedimentation during the construction phase, both from surface water run-off during rain events and also where the roads may cross watercourses, whilst pollution may also occur from run-off when the roads are in use by vehicles.	Moderate /Minor - Some land use changes (e.g. to factories, homes) could increase the risk of industrial and domestic pollution. Construction works required to facilitate business growth, start-up or diversification has the potential for adverse effects on water quality, whilst any increase in hard surfaces could exacerbate flood risk.	Negligible - Renovation of derelict buildings could result in adverse impacts on water quality from construction dust or chemical spillages, whilst any increase in hard surface will increase flood risk.	Negligible - If underground cables are used, the routes may cross numerous waterways in the river basin districts and possibly also affect wetlands. Installation of these cables could potentially result in accidental release of drilling fluid into watercourses, erosion of banks and sedimentation/ siltation.	Minor/ Negligible - The construction of small scale infrastructure developments and renovation/expansion of tourist facilities (particularly new car parking) has the potential for adverse effects on water quality and flood risk. Tourist numbers to NI's coast are likely to increase with possible associated impacts on water quality and marine life (e.g. due to litter, motorised water sports etc). For development etc in the North Western International River Basin, impacts could also be felt in Ireland.	Significant beneficial effects.	Negligible effect overall due to some beneficial aspects to this scheme, however, afforestation can decrease water availability and non-native coniferous plantations acidify soils and neighbouring watercourses. Contamination of local water courses can also occur from forestry activities, e.g. from sedimentation and contamination from fertilisers.	Minor/ Negligible - Pollution, siltation and sedimentation could occur during restoration activities (felling and replanting), particularly if the original damage occurs on sensitive sites (e.g. acid sensitive, upland and peatland). Pesticides used to spray trees may run-off into watercourses, reducing water quality.	The rural development proposed through this Programme, though small scale, could have a synergistic adverse effect on the water environment, with the potential for water pollution and flood risk increasing nationwide (and potentially over the border in Ireland). Water quality in NI is currently falling far short of Water Framework Directive targets, whilst the risk and effects of flooding and drought will increase with time due to climate change. However, for activities requiring EIAs or planning permission, these effects will be avoided or mitigated, whilst best practice may be adopted in other cases. It is also acknowledged that other schemes within the Programme will have a beneficial impact on water quality. With standard mitigation in place and compliance with planning policy, the overall cumulative effect of the Programme on water will reduce, but could still be significant. **Significant cumulative effect: yes.**
6. Air	Beneficial effects.	Negligible - There could be adverse effects relating to air quality from	Minor - Land use change to industrial facilities could increase air pollution. Moreover,	Negligible - Construction activities will generate temporary	Negligible - Temporary short-term effects may occur during installation, with	Minor - An increase in tourist numbers to rural areas is likely to increase traffic related air emissions,	Beneficial effects.	Beneficial effects.	No effects.	Construction related air quality impacts are expected to be small and localised, though diversification towards industrial activities and tourism could

SEA Objective	Scheme 4.1 (BIS)	Scheme 4.3 (FComp)	Scheme 6.4 (RBI)	Schemes 7.1a (VR) and 7.4 (RBS)	Scheme 7.3 (RB)	Scheme 7.5 (RT)	Scheme 8.1a (WE)	Scheme 8.1b (FE)	Scheme 8.3 (FP)	Adverse Cumulative Effect
		emissions for access work.	increased income and employment from farm diversification could result in additional emissions from transport.	emissions. Increased economic and social activity may increase transport related emissions.	possible dust, ozone, particulate matter and greenhouse gas emissions.	including within areas with NOx/PM10 sensitive habitats and species.				increase CO, NOx, SOx, VOC and PMx emissions. With a possible associated decrease in ammonia emissions (which is of greater concern in rural areas) air quality impacts are not considered to be significant. **Significant cumulative effect: no.**
7. Climate	Overall beneficial effect, however no reference to resilience or adaptation.	Neutral - There could be adverse effects relating to GHG emissions for access work.	Minor - Increased employment, income, and tourism could result in higher demand for goods and travel, leading to an increase in GHG emissions. In addition, there are no attempts to adapt new or existing development to the predicted effects of climate change, leaving rural businesses vulnerable.	Neutral - Construction activities will generate temporary emissions. Increased economic and social activity may increase transport related emissions. No reference to resilience or adaptation.	Negligible - Temporary short-term effects may occur during installation regarding possible greenhouse gas emissions. Improved access to broadband could possibly increase demand for new ICT products which require energy to produce.	Moderate /Minor - There may be an increase in air transport if visitors are drawn in from outside NI/Ireland, though local people may be encouraged to take their holidays within NI instead of going abroad. There are no attempts to adapt new or existing buildings and infrastructure to the predicted effects of climate change, leaving them vulnerable.	Beneficial effects.	Significant beneficial effects.	No effects.	In terms of climate change mitigation, the impact of the NIRDP is strongly positive due to emphasis on energy efficiency and carbon sequestration, though improving income, mobility and tourism through a number of schemes may increase CO2 emissions. However, the cumulative effect of new and upgraded buildings, structures and infrastructure not being climate proofed (i.e. adaptation and resilience to climate change) is likely to be significant in the longer term. **Significant cumulative effect: yes.**
9. Cultural Heritage	Minor - Intensive agricultural activities, the construction works associated with new or upgraded buildings or structures, the upgrading of infrastructure and possible drainage works all have the potential for adverse effects on archaeological remains, listed buildings and scheduled monuments.	Minor/ Negligible - Construction of roads and improving access to woodland for thinning and other management activities could possibly cause damage to undesignated forest heritage (e.g. boundary banks and dykes, burial mounds, charcoal-burning platforms, saw pits and kilns, existing veteran trees), including hidden	Minor/ Negligible - The construction works associated with new or upgraded business premises has the potential for adverse effects on listed buildings, scheduled monuments and archaeological remains.	Overall beneficial effect, though construction activities related to new buildings or renovations may have adverse impacts on buried archaeology and existing built heritage assets; insensitive conversions may harm local heritage assets	Minor - The construction works associated with the installation of underground fibre optic cables has the potential for damage to archaeological remains if surveys are not carried out along the proposed routes. Monuments could be affected temporarily during construction works through impacts on views	Overall beneficial effect, however the construction of small scale infrastructure developments and renovation/expansion of tourist facilities has the potential for adverse effects on listed buildings, scheduled monuments and archaeological remains, however, whilst other adverse effects of tourism may include: increased flood risk/erosion caused by motorised watersports; pollution	Moderate/ Minor - Woodland creation has potential for adverse effects on cultural heritage, for example boundary banks and dykes, burial mounds, charcoal-burning platforms, saw pits and kilns, existing veteran trees and areas where the landscape history is important if not acknowledged and mitigated for. Impacts can also extend to	Moderate/ Minor - Woodland creation has potential for adverse effects on cultural heritage, for example boundary banks and dykes, burial mounds, charcoal-burning platforms, saw pits and kilns, existing veteran trees and areas where the landscape history is important if not acknowledged and mitigated for. Impacts can also	Minor/ Negligible - Carrying out restoration activities (felling and replanting) could possibly cause damage to undesignated forest heritage (e.g. boundary banks and dykes, burial mounds, charcoal-burning platforms, saw pits and kilns, existing veteran trees), including hidden underground (and overground) archaeological remains that may not	The scale of development proposed through the NIRDP 2014-2020 is small, with the main focus being on renovating existing, derelict buildings. However, it is often small scale development or a change to land use or management practices (i.e. those that are not assessed through the EIA/Planning system) that cause the most damage, particularly to setting of historic monuments and buildings and hidden archaeological remains. With the additional impacts associated with pollution from transport and degradation from tourism and forestry activities (the latter is especially a concern due to poor knowledge of cultural heritage in

SEA Objective	Scheme 4.1 (BIS)	Scheme 4.3 (FComp)	Scheme 6.4 (RBI)	Schemes 7.1a (VR) and 7.4 (RBS)	Scheme 7.3 (RB)	Scheme 7.5 (RT)	Scheme 8.1a (WE)	Scheme 8.1b (FE)	Scheme 8.3 (FP)	Adverse Cumulative Effect
		underground (and overground) archaeological remains that may not yet have been discovered. But unlikely to be material impact due to size of funding.		and their setting.	and setting. If cables are to be over ground, there may be adverse effects on the views of/from and setting of cultural heritage assets during operation, whilst heritage buildings could be affected if broadband equipment is attached to them.	from additional transport damaging historic buildings; and damage from walking, horse-riding, vandalism, littering.	submerged archaeology in nearby watercourses.	extend to submerged archaeology in nearby watercourses.	yet have been discovered. The extent of the scheme (in terms of funding) is very low, however.	forestry), the overall impact of the Programme on NI's cultural heritage resource is likely to be significant. **Significant cumulative effect: yes.**
10. Landscape	Minor - The construction works associated with new or upgraded buildings or structures and the upgrading of infrastructure has the potential for adverse effects on landscape character, protected landscapes and visual amenity (including light spill).	Negligible - Visual amenity may be affected by small scale infrastructure and if felling/planting rotations change.	Minor - The construction works and some land use change (i.e. to industrial, residential) associated with new or upgraded business premises and farm diversification has the potential for adverse effects on landscape character, protected landscapes and visual amenity (including light spill).	Overall beneficial effect, however the construction works associated with new or upgraded buildings or infrastructure has the potential for adverse effects on landscape character, protected landscapes and visual amenity (including light spill).	Minor - Over ground installations have the potential for adverse effects on landscape character, protected landscapes and visual amenity during operation and also during construction, whilst underground installations may have a temporary effect during construction.	Overall beneficial effect, however the construction of small scale infrastructure developments and renovation/expansion of tourist facilities has the potential for adverse effects on landscape character, protected landscapes and visual amenity (including light spill), whilst litter may also increase.	Overall beneficial effect, though new woodland has potential for adverse impacts on landscape character and visual amenity, depending on where it is located and how it is designed in relation to the landform or the enclosure pattern.	Negligible - Woodland has potential for adverse impacts on landscape character and visual amenity, depending on where it is located and how it is designed in relation to the landform or the enclosure pattern.	Overall beneficial effect, though necessary felling could have adverse effects on local landscape character in the short-term.	The rural development proposed through this Programme is small scale, involving the construction and operation of new or upgraded buildings, structures and infrastructure relating to farm diversification, business expansion and tourism, and afforestation. There may be cumulative adverse effects on landscape character, protected landscapes and visual amenity (including light spill), though these effects will be minimised through adhering with the policies of PPS21 and standard mitigation relating to Planning and EIA Regulations. **Significant cumulative effect: no.**

In-combination effects with other plans and programmes

5.3.3 In-combination effects could also occur between schemes 4.1 (BIS), 6.4 (RBI), 7.3 (RB), 7.5 (RT), 8.1a (WE) and 8.1b (FE) and other plans and programmes that propose new developments or a change or intensification in land use. Of particular relevance are the NI Economic Strategy (2012) and the Irish RDP (2014) which are thought likely to have in-combination effects. This is considered unlikely for the NI Regional Development Strategy 2035 (2010), the Agri-Food Strategy Board Strategic Action Plan (2013) and Ireland's Food Harvest 2020 (2010) and Forestry Programme (unpublished; expected late 2014).

5.3.4 In addition, it is felt that scheme 7.5 (RE) may have an adverse effect of moderate/minor significance on climate (prior to mitigation) as a result of new tourist travel increasing GHG emissions. In-combination effects have been deemed likely to occur with the NI Economic Strategy (2012), the DETI Northern Ireland Tourism Strategy (2010) and Tourism Ireland's Corporate Plan 2011-2013 (2011).

5.3.5 These potential in-combination effects are considered in more detail in Table 5.4 below.

Table 5.4: In-Combination Assessment with Other Plans and Programmes

Plan or Programme	Objectives and Policies of Relevance	Likely In-Combination Effects
Plans and programmes relating to construction and land use change - Schemes 4.1 (BIS), 6.4 (RBI), 7.3 (RB), 7.5 (RT), 8.1a (WE) and 8.1b (FE)		
Agri-Food Strategy Board (2013) Going for Growth – A Strategic Action Plan in support of the NI agri-food industry	The Strategic Vision for the agri-food industry is set out as "Growing a sustainable, profitable and integrated Agri-Food supply chain, focused on delivering the needs of the market." Industry, Government and the wider stakeholder base, working together, will focus on the following strategic priorities: Grow sales by 60% to £7bn; Grow employment by 15% to 115,000; Grow sales outside Northern Ireland by 75% to £4.5bn; and Grow by 60% to £1bn the total added value of products and services from local companies. To ensure that the industry achieves sustainable business growth across the supply chain at farm and processing levels, government will invest £400m over three years in land, building stock, people and skill sets.	There are two Government Departments with responsibility for the agri-food industry – DARD and DETI – thus AFSB's priorities will be met in part through the NIRDP, with associated impacts as discussed previously. In particular, the significant funding for the Farm Business Investment Scheme (4.1 BIS) was recommended by the AFSB 'Going for Growth' report. The latter stresses that intensification on-farm must be environmentally sustainable (perhaps complemented by forestry), so significant cumulative effects are not considered likely.
DRD (2010) Regional Development Strategy 2035	This document provides an overarching strategic planning framework influencing spatial development for the Region up to 2035, facilitating and guiding the public and private sectors. It complements the Sustainable Development Strategy and informs the spatial aspects of the strategies of all Government Departments. Taken into account are key drivers such as population growth and movement, demographic change, increasing number of households, transportation needs etc. It addresses economic, social and environmental issues aimed at achieving sustainable development and social cohesion.	By informing the spatial aspects of the strategies of other Government Departments, DRD's strategy cannot have cumulative effects; rather it will direct the development as proposed elsewhere into the most appropriate locations, e.g. brownfield land or elsewhere as long as they are integrated appropriately within the settlement or rural landscape.

Plan or Programme	Objectives and Policies of Relevance	Likely In-Combination Effects
Northern Ireland Executive (2012) Northern Ireland Economic Strategy	The overarching goal is to improve the economic competitiveness of the NI economy, through focusing on export led economic growth to deepen and diversify the export base in order to increase employment and wealth across NI. This will be delivered through the following key rebalancing measures: Promote £400m of investment and 6,300 jobs in locally owned companies and a further 6,500 new jobs in new start-up businesses; Support projects that improve competitiveness and encourage diversification of the rural economy; Progress the upgrade of key road projects and improve the overall road network to ensure that by March 2015 journey times on key transport corridors are reduced by 2.5%.	The NI Executive's objectives will be met in part through the NIRDP, with associated impacts as discussed previously. However, there is likely to be cumulative impacts with the NIRDP as a result of road network improvement projects on biodiversity (e.g. habitat loss and fragmentation), landscape (e.g. aesthetics and character) and water (e.g. polluted run-off and increase in impermeable surfaces), along with indirect impacts of more traffic causing air emissions. The construction of sports stadiums may have similar impacts again.
DAFM (2014) Rural Development Programme 2014-2020	This Programme has been drafted under the same six EU priorities and focus areas as the NIRDP, though Ireland's needs are in some cases different to those in NI. Measures include: Knowledge Transfer Groups, CPD for Advisors, Targeted AHW Advisory Service, Bioenergy Scheme, TAMS II, GLAS Traditional Farm Buildings, GLAS / GLAS +, Organic Farming Scheme, Areas of Natural Constraint, European Innovation Partnerships, Support for Collaborative Farming, Locally Led Agri-Environment Schemes, Beef Data and Genomics Programme, LEADER. Almost 40% of the proposed funding under the RDP is to be allocated to the "Green Low-Carbon Agri-Environment Scheme" (GLAS), whilst 35% is to be allocated to "Areas of Natural Constraint" (ANCs).	DAFM proposes rural development similar to that proposed in the NIRDP and thus cumulative impacts are possible, particularly for activities taking place in the Border region that may affect landscape, biodiversity or water. However, the SEA of the Irish RDP concludes that, when viewed in its totality, the RDP has little potential to result in any adverse environmental consequences of note. To the contrary, the RDP has the potential to deliver an overall positive contribution to Ireland's environment and to the communities that environment supports. Significant adverse cumulative effects with the NIRDP are thus unlikely.

Plan or Programme	Objectives and Policies of Relevance	Likely In-Combination Effects
DAFM (2010) Food Harvest 2020	On the basis of available data, the Committee believes that the following targets are achievable by 2020: Increasing the value of primary output in the agriculture, fisheries and forestry sector by 33% to €1.5 billion. Increasing the value-added in the agri-food, fisheries and wood products sector by 40% to €3 billion. Achieving an export target of €12 billion for the sector. This represents a 42% increase compared to the 2007-2009 average. This growth will be achieved by 'acting smart' (investing in R&D, improving skills, entrepreneurship and collaboration) and 'thinking green' (protecting the environment, conserving biodiversity and embedding sustainability into the supply chain).	Food Harvest 2020 will result in an agri-food industry with increased scale and productivity, which could potentially impact on habitats, species and water quality in particular. The report also promotes the take up of combined heat and power (CHP) and renewable energy. However, if Ireland expands its agri-food industry in the environmentally sustainable manner proposed, then there should be no significant adverse cumulative effects with the NIRDP.
DAFM (tbc) Ireland's Forestry Programme 2014-2020	This Programme has also been drafted under the same six EU priorities and focus areas as the NIRDP, however naturally there is a strong focus on forestry rather than agriculture. Measures include: Afforestation and Creation of Woodland, NeighbourWoods Scheme, Forest Roads, Reconstitution Scheme, Woodland Improvement (Thinning and Tending), Native Woodland Conservation, Knowledge Transfer and Innovation, Producer Groups, Innovative Forestry Technology, Forest Genetic Reproductive Material, and Forest Management Plans. 82% of the budget for new schemes is attributable to the Afforestation and Creation of Woodland, with another 9% going towards Forest Roads.	Ireland's Forestry Programme contains a far greater level of detail regarding forestry measures than those included in the NIRDP, with particular emphasis on ensuring that new woodland occurs in the right place in order to avoid or minimise adverse effects on the environment. The SEA found that the only adverse or uncertain effects of concern relate to biodiversity, soil and cultural heritage due to a lack of detailed information on where afforestation will occur. However, with adherence to recommended mitigation, the SEA concluded that no adverse impacts would be greater than negligible significance. Adverse cumulative effects with the NIRDP are thus unlikely.

Plan or Programme	Objectives and Policies of Relevance	Likely In-Combination Effects
Plans and programmes relating to new tourist travel increasing GHG emissions – Scheme 7.5 (RT)		
DETI (2010) A Draft Tourism Strategy for Northern Ireland	The vision is to: Create the new NI experience; Get it on everyone's destination wish list; and Double the income earned from tourism by 2020.	Through promoting and facilitating tourism through urban and rural parts of NI, including improvements to access, it is likely that this strategy will have cumulative impacts with scheme 6c of the NIRDP in terms of creating additional GHG emissions from transport.
Northern Ireland Executive (2012) Northern Ireland Economic Strategy	The overarching goal is to improve the economic competitiveness of the NI economy. This will be delivered through measures including: Increase visitor numbers and revenue to 4.2m and £676m respectively by December 2014; Develop direct air links with international long haul markets by eliminating Air Passenger Duty on direct long haul flights departing from NI.	The NI Executive's measures to encourage tourists and business people to fly to NI will have cumulative impacts with scheme 6c of the NIRDP in terms of increasing GHG emissions. Improving linkages within NI, including on a North-South and East-West basis will have similar impacts in terms of GHG emissions from increased (domestic tourism) travel.
Tourism Ireland (2011) Corporate Plan 2011-2013	The corporate plan sets out objectives, challenges and its associated strategy, targets and resources for a three year period. Tourism Ireland outlines their ambition that overseas tourism to the island will maintain markets and achieve growth targets of between 2-4.4% in visitor numbers and 4.2-6.9% in revenue over this period.	An increase in foreign visitors to Ireland will have cumulative impacts with scheme 6c of the NIRDP in terms of transport related GHG emissions; in addition there may be a localised indirect effect if some of these people combine a visit to N within the same holiday/business trip.

6 Mitigation and Recommendations

6.1.1 Annex 1 of the SEA Directive requires the Environmental Report to set out *'the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme'*. This chapter therefore sets out mitigation measures appropriate to minimising the adverse effects identified in Chapter 5 (as proposed in the Draft ER). Though not a legal requirement, this chapter also includes proposed enhancement measures to maximise the beneficial effects offered by the NIRDP.

6.1.2 Following submission of the NIRDP to the European Commission by DARD in October 2014, an observation letter was issued by the European Commission in March 2015, setting out a number of comments that were necessary for DARD to address before the NIRDP can be adopted. Many of these comments relate to the environment, and as such the finalised NIRDP has had a number of environmental improvements. In particular, these improvements involve inclusion in the NIRDP of a number of the previously proposed environmental mitigation and enhancement measures. The measures now included in the NIRDP to reduce adverse effects and enhance beneficial effects on the environment are set out later in this chapter. Finally, this chapter provides an opinion of the Programme's residual effects taking into account the agreed mitigation and enhancements.

6.2 HRA Screening at Project Level

6.2.1 Applications for funding or grants through the NIRDP will be screened for compliance with the EU Habitats Directive and an appropriate HRA will be carried out where they may be likely to impact on Natura 2000 sites. The conservation objectives of individual Natura sites will need to be considered; adverse effects on the integrity of a site or the ability to meet these conservation objectives may require the application to be refused, or an alternative project location, size or design proposed. The types of development or other rural activity that may give rise to adverse ecological impacts, for example Schemes 4.1 (BIS), 4.3 (FComp), 6.4 (RBI), 7.3 (RB), 7.5 (RT) and 8.1b (FE) ought to be avoided within (or in close proximity to) Natura 2000 sites where impacts are considered likely.

6.3 Minimising Adverse Effects

6.3.1 The SEA process identified some adverse effects on the environment of the NIRDP 2014-2020 being implemented. To ensure that these identified adverse effects are minimised, mitigation measures are required. Such measures will be particularly important where development is proposed in sensitive and/or protected areas, or close to the Border with Ireland. It must be noted that responsibility for carrying out these mitigation measures on the ground is unlikely to lie with DARD. Responsibility may lie with other Government departments and agencies, or in many cases will be addressed through the planning system (e.g. through EIAs or developer contributions).

6.3.2 The following mitigation measures were proposed in the Draft ER, set out by sustainability topic. The schemes that the mitigation measures relate to are included afterwards in brackets.

Ecology and Nature Conservation

- In line with existing planning, EIA and HRA requirements (if applicable), suitably appropriate mitigation measures should be undertaken at the planning or project application stage. Prior to construction works, a desk-based study should be carried out to determine the likelihood of species, habitats or protected sites being affected by the works. If deemed necessary, EIAs, HRAs, phase 1 habitat surveys and/or protected species surveys must be carried out by appropriately qualified ecologists; development location or design may need to be altered or suitable mitigation/compensation plans put in place to avoid significantly impacting on species and habitats. Best practice measures and guidance should be adhered to during construction, e.g. avoid sensitive areas/ seasons/ times if possible. Measures should also be taken to avoid the spread of pests/ invasive species during construction and operation. Such measures are also relevant for permitted development where species may be affected. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.1a VR, 7.3 RB, 7.4 RBS, 7.5 RT)

- Activities resulting in the loss of pollinator habitat, such as flower rich grassland and meadow should not be supported, or if necessary, mitigation such as wide buffer strips and promotion of flower rich strips along field boundaries should be introduced. (4.1 BIS, 4.3 FComp, 6.4 RBI, 8.1a WE, 8.1b FE)

- Intensification on-farm must be environmentally and ecologically sustainable (perhaps complemented by forestry, buffer strips or ecological focus areas) to avoid further deterioration in farmland biodiversity. In addition, drainage schemes should be avoided where possible in the vicinity of wetland habitats. (4.1 BIS)

- Farm activities causing an increase in livestock or land spreading (or other ammonia producing development) that are proposed within 500m of designated sites and priority habitats such as peatland and ancient woodlands should not be supported until a full assessment of the effects has been carried out. Appropriate mitigation might then include specific ammonia-reducing feedstuffs, ventilation systems and cleaning regimes, adoption of the Manure Efficiency Technology Scheme, and/or planting of appropriate trees to act as buffers. (4.1 BIS)

- Avoid facilitating access to forestry land located in peatland areas, or alternatively, ensure that infrastructure is carefully removed after forestry operations have ceased. (4.3 FC)

- Afforestation on Annex I habitats, or the habitat of Annex I birds or Annex II species should be avoided, and afforestation on intermediate value habitats should favour sites which result in improved biodiversity compared to the previous habitat.

Important open, peatland and wetland habitats should be avoided, including coniferous afforestation near acid-sensitive watercourses. (8.1a WE, 8.1b FE).

Soil and Land Use

- Best practice measures and guidance should be adhered to during construction and afforestation to avoid soil compaction, erosion or pollution. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.3 RB, 7.5 RT, 8.1b FE, 8.3 FP)
- As stated in PPS21, proposals for farm diversification will only be acceptable where they involve the re-use or adaptation of existing farm buildings; new buildings will only be permitted where there is no existing building available to accommodate the proposed use. Only less productive land should be taken out of agricultural uses. (6.4 RBI)
- Visitors/tourists should be encouraged to keep to paths to avoid erosion/trampling of soil and vegetation. They should also be encouraged to clean up any fouling. (7.5 RT)
- Afforestation in acid-sensitive areas should be avoided (8.1b FE).

Water

- New development should be avoided in flood risk zones and coastal areas. Best practice measures and guidance should be adhered to during construction to avoid water pollution from sedimentation, dust or spillages. Sustainable drainage systems (as set out in the Pollution Prevention Guidelines (PPGs) and Construction Industry Research and Information Association (CIRIA) guidance) should be employed if necessary to reduce the chance of flash floods and water pollution during operation. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.3 RB, 7.5 RT, 8.1b FE, 8.3 FP)
- Drainage schemes should be avoided where possible in the vicinity of wetland habitats. (4.1 BIS)
- Buffer zones should be set for spraying of pesticides to avoid impacts on watercourses, as appropriate to the product and target species in line with national/EU regulations and guidance. (8.3 FP)

Air Quality and Climate Change

- Farm activities causing an increase in livestock or land spreading (or other ammonia producing development) should not be supported in areas where the critical loads for nitrogen deposition for sensitive habitats is already being exceeded unless sufficient mitigation is proposed. This could include specific ammonia-reducing feedstuffs, ventilation systems and cleaning regimes, adoption of the Manure Efficiency Technology Scheme, and/or planting of appropriate trees to act as buffers. (6.4 RBI)

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- If travel to particular farms and business sites substantially increases (e.g. for some farm diversification schemes such as tourism) adversely affecting nearby roads (through congestion) and thus people, habitats and climate (through emissions), then alternative access routes, site locations or transport modes may need to be considered. (4.1 BIS, 6.4 RBI, 7.5 RT)

- Resilience measures for proposed new and existing farms, rural businesses, tourist facilities and infrastructure should include: not building in areas at risk of flooding; increasing the permeability of hard standing where appropriate; using building materials that can cope with higher temperatures; incorporating water storage/wetland areas, grassland buffer strips and climate-resilient trees to improve drainage and shading; adoption of drought prevention measures to protect soils etc. (4.1 BIS, 4.3 FComp, 6.4, RBI, 7.5 RT)

Cultural Heritage

- In line with existing planning and EIA requirements (if applicable), suitably appropriate mitigation measures should be undertaken at the planning or project application stage (including for small scale permitted development works). Prior to construction works, a desk-based study should be carried out to determine the likelihood of cultural heritage assets being affected by the works. If deemed necessary, additional (site) surveys should be carried out by suitably experienced professionals, and developments may need to be altered, or screening provided to reduce impacts on setting of the assets. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.3 RB, 7.4 RBS, 7.5 RT)

- Sensitive conservation and restoration of (derelict) historic buildings and brownfield sites should be carried out in preference to new development, in line with the requirements of NI's PPS21, PPS6 and the Historic Monuments and Archaeological objects (NI) Order 1995. (4.1 BIS, 6.4 RBI, 7.1a VR, 7.4 RBS, 7.5 RT)

- Project applications which involve the whole or partial destruction of archaeological and built heritage assets should have a condition attached to ensure that a suitably detailed research and publication strategy for the heritage asset to be destroyed is costed, built into the project design and fully implemented. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.3 RB, 7.4 RBS, 7.5 RT, 8.1a WE, 8.1b FE, 8.3 FP)

- For afforestation and other woodland operations, plan an appropriate area of open space around features of historical significance (a minimum of 20m for Scheduled Monuments) and consider the setting as well as the individual features. Where evidence suggests that significant historical remains may be present, but specific features have not been identified, identify these areas in forest management plans, restrict any planting to smaller trees or shrubs and minimise ground disturbance. For new woods in areas where the landscape history is important, consider restoring tree cover on previously wooded sites.

Archaeological risk assessment of neighbouring watercourses is also advised prior to commencement of a project. For forest roads, avoid disturbing the ground on or near sites of historical significance and avoid using areas of historical importance for storing material, stacking timber or as a parking area for machinery. (4.3 FComp, 8.1a WE, 8.1b FE, 8.3 FP)

Landscape

- In line with existing planning and EIA requirements (if applicable), suitably appropriate mitigation measures should be undertaken at the planning or project application stage. Prior to construction works, a desk-based study should be carried out to determine if there may be landscape or visual impacts. If deemed necessary, additional (site) surveys should be carried out by suitably experienced professionals, and developments may need to be altered, or screening provided to reduce impacts on character and views, whilst minimising light spill (see PPS21 for more details on integration of buildings in the countryside). (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.3 RB, 7.4 RBS, 7.5 RT)
- Forests should be designed and managed to take account of the landscape context to ensure visual aspects are appropriately addressed. They should also take account of relevant landscape designations and policies, landscape character assessments and local distinctiveness of the landscape. (8.1a WE, 8.1b FE)

6.4 Enhancing Beneficial Effects

6.4.1 The majority of schemes proposed under the six EU priorities of the NIRDP 2014-2020 are expected to have at least some beneficial effects on the environment of NI (see Section 5.1). This is particularly so when compared to the 'do nothing' alternative as many aspects of the environment are currently in poor and/or deteriorating condition (see Sections 3.3 and 3.4).

6.4.2 The Draft NIRDP 2014-2020's strong focus on resource and energy efficiency, environmental training and enhancing natural and built environments were thought to add to the benefits delivered through the current Programme. However, if funding allows, even more could be done to maximise the environmental benefits. Enhancement measures are suggested below by sustainability topic (reproduced from the Draft ER).

Ecology and Nature Conservation

- Farmers operating in areas where ammonia and nitrogen deposition are causing a deterioration in sensitive habitats could be targeted through the Manure Efficiency Technology Scheme. (4.1 BIS)
- Advice provided to rural businesses could specifically include how to reduce the impacts of ammonia emissions, and also about reviewing and taking into account the status of important ecological sites affected by nitrogen deposition. (6.4 RBI)

- Advice provided to businesses could specifically refer to the part they can play in improving on- and off-site biodiversity, particularly for pollinators. (1.2b EAS, 6.4 RBI)
- Visitors/tourists could be encouraged to use sustainable transport if possible and keep to paths to avoid trampling and disturbance of sensitive species and habitats. Visitors/tourists could also be encouraged to keep domestic pets on leads. (7.5 RT)
- Visitor centres could promote understanding of NI's habitats and species and the threats to native biodiversity. (7.5 RT)
- Advice to farmers could include recommendations to diversify land use to boost farmland biodiversity and provide a greater array of ecosystem services. (1.1c GT, 6.4 RBI, 10.1a)
- Encourage farms that fall below the greening thresholds agreed in the June 2013 CAP deal (10ha for crop diversification and 15ha for ecological focus areas) to nonetheless undertake these actions as best practice. (1.2b EAS, 10.1a EF)
- Improve management, protection and connectivity of upland and marine habitats and species, particularly important in a changing climate. (10.1a EF, 13.2 LFA/ANC)
- Adhere to the EC's 2013 guidance on Farming for Natura 2000 which sets out recommendations for suitable agricultural practices that can contribute to the conservation of Natura 2000 habitats and species[4]. (1.2b EAS, 7.1b N2K)

Socio-Economics, Health and Quality of Life

- Consider re-training opportunities for manual farm workers whose skills may no longer be required with a move towards greater efficiency through technology/mechanisation. (4.1 BIS and Measure 1)
- Any regeneration that involves either construction works or community cohesion measures ought to incorporate new greenspace wherever possible to help improve quality of life (7.1a VR, 7.4 RBS).
- Visitor centres could emphasise/advertise the importance of outdoor physical activity for physical and mental health and wellbeing; they could also be encouraged in woodland environments with a focus on cycling, tree top assault courses, bushcraft, woodland education etc. (7.5 RT)

[4] Article 34(2)(b) of Council Regulation 73/2009 stipulates that land remains eligible for single farm payments when environmental management requirements result in a situation in which that land would not otherwise be recognised as being part of the agricultural area of the farm. Furthermore, EU case law (Case C-61/09) has shown that as long as the agricultural area is being used for an agricultural activity it is irrelevant whether this activity has an essentially agricultural or nature conservation objective.

Soil and Land Use

- Visitor centres could encourage people to grow their own food and to buy locally produced food (7.5 RT, 16.3 AfT).
- Consider blocking drains to restore the hydrology of degraded peatland, perhaps in association with DOE. In addition, consider restoration or re-creation of peatland habitat (e.g. on ex-forestry sites) where there is a peat layer of at least 0.5m and maintaining/creating a high water level is feasible. (Measure 10)

Water

- Advice provided to businesses could specifically refer to the part they can play in improving the water environment, such as enhancing water efficiency and installing water storage/wetland features on farms. (1.2b EAS, 6.4 RBI)
- Visitor centres could emphasise/advertise the importance of sustainable water use for preserving habitats and landscapes, along with promoting environmentally responsible behaviour in marine environments. (7.5 RT)
- Consider blocking drains to restore the hydrology of degraded peatland (in association with NIEA) thus improving the quality of surface water and ground water, the resilience of the water environment to climate change impacts; and minimisation of and adaption to flood risk. (Measure 10)
- Farms located in areas with poor river quality (e.g. central and south-eastern parts of the country) could be specifically targeted to join AES and/or select options relevant to the water environment. (10.1a EF)
- It ought to be a requirement that all new rural developments incorporate (or at least consider the respective costs and benefits of) sustainable drainage schemes. (4.1 BIS, 4.3 FComp, 6.4 RBI, 7.4 RBS, 7.5 RT)

Air Quality and Climate Change

- Farmers operating in areas where ammonia and nitrogen deposition are causing a deterioration in sensitive habitats could be targeted through the Manure Efficiency Technology Scheme. (4.1 BIS)
- Advice provided to rural businesses could specifically include how to reduce the impacts of ammonia emissions, and also about reviewing and taking into account the status of important ecological sites affected by nitrogen deposition. (6.4 RBI)
- Advice provided to businesses could specifically refer to the part they can play in adapting to climate change, for example through increasing cooling greenspace and sustainable drainage. (4.1 BIS, 6.4 RBI)
- Village renewal and other new developments should incorporate new greenspace wherever possible (4.1 BIS, 6.4 RBI, 7.1a VR, 7.4 RBS, 7.5 RT).

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- Encourage home-working for those with access to broadband and encourage re-use of ICT equipment to reduce the need for additional production. (7.3 RB)
- Visitors/tourists could be encouraged to use non-motorised or public transport. Though outside of DARD's control, environmentally friendly transport services (e.g. coaches, buses and cycle hire) could operate between tourist sites and train stations/airports. (7.5 RT)
- Visitor centres could emphasise/advertise the importance of climate change mitigation and adaptation for preserving habitats, whilst highlighting the adverse impacts that air pollution caused by vehicles can have on vegetation. (7.5 RT)
- Support for measures to avoid climate change impacts and increase resilience to these could be more clearly identified. Species selection and target annual or programme-wide spatial area needs to be identified to be able to assess the significance of the carbon sequestration and other benefits. (8.1b FE)

Material Assets

- Local, sustainable and recycled materials ought to be encouraged for all construction works (ensuring that procurement requirements are met), whilst materials from any demolished structures should also be re-used or recycled where possible. (4.1 BIS, 6.4 RBI, 7.1a VR, 7.4 RBS, 7.5 RT)
- Advice provided to businesses could specifically refer to the importance of waste minimisation and recycling. (1.1a BDKT, 1.2a ITED, 4.1 BIS, 4.2 AfPI, 6.4 RBI, 7.4 RBS)
- Visitor centres could emphasise/advertise the importance of sustainable resource use, waste minimisation and recycling. (7.5 RT)

Cultural Heritage

- Incorporate sensitively restored historic buildings into heritage trails with appropriate signage and tourist information boards as part of village renewal schemes. (7.1a VR)
- Provide advice to business and farmers about the adverse impacts of agricultural and forestry activities and developments on archaeological and built heritage assets and highlight the advantages of protecting and managing these assets as part of the rural economy. (1.2b EAS, 6.4 RBI)
- Consider including an option under the agri-environment Scheme 10.1a (EF) to complete historic monument management plans to restore and enhance historic monuments.
- Though not necessarily in the remit of the NIRDP, consider developing a mechanism which would allow information on archaeological and built heritage assets on both sides of the border to be made available through the websites of

the National Monuments Service in Ireland and the DOE in Northern Ireland. Also consider developing a NI 'portable antiquites scheme' which will be a mechanism to incorporate stray finds made through legal metal detecting into the archaeological record.

Green Infrastructure and Ecosystem Services

- Advice provided to businesses could specifically refer to environmental and sustainability improvement measures, as well as the part they can play in facilitating ecosystem services. (1.2b EAS, 6.4 RBI)
- New development and technology to improve farm efficiency and productivity must not undermine the farm's ability to provide ecosystem services. Advice should be provided to businesses and local authorities to plan diversification to be consistent with the ecosystem services needs of the local area. (1.1a BDKT, 4.1 BIS, 6.4 RBI)
- Tourist facilities could emphasise/advertise the importance of green infrastructure and the ecosystem services provided by terrestrial, aquatic and marine ecosystems to increase public awareness and understanding. Activity/tourist centres could be encouraged in woodland environments with a focus on cycling, tree top assault courses, bushcraft, woodland education etc. (7.5 RE)
- Consider a site selection mapping tool to maximise the environmental benefits predicted through woodland expansion, i.e. to ensure the right tree is indeed planted in the right place. (8.1a WE, 8.1b FE)
- Specific options for providing ecosystem services, particularly in LFA/ANCs (i.e. management and protection of habitats, landscapes and water resources) could be provided through AES[5]. (10.1a EF)
- Consider blocking drains to restore the hydrology of degraded peatland (in association with NIEA) in order to enhance priority habitat; enhance connectivity of habitats; improve resilience of habitats and the water environment to climate change impacts; adapt to flood risk, storms and changing climate patterns; and enhance ability to provide ecosystem services. (Measure 10)
- Ensure connectivity of ecological networks, e.g. through creation of or linking up existing stepping stone habitats and other green infrastructure assets. NIEA has suggested a spatial landscape analysis to aid with the identification of the most important areas for support which would ensure greatest impact with limited funds. (Measures 10 and 8)
- Follow the suggestions for an ecosystems approach to farming in the NI Chapter of the 2011 UK National Ecosystem Assessment, as set out in Table 6.1 below.

[5] See Defra's 2013 guidance on payments for ecosystem services.

Table 6.1: Comparison of current and ecosystem services based approaches to farming

Current Farming Approach	The Ecosystems Approach
• Specialisation - heavy reliance upon livestock producing meat or milk. • Intensive agriculture, driven by subsidy conditions. • Single output leads to vulnerability to disease and market fluctuations. • CAP Single Farm Payment significant determiner of farm viability. • Dependence on fossil fuels for energy, fertilisers and pesticides leaves farms vulnerable to price changes and security of supply. • Expensive management of animal wastes uses water and wastes potential energy and nutrients. • Phosphate and nitrate runoff contribute to river pollution.	• Mixed farming - multiple outputs and goals. • Permanent pastureland acts as carbon store. • Crop rotation allows natural nutrient soil regeneration and reduces the need for pesticide application. • Use of land to store carbon helps to meet climate targets. • Anaerobic digestion of animal waste and use of other renewable energy sources (eg wind, solar) provides energy that can be used onsite or sold to the community. • Renewable generation provides energy, jobs and market drivers. • Alternative crops (eg oilseed rape, fruit) reduce reliance upon livestock as the single source of income. • Involvement in agri-environment schemes provides income to carry out environmentally friendly practices for archaeological or natural heritage sites. • Downstream flood risk minimised by river and flood plain management. • Wide hedgerows provide pollinators and natural pest control. • Income from providing access for recreation and tourism.

6.5 Mitigation and Enhancement Measures Incorporated into the NIRDP

6.5.1 Section 3.2.2 of the finalised NIRDP states that "*DARD will consider the SEA recommendations as part of the programme implementation, as many of the mitigation and potential enhancement measures are appropriate for inclusion in the scheme guidance*". DARD has committed to implementing the following specific SEA mitigation measures at Programme level (text taken directly from Section 3.2.2 of the finalised NIRDP).

Capital Investment

6.5.2 The following mitigation measures will be applied to capital investment:

6.5.3 Where needed the requirements of Environmental Impact Assessments and energy efficiency obligations will be respected. This will include criterion in the selection of

eligible items for funding and the assessment of individual projects. This will be in accordance with Article 45 of Regulation (EU) No 1305/2013 which requires an assessment of the expected environmental impact where the investment is likely to have a negative effect on the environment. The following actions will be undertaken:

- An Environmental Impact Assessment (EIA) will be carried out on all investments where this is legally required.
- Capital investment projects will be assessed for possible impacts on Natura 2000 sites and where required a Habitats Regulation Assessment will be carried out by the Competent Authority.
- Investments will be subject to the necessary planning and other permissions.
- All projects with be subject to a Development Path Analysis (DPA) which assesses both the direct and indirect environmental impacts that are likely to result from the proposed activity. The DPA scoring is considered during project selection. Environmental sustainability as a horizontal principle is included in all selection panels.
- Any investments negatively impacting on e.g. climate change, biodiversity, Water Framework Directive (WFD), Floods Directive or air quality objectives such as an increase in livestock or in manure and slurry spreading on land (or other ammonia producing developments) will only be supported if there are appropriate mitigation actions which will be evaluated during project selection and on a catchment basis.
- Only investments that go beyond the requirement of the Nitrates Action Programme will be funded.

Drainage

6.5.4 In addition the following mitigation measures will be applied to drainage:

6.5.5 Financial support for drainage channels will be provided only if compliance with the WFD, in particular Article 4(7), (8) and (9) is demonstrated taking duly into account cumulative impacts, and the appropriate mitigation measures at river basin management level are foreseen.

6.5.6 In addition to this Northern Ireland will also be making available advice to farmers and land managers, at an early stage and prior to consideration of grant assistance, which will address emissions, manure, pesticide and fertiliser use and other steps they can take to mitigate any harmful impacts on soil, water, air quality and biodiversity.

6.5.7 In respect of the installation of drainage systems to improve land management the following will be required:

i. A farm level Nutrient and Pesticide Management Plan
ii. An appropriate environmental assessment of the proposed drainage works.

iii. Drainage that would have an adverse impact on the Water Framework Directive status of water bodies, flooding under The Floods Directive or the status Natura 2000 sites is not eligible.

iv. New drainage on high carbon peat soils is not eligible.

Forestry

6.5.8 The following mitigation measures will be implemented for forestry

- Afforestation of important open, peatland and wetland habitats or near acid-sensitive water courses will be avoided.
- For afforestation and other woodland operations, an appropriate area of open space around features of historical significance will be planned.
- Where evidence suggests that significant historical remains may be present, these will be identified in forest management plans, and ground disturbance will be minimised.
- For new woods in areas where the landscape history is important, restoring tree cover on previously wooded sites will be supported.
- Forests will be designed and managed to take account of the landscape context to ensure visual aspects are appropriately addressed.

6.6 Residual Effects of the NIRDP

6.6.1 In response to the European Commission's Observation letter, DARD felt that addressing the environmental impact of projects, particularly relating to drainage and forestry, were of particular importance. This has been addressed by changes to Measure 4 (Investments in Physical Assets), changes to the General Conditions for the Measures (Section 8.1 of the NIRDP), and inclusion in the NIRDP of a number of mitigation and enhancement measures (Section 3.2.2 of the NIRDP, repeated in this Chapter, above).

6.6.2 As a result, it is anticipated that none of the effects identified as adverse in the detailed matrix assessment will be of greater than minor significance. This will ensure that, even without adoption of additional enhancement measures, the overall effect of the NIRDP 2014-2020 is strongly positive.

6.6.3 Adoption of these mitigation measures should also ensure that identified adverse cumulative effects, both between the schemes within the NIRDP and between the NIRDP and other plans and programmes, will not be significant.

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7 Monitoring and Next Steps

7.1 Monitoring Proposals

7.1.1 Article 10 of the SEA Directive requires DARD, as the Managing Authority, to monitor significant environmental effects of implementing the NIRDP. This must be done in such a way as to also identify unforeseen adverse effects and to take appropriate remedial action. Monitoring should commence as soon as the programme is adopted, with annual reporting carried out for the life of the programme. It may be necessary to revise the monitoring programme periodically so that it takes account of new methods and increased understanding of the baseline environment.

7.1.2 Rural development policy for the period 2014-2020 is more result-oriented than the current and previous programmes. Therefore the measurement of programme progress and achievements plays a crucial role and the establishment of an adequate measurement system to assess how far the expected objectives have been achieved, based on common and programme-specific indicators is becoming ever more essential. The following types of indicators can be differentiated: common context indicators developed by the Commission to define the programme strategy; and programme-related indicators which are used to measure the achievements of RDP interventions in light of their objectives.

7.1.3 Within the current NIRDP, Development Path Analysis (DPA) has been used to monitor the environmental impact of projects under certain measures. The DPA recognises six development paths from Path A (activity that simply meets minimum environmental regulations) to Path F (activity that pursues environmental protection), with the objective of the tool being to help shift activity away from Path A towards Path F. However, the Environment Sub Group of the NIRDP Monitoring Committee have raised issues with the suitability of DPA and have suggested that alternative ways of measuring environmental impact of projects funded under the Programme should be considered.

7.1.4 In light of the above, ADAS proposed possible monitoring measures based on the common context indicators and the results of the SEA as a means of monitoring the identified adverse effects. These monitoring measures are set out in Table 7.1 (reproduced from the Draft ER).

Table 7.1: Suggestions for Possible Monitoring Measures

SEA Objectives	Potential adverse environmental impacts of implementing the NIRDP 2014-2020	Recommended mitigation measures for inclusion in the NIRDP 2014-2020	Potential enhancement measures for inclusion in the NIRDP 2014-2020	Possible monitoring measures for undertaking by relevant Government Departments, land owners or organisations
Ecology & Nature Conservation	• Drainage schemes may change water quality and quantity dynamics with uncertain impacts on wetland habitats. • Intensifying of agricultural activities could degrade or cause loss of habitats (affecting e.g. specialist birds and pollinators) and increase methane and ammonia emissions (affecting sensitive flora). • Construction works associated with new or upgraded buildings or structures has the potential for habitat loss and/or fragmentation, and disturbance effects on species. • Disturbance from increased number of tourists to semi-natural areas and emissions from tourist vehicles affecting sensitive flora. • Loss or degradation of habitat (with knock on effects for species, particularly those relying on open, wetland or peatland habitats) from inappropriately located afforestation. • Possible increased spread of invasive species with wider access to the countryside.	• Applications for funding or grants through the NIRDP must be screened for compliance with the EU Habitats Directive and an appropriate HRA will be carried out where they may be likely to impact on Natura 2000 sites. • Prior to construction works, desk-based, phase 1 habitat and protected species surveys may be carried out if required at the planning stage and if necessary developments may be altered to avoid significant impacts on species and habitats. • Best practice measures and guidance should be adhered to during construction e.g. avoiding sensitive areas, seasons and times if possible as well as the spread of pests/invasive species. • Activities resulting in the loss of pollinator or wetland habitat should not be supported, or if necessary, mitigated with wide buffer strips. • Farm activities causing an increase in livestock or land spreading should be avoided within 500m of designated sites and priority habitats such as peatland and ancient woodlands unless METS, ventilation, buffers etc are introduced. • Avoid afforestation of important open, peatland and wetland habitats or near acid-sensitive watercourses.	• Farmers operating in areas where ammonia/ nitrogen deposition are affecting sensitive habitats could be targeted for METS. • Advice provided to rural businesses could specifically include how to reduce the impacts of ammonia emissions and improve on- and off-site biodiversity, particularly for pollinators. • Visitors/tourists could be encouraged to use sustainable transport if possible and keep to paths to avoid trampling and disturbance of sensitive species and habitats. • Visitor centres could promote understanding of NI's habitats and species and the threats to native biodiversity. • Advice to farmers could include recommendations to diversify land use to boost farmland biodiversity and provide a greater array of ecosystem services. • Encourage farms that fall below the greening thresholds agreed in the June 2013 CAP deal (10ha for crop diversification and 15ha for ecological focus areas) to nonetheless undertake these actions. • Improve management, protection and connectivity of upland and marine habitats and species. • Adhere to the EC's 2013 guidance on Farming for Natura 2000 which sets out recommendations for suitable agricultural practices that can contribute to the conservation of Natura 2000 habitats and species.	• Record presence of bird and other animal species on farms undergoing intensification, habitat loss or land use change. • Record ecological quality of rivers on, adjacent to or downstream of farmland. • Record the proportion of funding applications for physical construction works where ecological surveys were undertaken. • Where mitigation measures are requested at project level, identify proportion of projects (mid or end of 2014-2020 period) where mitigation was actually undertaken. • Monitor land use of designated sites to ensure that conversion to woodland is not adversely impacting other important habitats on a landscape scale.
Socio-Economics, Health and Quality of Life	• Noise and dust from construction works. • Increased odour from more intensive agriculture or new industrial operations. • Increased congestion and associated degradation in air quality due to an expanded tourism sector. • Loss of traditional manual agricultural jobs.	• None required.	• Consider re-training opportunities for manual farm workers whose skills may no longer be required with a move towards greater efficiency through technology/mechanisation. • Visitor centres should emphasise/advertise the importance of outdoor physical activity for physical and mental health and wellbeing. • Regeneration involving construction works or community cohesion measures should incorporate new green spaces to help improve quality of life.	• Record number of new jobs created and traditional jobs lost. • Record visitor numbers to promoted sites. • Monitor air quality in locations where traffic increases due to diversified land use / tourism. • Monitor odour in vicinity of farms for those with METS, those increasing animal numbers, and those diversifying to odour industrial activities.

SEA Objectives	Potential adverse environmental impacts of implementing the NIRDP 2014-2020	Recommended mitigation measures for inclusion in the NIRDP 2014-2020	Potential enhancement measures for inclusion in the NIRDP 2014-2020	Possible monitoring measures for undertaking by relevant Government Departments, land owners or organisations
				• Record number of diversification/tourism projects that provide/encourage physical activities.
Soil and Land Use	• Construction works associated with new buildings and infrastructure may adversely impact on soils e.g. through erosion, compaction or pollution from spillages. • Farm diversification could lead to a reduction in food production. • Coniferous afforestation could increase soil acidification.	• Best practice measures and guidance should be adhered to during construction to avoid soil compaction, erosion or pollution; • Existing buildings and previously developed land should be re-used wherever possible; failing this only less productive land should be taken out of agricultural uses. • Visitors/tourists should be encouraged to keep to paths to avoid erosion/trampling of soil and vegetation. • Afforestation in acid-sensitive areas should be avoided.	• Visitor centres should encourage people to grow their own food and to buy locally produced food; and • Reinstate ecologically functioning peatland habitats (e.g. by blocking drains) to restore hydrology, reduce erosion/sedimentation, and to act as a carbon sink.	• Record amount and grade of land taken out of agricultural production. • Record land area of new impermeable surfaces (e.g. buildings) • Record land area of new woodland and also area of habitats it has replaced. • Survey soil quality, pH, chemical and nutrient content. • Monitor the level of the water table.
Water	• Construction of new buildings and infrastructure has potential for adverse effects on water quality (pollution and sedimentation) and flood risk. • Increased concentration of farming in productive area may cause pollution trends to accelerate. • Drainage schemes may change water quality and quantity dynamics, particularly of wetlands. • Rise in tourist numbers to coastal areas could impact on water quality and marine life (e.g. due to litter, motorised water sports etc). • Acidification and sedimentation of watercourses from non-native coniferous plantations and associated forestry activities, including contamination from fertilisers.	• New development should be avoided in flood risk zones and coastal areas. • Best practice measures and guidance should be adhered to during construction to avoid water pollution from dust or spillages. • Sustainable drainage systems should be employed to reduce the chance of flash floods and water pollution during operation. • Drainage schemes should be avoided where possible in the vicinity of wetland habitats. • Buffer zones should be set for spraying of pesticides to avoid impacts on watercourses.	• Advice provided to businesses should refer to the part they can play in improving the water environment, such as enhancing water efficiency and installing water storage/wetland features on farms. • Visitor centres should emphasise/advertise the importance of sustainable water use for preserving habitats and landscapes. • Consider blocking drains to restore the hydrology of degraded peatland (in association with NIEA) thus improving the quality of surface water and ground water, the resilience of the water environment to climate change impacts; and minimisation of and adaption to flood risk. • To help NI meet the Water Framework Directive target of improving river water quality, farms in areas with poor river quality could be encourage to join AES. • It could be a requirement that all new rural developments incorporate sustainable drainage schemes.	• Record volume of fertilisers, pesticides and other chemicals used by farmers and land managers. • Record quality of rivers on, adjacent to or downstream of farmland. • Record extent of riparian buffers funded. • Monitor the level of the water table. • Record number of projects responsible for adverse and positive changes in water quality.
Air Quality	• Land use change to industrial facilities could increase air pollution. • Encouraging new visitors to rural areas could increase emissions of NOx and PM10 from associated transport, affecting both human health and sensitive flora.	• Best practice measures and guidance should be adhered to during construction to avoid emissions contributing to dust or odour affecting health. • If travel to farms and business sites increases and adversely affects local roads, then alternative access routes, site locations	• Farmers operating in areas where ammonia/ nitrogen deposition are affecting sensitive habitats could be targeted for METS. • Advice provided to rural businesses could specifically include how to reduce the impacts of ammonia emissions. • Environmentally friendly transport services could operate between tourist sites and train stations/airports, along with	• Monitor gases/PM during construction / afforestation operations and along tourist routes to ensure emissions are within acceptable thresholds as appropriate to the environmental vicinity (at project level).

SEA Objectives	Potential adverse environmental impacts of implementing the NIRDP 2014-2020	Recommended mitigation measures for inclusion in the NIRDP 2014-2020	Potential enhancement measures for inclusion in the NIRDP 2014-2020	Possible monitoring measures for undertaking by relevant Government Departments, land owners or organisations
	• Construction activities will generate temporary emissions, dust, ozone, particulate matter.	or transport modes may need to be considered. • Farm activities causing an increase in livestock or land spreading should be avoided where the critical loads for nitrogen deposition for sensitive habitats is already being exceeded unless METS, ventilation, buffers etc are introduced.	encouraging visitors to use non-motorised public transport where possible. • Visitor centres could highlight the adverse impacts that air pollution caused by vehicles can have on vegetation.	• Record number of complaints to environmental health department re odour from farms. • Monitor habitats affected by ammonia and nitrogen deposition.
Climate Change	• Increase in income, employment, mobility and new businesses can result in higher demand for goods, travel and energy, increasing GHG emissions. • An expanding tourism industry is likely to increase GHG emissions from more people driving through the countryside, and possibly also aeroplane emissions. • No attempts to adapt new or existing development to the predicted effects of climate change, leaving rural businesses and communities vulnerable.	• Resilience and adaptation measures should be incorporated for new and existing farms, rural businesses, tourist facilities and infrastructure, e.g. avoiding flood risk areas; incorporating SuDS or wetland areas; increasing greenspace and shading by trees; and use of building materials that can withstand higher temperatures.	• Environmentally friendly transport services could operate between tourist sites and train stations/airports, along with encouraging visitors to use non-motorised public transport where possible. • Advice provided to businesses could refer to the part they can play in improving energy efficiency and adapting to climate change. • Visitor centres could emphasise/advertise the importance of climate change mitigation and adaptation for preserving habitats. • Village renewal and regeneration could incorporate new greenspace. • Encourage home-working for those with access to broadband and encourage re-use of ICT equipment to reduce the need for additional production. • Support for measures to avoid climate change impacts and increase resilience to these could be more clearly identified. Re forestry, species selection and target annual or programme-wide spatial area needs to be identified to be able to assess the significance of the carbon sequestration and other benefits.	• Record the number of business that actually employ energy efficiency measures. • Record proportion of new and renovated buildings incorporating climate adaptation measures, e.g. sustainable drainage systems. • Measure CO2 levels in traffic hotspots. • Measure increase in CO2 sequestered due to afforestation.
Material Assets	• Unsustainable use of resources and production of waste can occur during the construction process. • No reference to the importance of recycling and waste minimisation. • Possible increased demand for raw materials for new equipment etc.	• None required.	• Construction of new buildings or upgrading of existing buildings and infrastructure could use local, sustainable and recycled materials if possible, whilst materials from any demolished structures could also be re-used or recycled where possible. • Advice provided to businesses could refer to the importance of sustainable resource use, waste minimisation and recycling. • Visitor centres could emphasise/advertise the importance of sustainable resource use, waste minimisation and recycling.	• Record the number of business that actually employ resource efficiency measures. • Record re-use and recycling rates. • Record proportion of developments constructed on greenfield vs brownfield land and the number that renovate/use existing buildings vs new build. • Record proportion of waste that goes to landfill from construction processes.
Cultural Heritage	• Construction works, forestry and intensive agricultural activities have the potential for adverse effects on both designated and	• Prior to construction works, desk-based surveys (and site surveys if required) should be carried out at the planning stage to	• Incorporate sensitively restored historic buildings into heritage trails with appropriate signage and tourist information boards as part of village renewal schemes.	• Record number of projects that seek to protect or enhance cultural heritage features.

SEA Objectives	Potential adverse environmental impacts of implementing the NIRDP 2014-2020	Recommended mitigation measures for inclusion in the NIRDP 2014-2020	Potential enhancement measures for inclusion in the NIRDP 2014-2020	Possible monitoring measures for undertaking by relevant Government Departments, land owners or organisations
	non-designated archaeological and built heritage assets. • Archaeological and built heritage assets may suffer as pressure for efficiency (and intensification) on farms increases. • Increased focus on cultural heritage based tourism could cause degradation of the visited assets.	determine if any cultural heritage assets may be affected. • Developments may need to be altered, or visual screening provided to reduce impacts on setting of the assets. • Sensitive conservation and renovation of existing derelict historic buildings and other structures should be carried out in preference to new development, in line with the requirements of PPS21, PPS6 and the Historic Monuments and Archaeological objects (NI) Order 1995. • Project applications which involve the whole or partial destruction of archaeological and built heritage assets should have a condition attached to ensure that a suitably detailed research and publication strategy for the heritage asset to be destroyed is costed, built into the project design and fully implemented. • For afforestation and other woodland operations, plan an appropriate area of open space around features of historical significance. • Where evidence suggests that significant historical remains may be present, identify these areas in forest management plans, and minimise ground disturbance. • For new woods in areas where the landscape history is important, consider restoring tree cover on previously wooded sites.	• Provide advice to business and farmers about the adverse impacts of agricultural and forestry activities and developments on archaeological and built heritage assets and highlight the advantages of protecting and managing these assets as part of the rural economy. • Consider including an option under the agri-environment Scheme 10.1a (EF) to complete historic monument management plans to restore and enhance historic monuments. • Consider developing a mechanism which would allow information on archaeological and built heritage assets on both sides of the national border to be made available through the websites of the National Monuments Service in Ireland and the DOE in Northern Ireland. Also consider developing a NI 'portable antiquites scheme' which will be a mechanism to incorporate stray finds made through legal metal detecting into the archaeological record.	• Record number of projects that have an adverse effect on cultural heritage features. • Record proportion of developments that renovate/use existing buildings vs new build. • Record the number of forest management plans that refer to cultural/archaeological heritage.
Landscape	• Construction works associated with new buildings and infrastructure has the potential for adverse effects on landscape character, protected landscapes and visual amenity (including light spill). • Afforestation can have adverse effects on landscape character depending on where it is located and how it is designed in relation to the landform or the enclosure pattern.	• Prior to construction works, desk-based surveys (and site surveys if required) should be carried out at the planning stage to determine what the landscape and visual impacts are likely to be. • Developments may need to be altered, or screening provided to reduce impacts on character and views. • New/renovated buildings in rural areas should seek to blend in with the landscape and minimise light spill (as per PPS21).	• Visitors/tourists could be encouraged to recycle their waste rather than littering public sites.	• Record number of applications for physical/capital construction works where landscape impacts was a consideration. • Monitor extent of afforestation by type in areas of open habitat and previous woodland use.

SEA Objectives	Potential adverse environmental impacts of implementing the NIRDP 2014-2020	Recommended mitigation measures for inclusion in the NIRDP 2014-2020	Potential enhancement measures for inclusion in the NIRDP 2014-2020	Possible monitoring measures for undertaking by relevant Government Departments, land owners or organisations
		• Forests should be designed and managed to take account of the landscape context to ensure visual aspects are appropriately addressed.		
Green Infrastructure and Ecosystem Services	• Construction activities and land use change could marginally reduce ability of existing land to provide ES, for example food production, habitat provision, aesthetic/landscape value.	• New development and technology to improve farm efficiency and productivity must not undermine the farm's ability to provide ecosystem services.	• Advice provided to businesses should refer to environmental and sustainability improvement measures, as well as the part they can play in facilitating ecosystem services in relation to the needs of the local (or wider) area. • Tourist facilities through public awareness and understanding could make reference to importance of green infrastructure and ecosystem services provided by terrestrial, aquatic and marine ecosystems. • Activity/tourist centres could be encouraged in woodland environments with a focus on cycling, tree top assault courses, bushcraft, woodland education etc. • Consider a site selection mapping tool to maximise the environmental benefits predicted through woodland expansion, i.e. to ensure the right tree is indeed planted in the right place. • Specific options for providing ecosystem services, particularly in LFA/ANCs (i.e. management and protection of habitats, landscapes and water resources) could be provided through AES. • Consider blocking drains to restore the hydrology of degraded peatland. • Ensure connectivity of ecological networks, e.g. through creation of or linking up existing stepping stone habitats and other green infrastructure assets. NIEA has suggested a spatial landscape analysis to aid with the identification of the most important areas for support which would ensure greatest impact with limited funds. • Village renewal and regeneration could incorporate new greenspace. • There is a need for a coordinated planned approach regarding green infrastructure to direct funding to areas of most benefit. • Follow guidance from UKNEA and Defra suggests measures for enhanced land management and ecosystem service provision within farmed environments.	• Record the proportion of new development that incorporates green space, vegetative planting or sustainable drainage systems. • Record the uptake of training in relation to environmental advice. • Survey visitor knowledge of ‘nature’s benefits’.

7.2 Monitoring Measures Incorporated into the NIRDP

7.2.1 During the development of the NIRDP, DARD sought information from divisions within the Department on potential alternatives to Development Path Analysis (DPA) that could be used to monitor the sustainability and environmental impact of all measures across the new Programme. DARD also discussed the issue of monitoring with the Department of Finance and Personnel (DFP) to ensure consistency across all the European Structural Investment (ESI) funds. Following the discussions within DARD and with DFP, it was decided to continue with the DPA analysis again, ensuring consistency with the ERDF programme.

7.2.2 Regarding monitoring, the European Commission set out in their Observation letter on the NIRDP that:

"monitoring environmental sustainability is an essential element to ensure that the benefits of funding provided can be described in terms of RDP indicators, such as financial outlay and hectares covered, but also in terms of environmental policy targets and outcomes. It is necessary to ensure that it is clear what this monitoring will encompass, and how, and that it is closely related to RDP and environmental policy targets and outcomes."

7.2.3 The amended Section 3.3.26 of the NIRDP thus sets out details on the monitoring system which will be established in conjunction with all the ESI funds to assess environmental sustainability.

7.2.4 The DPA will be used to assess each application for support under the RDP, and is based on an assumption that certain patterns of development, or "development paths," are more environmentally sustainable than others and that regions have choices about which path to pursue. The tool recognises six development paths, with the aim being to shift activity towards Path F which pursues environmental protection at the same time as it pursues economic and social development. When scoring project proposals, both the direct and indirect environmental impacts that are likely to result from the activity will be considered. The DPA scoring will form part of the information that is considered during project selection. Environmental sustainability as a horizontal principle is included in selection panels' scoring sheets and the DPA score will inform the selection panel.

7.2.5 In addition to the above, DARD will develop specific indicators to monitor the environmental impact of the programme. These will be included in the working evaluation plan.

7.3 Next Steps

7.3.1 Once the NIRDP 2014-2020 has been adopted, an SEA Statement will be produced to provide information on how the Environmental Report and consultees' opinions were taken into account in deciding the final form of the NIRDP.

7.3.2 The environmental impact of the NIRDP will be monitored during the years 2015-2023 by both DARD and the Rural Development Programme Monitoring Committee.

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9 Appendices

Appendix A: Scoping Consultation Responses

Appendix B: Relevant Environmental Protection Objectives

Appendix C: Environmental Baseline Maps

Appendix D: Statutory and Public Consultation Responses

Appendix E: Detailed Matrix Assessment

Non Technical Summary – standalone document provided separately