



Strategic Environmental Assessment Statement

Barrow

2018

Strategic Environmental Assessment Statement

For

River Basin (14) Barrow Flood Risk Management Plan

Areas for Further Assessment included in the Plan:

<i>Fiodh Alúine</i>	<i>Allenwood</i>
<i>Baile Átha Í</i>	<i>Athy</i>
<i>Baile Cheatharlach</i>	<i>Carlow</i>
<i>Díseart Diarmada</i>	<i>Castledermot</i>
<i>An Daingean</i>	<i>Daingean</i>
<i>Gráig na Manach</i>	<i>Graiguenamanagh</i>
<i>Leithghlinn an Droichid</i>	<i>Leighlinbridge</i>
<i>Móinteach Mílic</i>	<i>Mountmellick</i>
<i>Mainistir Eimhín</i>	<i>Monasterevin</i>
<i>Cúil an tSúdaire</i>	<i>Portarlinton</i>
<i>Rath Iomgháin</i>	<i>Rathangan</i>
<i>Port Laoise</i>	<i>Portlaoise</i>
<i>Ros Mhic Thriúin & máguaird</i>	<i>New Ross & Environs</i>
<i>Crochta na Gréine</i>	<i>Suncroft</i>

Flood Risk Management Plans prepared by the Office of Public Works 2018

In accordance with

European Communities (Assessment and Management of Flood Risks) Regulations 2010 and 2015

Purpose of this Report

As part of the National Catchment-based Flood Risk Assessment & Management (CFRAM) programme, the Commissioners of Public Works have commissioned expert consultants to prepare Strategic Environmental Assessments, Appropriate Assessment Screening Reports and, where deemed necessary by the Commissioners of Public Works, Natura Impacts Assessments, associated with the national suite of Flood Risk Management Plans.

This is necessary to meet the requirements of both S.I. No. 435 of 2004 European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (as amended by S.I. No. 200/2011), and S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011.

Expert Consultants have prepared these Reports on behalf of the Commissioners of Public Works to inform the Commissioners' determination as to whether the Plans are likely to have significant effects on the environment and whether an Appropriate Assessment of a plan or project is required and, if required, whether or not the plans shall adversely affect the integrity of any European site.

The Report contained in this document is specific to the Flood Risk Management Plan as indicated on the front cover.

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Acknowledgements

The Office of Public Works (OPW) gratefully acknowledges the assistance, input and provision of data by a large number of organisations towards the implementation of the National CFRAM Programme. In particular, the OPW acknowledges the assistance of RPS Consulting Engineers and the valuable input and support of the Local Authorities at project level in each of the study areas.

The OPW also acknowledges the participation of members of the public, representative organisations and other groups throughout each stage of consultation.



South Eastern CFRAM

Study UoM14 - Barrow

Strategic Environmental Assessment Statement

DOCUMENT CONTROL SHEET

Client	OPW					
Project Title	South Eastern CFRAM Study					
Document Title	IBE0601Rp0056_UoM14_SEA_Statement_Report					
Document No.	IBE0601Rp0056					
OPW Document No.	O14_SEA_Statement_PART01					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	1	1	45	1	1	2

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
D01	Draft	Various	R. Bingham	G. Glasgow	Belfast	01/08/17
D02	Draft	Various	R. Bingham	G. Glasgow	Belfast	16/08/17
F01	Final	Various	R. Bingham	G. Glasgow	Belfast	16/08/17

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The draft Flood Risk Management Plans are intended **for the purpose of consultation only**. They should not be used or relied upon for any other purpose or decision-making process. They are likely to be updated, refined or changed before finalisation. The Commissioners of Public Works in Ireland reserve the right to change the content and/or presentation of any of the information provided in the draft Flood Risk Management Plans at their sole discretion.

ACKNOWLEDGEMENTS

The Office of Public Works (OPW) gratefully acknowledges the assistance, input and provision of data by a large number of organisations towards the implementation of the National CFRAM Programme and the preparation of this Draft Flood Risk Management Plan, including:

- RPS Consulting Engineers
- WFD Local Authorities Water and Communities Office LAWCO
- Southern Regional Assembly
- Carlow County Council
- Cork County Council
- Kildare County Council
- Kilkenny County Council
- Laois County Council
- Limerick City and County Council
- Offaly County Council
- Tipperary County Council
- Waterford City and County Council
- Wexford County Council
- Wicklow County Council
- Mid-East Regional Authority
- The Environmental Protection Agency
- Met Éireann
- All members of the National CFRAM Steering and Stakeholder Groups

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TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	PURPOSE OF THIS REPORT.....	1
2	SUMMARY OF SEA PROCESS.....	2
2.1	SEA SCREENING	3
2.2	SEA SCOPING.....	3
2.3	ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL REPORT.....	4
2.4	CONSULTATIONS.....	4
2.5	APPROPRIATE ASSESSMENT AND NATURA IMPACT STATEMENT.....	7
2.6	SEA STATEMENT.....	8
2.7	ADOPTION OF THE PLAN.....	8
3	INFLUENCE OF SEA ON THE PLAN	9
3.1	PRELIMINARY SCREENING OF FRM METHODS.....	10
3.2	MULTI-CRITERIA ANALYSIS OF FRM OPTIONS.....	12
3.3	ENVIRONMENTAL ASSESSMENT OF PREFERRED OPTIONS.....	13
3.4	PLAN AND SEA OBJECTIVES	14
3.4.1	Development of Strategic Environmental Objectives	14
3.5	RECOMMENDED MITIGATION MEASURES.....	17
3.5.1	General Mitigation	17
3.5.2	Mitigation by Environmental Impact	18
3.5.3	Mitigation Guidelines	22
3.6	HOW CONSULTATION FEEDBACK HAS INFLUENCED THE FINAL PLAN.....	22
4	PREFERRED SCENARIO AND REASON FOR CHOOSING THE FINAL PLAN.....	24
4.1	ALTERNATIVES CONSIDERED.....	24
4.2	FINAL PLAN FLOOD RELIEF MEASURES.....	25
4.2.1	Measures Applicable for All Areas	25
4.2.2	Sub- Catchment Measures.....	26
4.2.3	Athy AFA Preferred Measure	26
4.2.4	Carlow AFA Preferred Measure	26
4.2.5	Castledermot AFA Preferred Measure	26
4.2.6	Graiguenamanagh AFA Preferred Measure	27
4.2.7	Leighlinbridge AFA Preferred Measure	27
4.2.8	Mountmellick AFA Preferred Measure	27
4.2.9	Portarlinton AFA Preferred Measure.....	28
4.2.10	Portlaoise AFA Preferred Measure	28
4.2.11	Suncroft AFA Preferred Measure.....	28
4.3	MEASURES WITH A BENEFIT - COST RATIO BELOW UNITY.....	28
5	MEASURES TO MONITOR SIGNIFICANT ENVIRONMENTAL EFFECT OF IMPLEMENTING THE PLAN.....	30
5.1	RESPONSIBILITIES FOR MONITORING.....	30

	5.2 SOURCES OF INFORMATION FOR MONITORING	30
6	SCREENING AND CHANGES TO FINAL PLAN.....	34
	6.1 CARLOW	34
7	CONCLUSIONS AND NEXT STEPS.....	41
8	GLOSSARY OF TERMS.....	42

LIST OF FIGURES

Figure 2.1	Overview of the SEA Process	2
Figure 2.2	Overview of the South Eastern CFRAM Consultation Stages and Structures	6
Figure 3.1	Interactions of the Plan and Environmental Assessments	9

LIST OF TABLES

Table 2.1	Summary Description of Main Stages in the SEA Process	3
Table 3.1	Flood Risk Management Methods.....	11
Table 3.2	Plan Objectives used in MCA and their SEA Compatibility	15
Table 3.3	Proposed Mitigation Measures	18
Table 5.1	Environmental Monitoring of Plan.....	32

APPENDICES

APPENDIX A – Stakeholder and Public Engagement and Consultation	8 Pages
APPENDIX B – Draft Plan Consultation – UoM14 Environmental Submissions	52 Pages

ABBREVIATIONS

AA	Appropriate Assessment
AFA	Area for Further Assessment
CAFE	Clean Air for Europe [Directive]
CBA	Cost Benefit Analysis
CFRAM	Catchment Flood Risk Assessment and Management
CJEU	Court of Justice of the European Union
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DAHRRGA	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
DCENR	Department of Communications, Energy and Natural Resources
DD	Drainage District
DECLG	Department of Environment, Community and Local Government
DEHLG	Department of Environment, Heritage and Local Government
DfI	Department for Infrastructure
EC	European Commission
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ERBD	Eastern River Basin District
FEMFRAM	Fingal East Meath Flood Risk Assessment and Management Study
FPM	Freshwater Pearl Mussel
FRA	Flood Risk Assessment
FRM	Flood Risk Management
FRMP	Flood Risk Management Plan
GIS	Geographical Information Systems
GSI	Geological Survey Ireland
HA	Hydrometric Area
HPW	High Priority Watercourse
IFI	Inland Fisheries Ireland
IPP	Individual Property Protection
IRBD	International River Basin District
IROPI	Imperative Reasons of Overriding Public Interest
LA	Local Authority
LAP	Local Area Plan
MCA	Multi-Criteria Analysis
MIDA	Marine Irish Digital Atlas
MPA	Marine Protected Area
MPW	Medium Priority Watercourse
NBIRBD	Neagh Bann International River Basin District
NHA	Natural Heritage Area

NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NWIRBD	North Western International River Basin District
NWNB	North Western – Neagh Bann
OD	Ordnance Datum
OPW	Office of Public Works
OSi	Ordnance Survey Ireland
OSPAR	(Oslo Paris) Convention for the Protection of the Marine Environment of the North-East Atlantic
PFRA	Preliminary Flood Risk Assessment
P/P	Plan or Programme
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SERBD	South Eastern River Basin District
SI	Statutory Instrument
SOP	Standard Operating Procedure
SoP	Standard of Protection
SPA	Special Protection Area
SSA	Spatial Scale of Assessment
SuDS	Sustainable Drainage Systems
SWRBD	South Western River Basin District
UNESCO	United Nations Educational, Scientific and Cultural Organization
UoM	Unit of Management
WFD	Water Framework Directive
WHO	World Health Organisation
WRBD	Western River Basin District

1 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This Strategic Environmental Assessment (SEA) Statement has been prepared as part of the SEA for the Flood Risk Management Plan (FRMP) for Unit of Management 014 (UoM014 – Barrow River Basin) under the South Eastern Catchment-based Flood Risk Assessment and Management (CFRAM) Study. This document provides information on the decision-making process and documents how environmental considerations, the views of consultees and the recommendations of the Environmental Report and the assessment carried out under Article 6 of the Habitats Directive have been taken into account by, and influenced, the Plan.

The South Eastern CFRAM study area includes six Units of Management (UoM) / Hydrometric Areas (HAs). The UoMs constitute major catchments / river basins (typically greater than 1000km²) and their associated coastal areas, or conglomerations of smaller river basins and their associated coastal areas. The UoM boundaries match the HA boundaries within the South Eastern CFRAM Study Area. These are UoM11 (Owenavorrhagh & Blackwater River Basin), UoM12 (Slaney River Basin), UoM13 (Ballyteigue - Bannow River Basin), UoM14 (Barrow River Basin), UoM15 (Nore River Basin), UoM16 (Suir River Basin), and UoM17 (Waterford South Coast River Basin). There is a high level of flood risk within the South Eastern CFRAM Study area with significant coastal and fluvial flooding events having occurred in the past. The Barrow River Basin is a predominantly rural catchment in an Irish context, with the largest urban areas being Athy, Carlow and Portlaoise.

In total there are 29 Flood Risk Management Plans (FRMPs) being published; each setting out the feasible range of flood risk management measures for their respective Units of Management (UoM). The preparation of these Plans is a central part of the implementation of Government policy on flood risk management (OPW, 2004), and meets Ireland's obligations under the 2007 EU 'Floods' Directive (EU, 2007¹).

This SEA Statement has been prepared in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [S.I. 435/2004] and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 [S.I. 436/2004], and their recent amendments of European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 [S.I. 200/2011] and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 [S.I. 201/2011]. The Final Flood Risk Management Plan for the Barrow River Basin, the SEA Environmental Report, and the Natura Impact Statement (NIS) are available for download on the South Eastern CFRAM website: <http://southeast.cfram.com/>

¹ Directive on the assessment and management of flood risks, 2007/60/EC

2 SUMMARY OF SEA PROCESS

The SEA Directive requires that certain Plans and Programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, be subject to the SEA process. The SEA process is broadly comprised of the stages shown in **Figure 2.1**, which are given a summary description in **Table 2.1**.

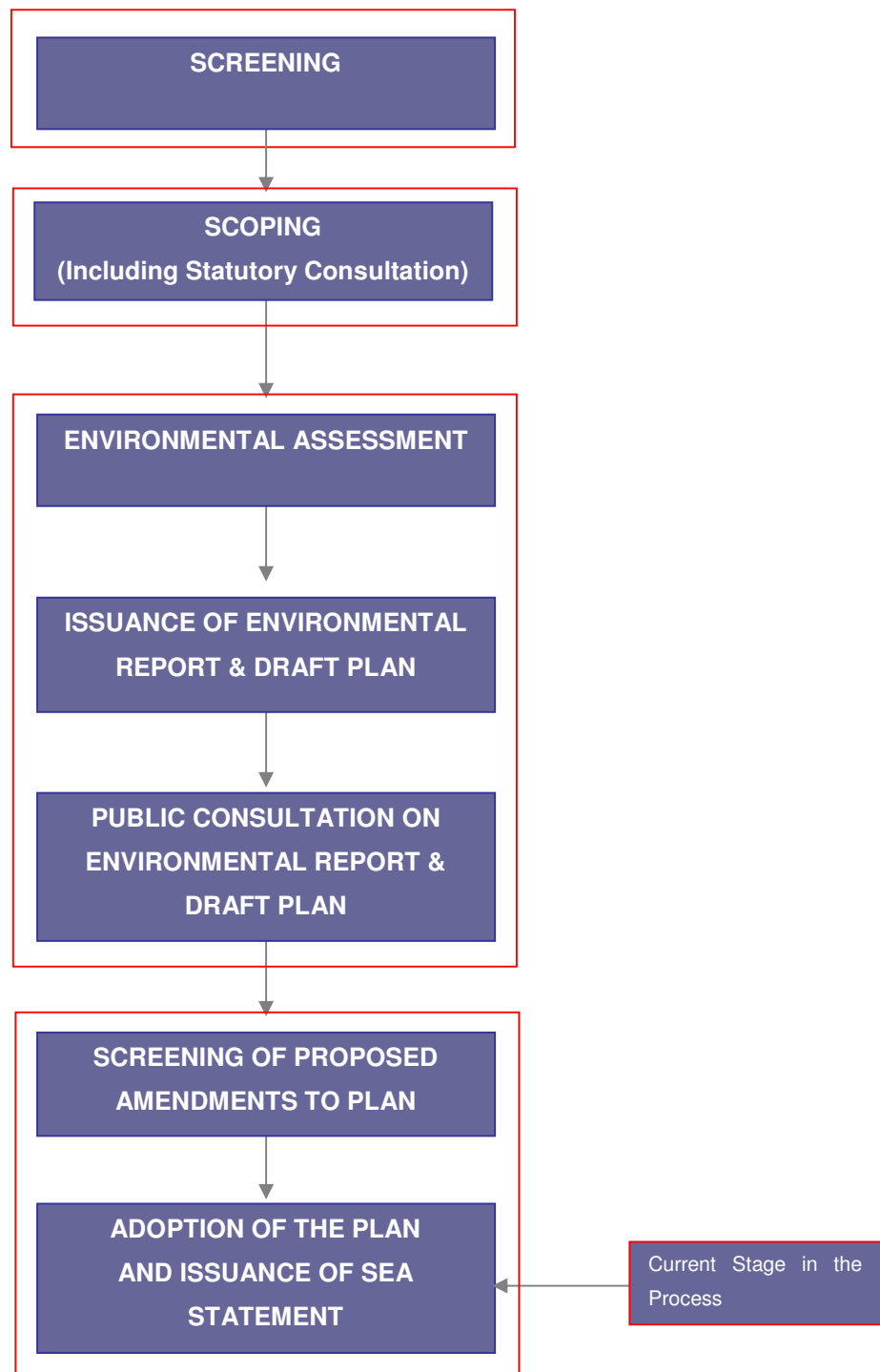


Figure 2.1 Overview of the SEA Process

Table 2.1 Summary Description of Main Stages in the SEA Process

Stages	Description	Status
Screening	Determines whether SEA is required for a Plan / Programme, in consultation with the designated statutory consultees.	Completed in 2011
Scoping	Determines the scope and level of detail of the assessment for the SEA, in consultation with the designated statutory consultees.	Completed in 2015
Environmental Assessment	Formal and transparent assessment of the likely significant impacts on the environment arising from the Plan / Programme, including all reasonable alternatives. The output from this was an Environmental Report, which went on public display along with the draft Plan.	Completed in 2016
SEA Statement	Summarises the process undertaken and identifies how environmental considerations and consultations have been integrated into the final Plan / Programme.	Current Stage

2.1 SEA SCREENING

The OPW carried out a SEA Screening in 2011 for all the CFRAM Studies in Ireland and determined that SEA of the FRMPs would be required due to the following reasons:

- The FRMPs will be carried out for areas typically greater than 1000 km² and collectively they will cover the entire landmass of the Republic of Ireland. The outcomes of the FRMPs therefore have the potential to have a significant effect on the environment. Carrying out SEAs would allow for the early consideration of environmental issues and the incorporation of these issues into the formulation of the recommendations for flood risk management within the FRMPs.
- The FRMPs will form a framework for future projects and allocation of resources concerning reduction of flooding risk.
- The FRMPs will influence spatial plans at both regional and local level.
- The FRMPs are likely to require an assessment under Article 6 of the EU Habitats Directive.

The OPW SEA Screening from 2011 for all the CFRAM Studies in Ireland can be found at:

<http://southeast.cfram.com/>

2.2 SEA SCOPING

The SEA Scoping for the CFRAM Study took place in mid to late 2015. A SEA Scoping Report, a SEA Scoping Summary Report, an Environmental Constraints Report and a table of High Level Impacts of FRM Methods were produced as part of the scoping phase of the SEA for the South Eastern CFRAM Study. The purpose of the Scoping Report and associated documents was to provide sufficient information on the South Eastern CFRAM Study to enable the consultees to form an opinion on the appropriateness of the scope, format, level of detail, methodology for assessment and the consultation period proposed for the Environmental Report. All scoping documents for the South Eastern CFRAM Study can be found at: <http://southeast.cfram.com/>

Under Article 6 of the SEA Directive, the competent authority preparing the Plan or Programme (in this case the OPW) is required to consult with specific environmental authorities (statutory consultees) on the scope and level of detail of the information to be included in the Environmental Report. Under S.I. 435 of 2004 and S.I. 200 of 2011 these five statutory consultees are established within the national legislation as being:

- Environmental Protection Agency (EPA);
- Department of Housing, Planning, Community and Local Government (DHPCLG);
- Department of Agriculture, Food and the Marine (DAFM);
- Department of Communications, Climate Action and the Environment (DCCAE); and
- Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA).

2.3 ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL REPORT

A SEA Environmental Report was completed that detailed the environmental assessments undertaken on the draft Plan for the Barrow River Basin. The preparation of an Environmental Report on the likely significant effects on the environment of the Plan for the Barrow River Basin included consideration of:

- Baseline data relating to the current state of the environment;
- Links between the Plan and other relevant Strategies, Policies, Plans, Programmes and Environmental Protection Objectives;
- Key environmental issues in the area of the Plan;
- Alternatives available;
- The likely significant positive and negative effects of a number of reasonable alternatives on the environment;
- Measures envisaged for the prevention, reduction and mitigation of any significant adverse effects;
- Monitoring measures to ensure that positive and negative environmental effects will be identified, allowing for appropriate remedial action to be taken if necessary.

2.4 CONSULTATIONS

Environmental factors have been taken into account at every stage of the development of the Plans and supporting environmental assessments. This was achieved through a range of consultation activities including, but not limited to; Stakeholder Group Workshops, Elected Member briefings, Public Consultation Days and web-based consultation and communication.

The South Eastern CFRAM Stakeholder Group was established under section 4, sub-section (9) of S.I. 122 of 2010. The Group included representatives of a number of Environmental Authorities, Regional and Local Authorities, and statutory and non-statutory local organisations within the South Eastern River Basin District; all of whom have an interest in, or are affected by, the Flood Hazard or Risk Maps or the Flood Risk Management Plans. Meetings between these organisations took place at key intervals throughout the Study to provide views and feedback on project-specific issues such as flood risk management and related environmental concerns within the Study area.

Public Consultation Days (PCDs) and Elected Member briefings also provided for the consideration of environmental issues as part of the Plan development process. These events enabled local groups

and members of the public to meet with and discuss the development of the Plan and its supporting environmental reports through each of the various stages of the Study. They took place at key stages; during the initial scoping phase (late 2012), the mapping phase (early 2015), the options phase (late 2015/early 2016) and the draft Plan phase (late 2016).

The environment was considered during the initial scoping phase of the Study, insofar as consultation activities were employed to inform stakeholders and members of the public of their opportunities to feed into, and influence, the planning and SEA/AA processes. They were also used to elicit views and information from interested parties in relation to SEA scoping activities and relevant issues relating to flood risk and environmental assets which might be affected by the outcomes of the Study.

During the mapping phase of the Study, the views of stakeholders and the public were sought in relation to issues of local value, local weightings and community perceptions of solutions. Views and information were also sought in relation to the accuracy of the draft flood maps and with regard to issues of environmental concern relevant to the on-going environmental assessment.

The views of stakeholders and the public were elicited during the options phase of the Study with respect to significant negative social, technical, economic or environmental issues relating to the proposed flood risk management options. They were also sought with regards to local weightings for MCA objectives and final MCA scores. Consultation activities were further used to remind stakeholders with respect to their opportunities to feed into and influence the planning and SEA/AA processes.

Consultation activities during the draft Plan phase of the Study were used to elicit the views of stakeholder and members of the public in relation to the Plan, the SEA Environmental Report and the Natura Impact Statement for the Plan. The opportunity was also taken to increase public and stakeholder understanding in relation to the preferred options proposed to mitigate the risk of flooding and to further advise them with respect to the consultation process; and in particular to the consultation period, the means by which to make formal submissions and the process and likely timescale for finalizing the Plans.

An overview of the CFRAM consultation stages and structures is provided diagrammatically in **Figure 2.2**. Further information on the public and stakeholder engagement is provided in **Appendix A**.

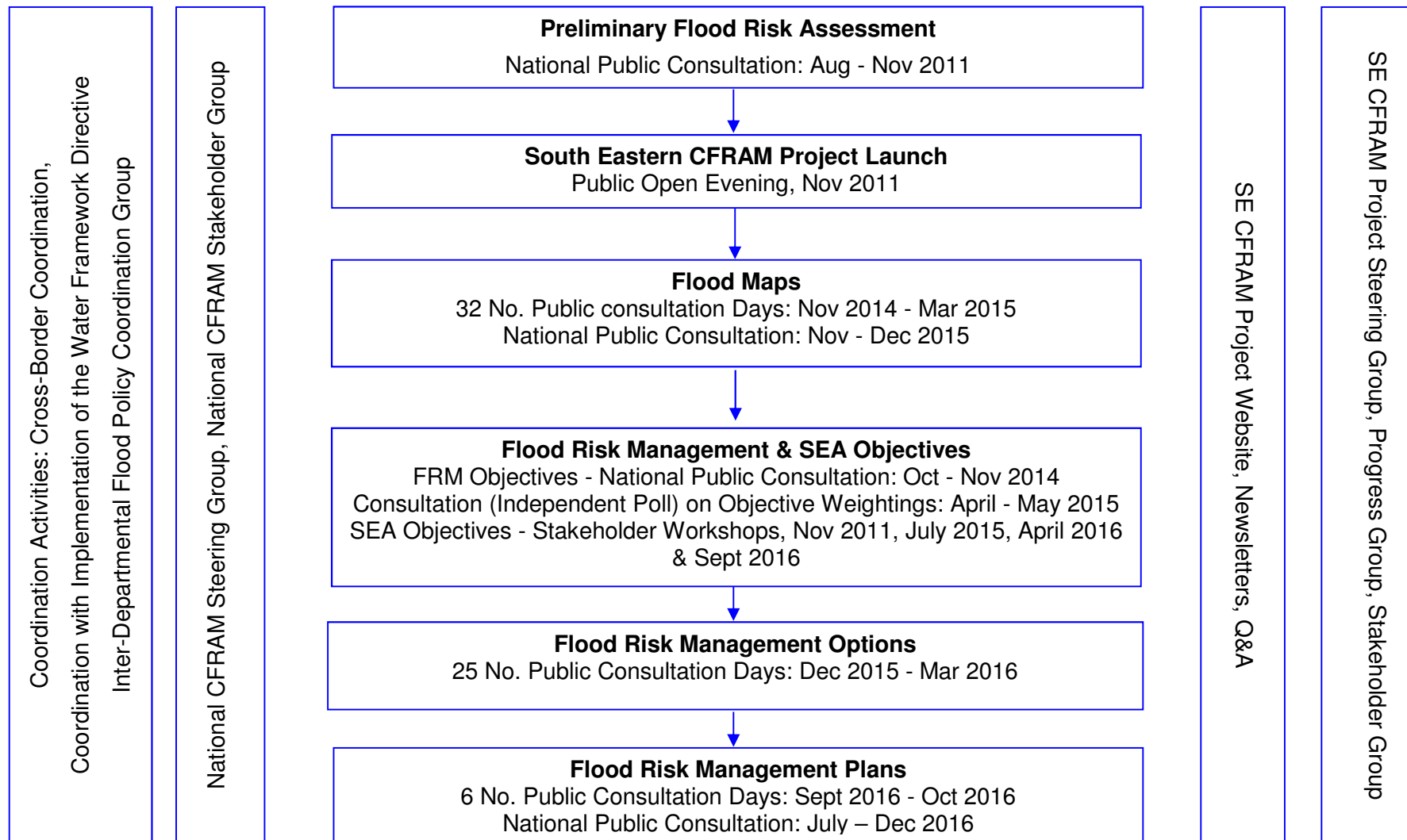


Figure 2.2 Overview of the South Eastern CFRAM Consultation Stages and Structures

2.5 APPROPRIATE ASSESSMENT AND NATURA IMPACT STATEMENT

In addition to the SEA, there was a requirement under the EU Habitats Directive (92/43/EEC) to assess whether the Plan for the Barrow River Basin has the potential to impact negatively on a Natura 2000 site, which includes Special Protection Areas (SPAs) for birds and Special Areas of Conservation (SACs) for habitats and species. Article 6 is one of the most important articles of the Habitats Directive in determining the relationship between conservation and site use. Article 6(3) requires that,

“Any plan or project not directly connected with or necessary to the conservation of a site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives.”

An Appropriate Assessment (AA) Screening was undertaken for the South Eastern CFRAM Study in late 2015 / early 2016, which demonstrated the potential European sites that may be negatively impacted upon by FRM activities in the Barrow River Basin. A Plan level Stage 2 AA was undertaken in parallel with the SEA process and a Natura Impact Statement (NIS) was prepared. The findings of the AA were used to guide the development of the alternatives to be considered in the Plan. The findings of the NIS were integrated into the SEA Environmental Report and subsequently summarized in Section 7 the Plan. The AA for the Plan investigated the potential direct and indirect impacts of the proposed works on the integrity and interest features of European sites, alone and in-combination with other plans and projects, taking into account the sites' structure, function and conservation objectives. Where potentially significant adverse impacts were identified a range of mitigation and avoidance measures were suggested to help eliminate them by design or reduce them to acceptable levels. As a result of this AA it has been concluded that, provided the avoidance and mitigation measures suggested are adopted at the project stage, the proposed draft FRM measures in the Barrow River Basin Plan will not have significant adverse impacts on any European sites.

2.6 SEA STATEMENT

The main purpose of the SEA Statement is to provide information on the decision-making process for the Plan in order to illustrate how decisions were taken, making the process more transparent. In doing so, the SEA Statement documents show how the recommendations of both the Environmental Report and the NIS, as well as the views of the statutory consultees and other submissions received during consultation, have influenced the preparation of the Plan for the Barrow River Basin. The SEA Statement also provides information on the arrangements put in place for monitoring and mitigation. The SEA Statement is available to the public, along with the Environmental Report, the NIS and the adopted Plan for the Barrow River Basin.

The SEA Statement includes the following information:

- Summary of how environmental considerations have been integrated into the Plan;
- Summary of how submissions received during consultation have been taken into account in the Plan;
- Reasons for choosing the recommended option, in light of other reasonable alternatives considered; and
- Measures that are to be undertaken to monitor and mitigate the significant environmental effects of implementing the Plan.

2.7 ADOPTION OF THE PLAN

The Plan for the Barrow River Basin was finalised in July 2017. This Plan, along with the SEA Environmental report, SEA Statement and NIS are to be supplied to the Minister for Public Expenditure and Reform. The Minister can adopt the Plan, reject the Plan or adopt with recommended amendments. National prioritisation of all the CFRAM flood risk management schemes across Ireland will take place once all Plans are adopted. These adopted Plans and the prioritisation of schemes will then be taken to the Local Authorities across Ireland for comment and implementation.

3 INFLUENCE OF SEA ON THE PLAN

A draft Plan was produced for the Barrow River Basin within the South Eastern CFRAM Study Area. The SEA Environmental Report was produced to assess the environmental impacts of the FRM options (alternatives) of the Plan and to provide the environmental guidance to help create a more sustainable Plan. In parallel to this a NIS was prepared to inform the decision making process, in terms of the potential for the FRM options to impact the integrity of any European sites, in view of that sites conservation objectives. Both environmental assessments were central to the development of the draft Plan for the Barrow River Basin. The following section demonstrates the interactions between the various levels of environmental assessment and the stages at which these assessments will have influenced the Plan. A summary graphic of these interactions, and where environmental assessments were incorporated into the Plan process, is shown in **Figure 3.1**.

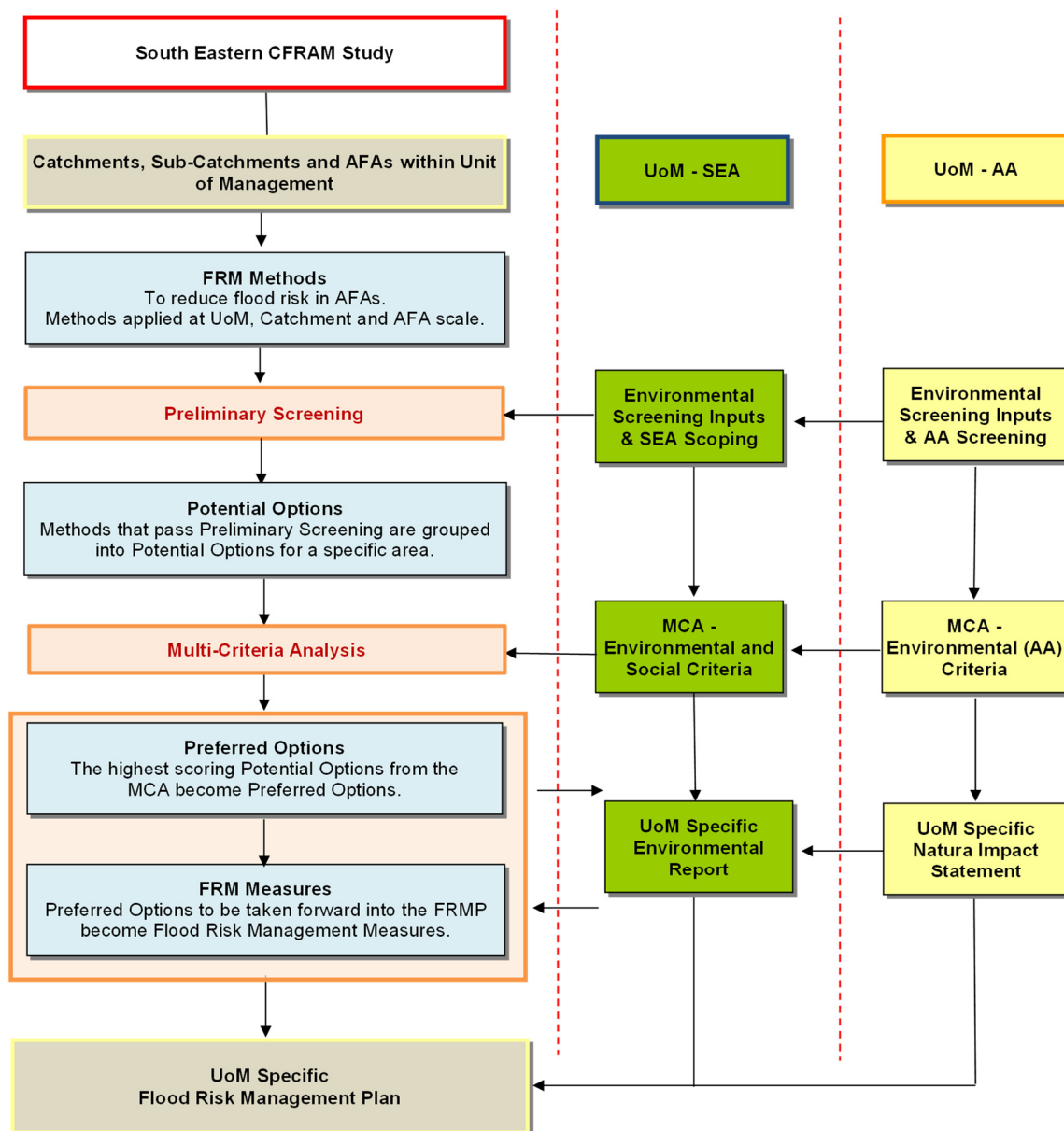


Figure 3.1 Interactions of the Plan and Environmental Assessments

The main steps of environmental input to the Plan can therefore be summarised as follows:

- 1 - Preliminary Screening of FRM Methods
- 2 - Multi-Criteria Analysis of FRM Options (Alternatives)
- 3 - Environmental Assessment of Preferred Options.

3.1 PRELIMINARY SCREENING OF FRM METHODS

For each area of flood risk to be assessed the starting point was to look at a long list of FRM methods that could be implemented to manage this risk. This long list of FRM methods was specified by OPW and included structural and non-structural methods that are available to manage flood risk in Ireland. The long list of methods was considered for each of the flood risk areas identified. A table of the high level environmental / social impacts of these FRM methods was developed early in this process and consulted on alongside the SEA Scoping Report. This table outlines the main potential likely impacts of implementation of the flood risk management methods on the general environment. These impacts can be positive, negative or neutral. The purpose of producing this information was to develop a streamlined assessment of impacts of flood risk management methods on the general environment, which was then used within the environmental assessments for the Plan. These are high-level / strategic impacts and are not site or species specific. This is to reflect the strategic nature of the Plan and the environmental assessments of the Plan. This information was circulated for consultation to statutory bodies, stakeholders and Local Authorities. Where feedback was received the table was amended accordingly.

The FRM methods went through an initial screening to determine their technical, economic and social / environmental feasibility. In this initial screening, if a FRM method was found to be technically feasible, i.e. it could completely or partially manage flood risk for an area, it was then screened for its economic viability. If the method was found to be economically viable it was then screened for environmental and social feasibility. The environmental and social criteria in the screening stage were based on the potential for impacts on designated European sites (namely special areas of conservation and special protection areas) and UNESCO World Heritage Sites (including tentative sites) in the first instance. Further social criteria were also taken into account for potentially detrimental impacts on socially important sites, e.g. relocation of hospitals would be deemed unacceptable.

Table 3.1 demonstrates the long list of flood risk management methods that were originally considered across all areas of flood risk and which were subject to a preliminary screening assessment. The methods highlighted in green are non-structural, which are policy and administrative based, and currently do not include physical works. The methods highlighted in red are considered the structural methods, wherein there will an engineered scheme with works required on the ground at a specific geographic location.

Table 3.1 Flood Risk Management Methods

Method	Description	
Do Nothing	Implement no new flood risk management measures and abandon any existing practices.	Non-Structural Methods
Maintain Existing Regime	Continue with any existing flood risk management practices, such as reactive maintenance.	
Do Minimum	Implement additional minimal measures to reduce the flood risk in specific problem areas without introducing a comprehensive strategy, includes channel or flood defence maintenance works / programme.	
Planning and Development Control	Zoning of land for flood risk appropriate development, prevention of inappropriate incremental development, review of existing Local Authority policies in relation to planning and development and of inter-jurisdictional co-operation within the catchment, etc.	
Building Regulations	Regulations relating to floor levels, flood-proofing, flood resilience, sustainable drainage systems, prevention of reconstruction or redevelopment in flood-risk areas, etc.	
Catchment Wide Sustainable Drainage Systems (SuDS)	Implement SuDS on a catchment wide basis.	
Land Use Management (NFM)	Creation of wetlands, riparian buffer zones, etc.	
Strategic Development Management	Necessary floodplain development (proactive integration of structural measures into development designs and zoning, regulation on developer-funded communal retention, drainage and / or protection systems, etc.)	
Flood Warning / Forecasting	Installation of a flood forecasting and warning system and development of emergency flood response procedures.	
Public Awareness Campaign	Targeted public awareness and preparedness campaign.	
Upstream Storage	Single or multiple site flood water storage, flood retardation, etc.	Structural Methods
Improvement of Channel Conveyance	In-channel works, floodplain earthworks, removal of constraints / constrictions, channel / floodplain clearance, etc.	
Hard Defences	Construct walls, embankments, demountable defences, Rehabilitate and / or improve existing defences, etc.	
Relocation of Properties	Relocation of properties away from flood risk.	
Diversion of Flow	Full diversion / bypass channel, flood relief channel, etc.	
Other works	Minor raising of existing defences / levels, infilling gaps in defences, site specific localised protection works, etc.	
Individual Property Flood Resistance	Protection / flood-proofing and resilience.	

During this preliminary screening the environmental specialists helped to steer the planning team towards more sustainable FRM methods and provided guidance on environmental issues in the areas of interest. This screening process coincided with the development of the SEA Scoping Report and the AA Screening Report for the South Eastern CFRAM Study. The outcomes of all Preliminary Screenings for the UoM were included within Appendix E of the draft Plan of the Barrow River Basin.

3.2 MULTI-CRITERIA ANALYSIS OF FRM OPTIONS

The methods that were found to be technically, economically, socially and environmentally acceptable in the preliminary screening were then combined into groups of options, which were then subjected to detailed Multi-Criteria Analysis (MCA), looking at technical, economic, social and environmental criteria.

Multi-Criteria Analysis is based on the numeric, but non-monetised assessment of options against the range of objectives, whereby indicators are set for each objective. These indicators are then used to define scores for that objective on the basis of the degree to which the option being appraised goes beyond the Basic Requirement for that objective towards meeting the Aspirational Target. The sums of the scores, set against the total costs of their achievement, represent the preference for a given option (using all criteria) or the net benefits of an option (using only the economic, social and environmental criteria). These total scores can be used to inform the decision on the selection of (a) preferred option(s) for a given location and the prioritisation of potential schemes between locations. These options are the alternatives available to the Plan that are likely to have physical impacts in their development and operation. The assessment of alternatives and the preferred alternative were discussed in Section 8 and 9 of the SEA Environmental Report.

SEA is particularly suited to the MCA approach to options assessment as the environmental / social criteria developed for the SEA can be directly inputted to the MCA framework and in turn directly influence the decision making process.

The FRM options were assessed against the Plan Objectives within the MCA. This assessment considered the issues of social and environmental impacts alongside the technical and economic criteria. The MCA framework has been developed to take account of the broader range of issues relevant to delivery of the Plan in the development and selection of FRM options, and their subsequent prioritisation. The SEA Objectives were developed from these Plan Objectives.

The MCA used 'Global Weightings' to rank the general importance of the objectives and 'Local Weightings' to determine the importance or relevance of each objective in each individual area of flood risk (e.g. catchment or AFA). Global weightings were developed through a public poll using a structured questionnaire. Local Weightings were determined through the project teams, steering groups, stakeholders and public consultation, using a nationally consistent approach.

The scorings of the options used in the MCA generally range from +5 to -5; however a score of -999 was also used where an option is to be completely removed due to unacceptable impacts. The scoring

indicators, along with the global and local score weighting assignments, for the Plan objectives that were brought through into the SEA were given in Appendix B of the SEA Environmental Report. The local weightings and their justifications could be found in Appendix D of the draft Plan.

The MCA Scores for all options considered, including the environmental and social scores and justifications, could be found in Appendix C of the SEA Environmental Report and Appendix F of the draft Plan. The highest scoring option for each area of flood risk (e.g. catchment or AFA), along with consideration of feedback from public and stakeholder consultation, has been put forward into the draft Plan for the Barrow River Basin as the preferred option. The SEA process has been critical for this MCA as it has provided the necessary information for the environmental and social inputs.

The MCA of FRM options stage was heavily influenced by the environmental specialists involved in the study. The development of FRM options was an iterative process between the environmental and FRM planning specialists. Where possible, environmental and sustainability criteria were considered in the selection and positioning of FRM options, prior to assessment in the MCA. This MCA stage coincided with the development of the SEA Environmental Report and the NIS.

3.3 ENVIRONMENTAL ASSESSMENT OF PREFERRED OPTIONS

The SEA Environmental Report specifically contributed to the scoring of social and environmental criteria and assessment in the MCA, while also providing qualitative supporting narrative in the environmental report. Expert judgement was used in both methods of assessment. The preferred options assessed in this Environmental Report are scored and reported on in terms of environmental impacts and their significance, which was from +5 to -5; however there was no preferred option selected that was scored with unacceptable impacts, and therefore no -999. The purpose of this further assessment of the preferred FRM Options is to ensure all potential wider environmental impacts have been identified, to provide further transparency on the potential impacts of the preferred options and to ensure the requirements of the SEA Directive were met. The preferred options were assessed against the environmental and social objectives for their potential short, medium and long term impacts on the following environmental topic areas, taking account of any secondary, cumulative, synergistic, permanent and temporary, positive or negative effects:

- | | |
|------------------------------------|-------------------------------|
| • Biodiversity, Flora & Fauna | • Cultural, Architectural & |
| • Population & Human Health | Archaeological Heritage |
| • Geology, Soils and Landuse | • Landscape & Visual Amenity |
| • Water | • Fisheries & Angling |
| • Climatic Factors | • Amenity, Community & Socio- |
| • Material Assets & Infrastructure | Economics |

3.4 PLAN AND SEA OBJECTIVES

It is a requirement of the EU 'Floods' Directive [Art. 7(2)] as transposed through SI No. 122 of 2010 [Section 15(2)] that Flood Risk Management Objectives are to be established as part of the planning process. The Flood Risk Management Objectives set out the goals that the Plan is aiming to achieve. They have a key role in the preparation of the Plan and the measures proposed, as the options that are available to manage flood risk within a given area are appraised against these objectives to determine how well each option will contribute towards meeting the defined goals. The objectives are focussed at considering potential benefits and impacts across a broad range of issues including human health, the environment, cultural heritage and economic activity. This broadly aligns with the environmental considerations defined for SEA.

3.4.1 Development of Strategic Environmental Objectives

In order to have a proactive and positive influence on decision making, the SEA has fed into the MCA framework adopted to assist the decision making process for the Plan. The SEA uses a system of objectives, targets and indicators to assess the benefits and impacts of a given plan or programme. These environmental objectives cover a range of issues including population; human health; water; material assets; cultural heritage; biodiversity etc.

The Plan also includes specific environmental and social objectives (included on equal weighting and importance as the technical and economic objectives) which broadly correspond to the issues considered in the SEA. As such the two processes offer considerable opportunity to coordinate, allowing the SEA to directly support decision making through the MCA.

Many of the Plan objectives therefore coordinated directly with the SEA objectives as they were directly compatible. The objectives / sub-objectives that match the SEA issues are shaded green in **Table 3.2**. In the SEA Environmental Report the environmental assessment of the preferred options was expanded upon from the MCA, based on these Objectives and Sub-Objectives. The scoring indicators, along with the global and local score weighting assignments, for the Plan objectives that have been brought through into the SEA were given in Appendix B of the SEA Environmental Report.

Although the environmental criteria and assessments have significantly influenced the development of the FRM options, the findings and outcomes of the environmental report and the NIS had the potential to still bring further amendments and improvements to the draft Plan. This iterative process adopted was to provide for a more sustainable Plan in the long term.

The full assessment outputs can be found in Section 9.3 of the main volume of the SEA Environmental Report.

Table 3.2 Plan Objectives used in MCA and their SEA Compatibility

CRITERIA		OBJECTIVE		SUB-OBJECTIVE		Related SEA Topic
1	Social	a	Minimise risk to human health and life	i)	Minimise risk to human health and life of residents	P/HH
				ii)	Minimise risk to high vulnerability properties	P/HH
		b	Minimise risk to community	i)	Minimise risk to social infrastructure and amenity	ACS
				ii)	Minimise risk to local employment	ACS
2	Economic	a	Minimise economic risk	i)	Minimise economic risk	
		b	Minimise risk to transport infrastructure	i)	Minimise risk to transport infrastructure	MA
		c	Minimise risk to utility infrastructure	i)	Minimise risk to utility infrastructure	MA
		d	Minimise risk to agriculture	i)	Minimise risk to agriculture	S
3	Environmental	a	Support the objectives of the WFD	i)	Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives.	W
		b	Support the objectives of the Habitats Directive	i)	Avoid detrimental effects to, and where possible enhance, Natura 2000 network, protected species and their key habitats, recognising relevant landscape features and stepping stones.	BFF
		c	Avoid damage to, and where possible enhance, the flora and fauna of the catchment	i)	Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other known species of conservation concern.	BFF

		d	Protect, and where possible enhance, fisheries resource within the catchment	i)	Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.	F
		e	Protect, and where possible enhance, landscape character and visual amenity within the river corridor	i)	Protect, and where possible enhance, visual amenity, landscape protection zones and views into / from designated scenic areas within the river corridor.	L
		f	Avoid damage to or loss of features, institutions and collections of cultural heritage importance and their setting	i)	Avoid damage to or loss of features, institutions and collections of architectural value and their setting.	H
				ii)	Avoid damage to or loss of features, institutions and collections of archaeological value and their setting.	H
4	Technical	a	Ensure flood risk management options are operationally robust	i)	Ensure flood risk management options are operationally robust	
		b	Minimise health and safety risks associated with the construction, operation and maintenance of flood risk management options	i)	Minimise health and safety risks associated with the construction, operation and maintenance of flood risk management options	
		c	Ensure flood risk management options are adaptable to future flood risk, and the potential impacts of climate change	i)	Ensure flood risk management options are adaptable to future flood risk, and the potential impacts of climate change	C

BFF – Biodiversity, Flora, Fauna. P/HH – Population, Human Health. S – Soils, Geology, Landuse. W – Water. MA – Material Assets. H – Heritage. L – Landscape. F – Fisheries. ACS – Amenity, Community, Socio-Economics.

3.5 RECOMMENDED MITIGATION MEASURES

Section 10.1 of the SEA Environmental Report demonstrates the mitigation measures proposed to be included within the Plan for the Barrow River Basin. These measures were recommended where potential negative impacts from flood risk management options on environmental topic areas have been identified. These mitigation measures aim to prevent, reduce and as fully as possible offset any significant adverse effects on the environment due to implementation of the Plan. Mitigation has been further enhanced following consultation of the draft Plan which is reflected in the following section below.

3.5.1 General Mitigation

The principal mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. visual appearance, alignment of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors. Where feasible, natural flood management and green engineering methods should be incorporated into the detailed planning to reduce the negative environmental impacts of a scheme.

Further environmental studies based on the detailed design and construction methodology should be undertaken as appropriate. These studies may involve, but are not limited to, aquatic and terrestrial ecology surveys, ornithological and bat surveys, fish surveys, landscape and visual assessments, WFD assessments, geotechnical investigations and heritage surveys. Further Appropriate Assessment, to meet the requirements of the Habitats Directive, of the preferred option detailed design and construction methodology will be required at the project level, where potential impacts have been identified in this SEA and accompanying NIS for the Plan.

Before any works are carried out, detailed method statements and management plans (construction and environmental) should be prepared, including timing of works, information on the specific mitigation measures to be employed for each works area, and mechanisms for ensuring compliance with environmental legislation and statutory consents.

The timing of construction and maintenance works should be planned to avoid any potential for negative cumulative impacts or inter-relationships with other schemes, plans or projects, yet look to optimise any potential positive cumulative impacts or inter-relationships.

Contractors should be required to prepare Construction Environmental Management Plans (CEMPs), which would include a requirement for related plans to be prepared, as appropriate, for project implementation, such as Erosion and Sediment Control, Invasive Species Management, Emergency Response, Traffic and Safety Management, Dust and Noise Minimisation and Stakeholder Communication Plans. It is recommended that a standard manual for FRM Mitigation Measures for the full suite of measures likely to be implemented in the Plan is developed, agreed with statutory and environmental bodies, and then incorporated into an Environmental Management System (EMS) / Environmental Management Plan (EMP) based approach for the roll out of individual or suites of Plan

measures. Works should only be carried out once the method statements have been agreed with competent authorities such as the NPWS and Inland Fisheries Ireland (IFI). At the project level it will not be sufficient to defer the production of construction method statements. These should be completed in the detailed design stage and may be subject to further Appropriate Assessment where potential impacts have been identified in this SEA and accompanying NIS for the Plan. Where there may be unavoidable impacts on protected habitats and/or species the necessary derogation licences should be applied for prior to seeking planning permission or approval for a scheme.

Direct instream works such as culvert upgrades or proposed measures along the riverbank have the greatest potential for negative impacts during spawning / breeding and early nursery periods for aquatic protected species. No instream or potentially significantly damaging out of river works should occur during restricted periods for relevant species and consultation should be undertaken with IFI in this regard.

Monitoring of project level mitigation measures should be undertaken during and after works, to ensure effectiveness.

All works and planning of works will be undertaken with regard to the OPW Environmental Management Protocols (EMP) and Standard Operating Procedures (SOP), all relevant legislation, licensing and consent requirements, and recommended best practice guidelines.

An ecological clerk of works should be appointed for environmental management of each scheme, and where freshwater pearl mussels may be impacted an appropriate freshwater pearl mussel expert should also be appointed.

3.5.2 Mitigation by Environmental Impact

Table 3.3 demonstrates environmental impact specific mitigation measures that should be adopted within the Plan to minimise the potential for any negative effects on the wider environment of implementing the preferred options. These mitigation measures should be implemented and further developed at the next detailed design stage and project level study stage.

Table 3.3 Proposed Mitigation Measures

Impact	Proposed Mitigation
Temporary disturbance and destruction of existing habitats and flora, and the displacement of fauna, along the river corridors.	Good planning and timing of works to minimise footprint impacts. Where applicable, prior to any vegetation clearance an appropriately qualified ecologist should be contracted to undertake a 'pre-vegetation clearance' survey for signs of nesting birds and protected and important species e.g. otters, kingfisher etc. Should important species be found during surveys the sequential approach of avoid, reduce or mitigate should be adopted to prevent significant impacts with advice from appropriately qualified professional. Vegetation and tree clearance should be minimised and only occur outside the main bird nesting season from February to August. Where there are over-wintering birds, to avoid disturbance, works should not be

	undertaken between September to March. Following construction, replanting and landscaping, or natural revegetating, should be undertaken in line with appropriate guidelines that aim to improve local biodiversity and wildlife, therefore will give medium and long term benefits to the biodiversity, flora and fauna of the working areas. Where possible, original sediment/soil should be reinstated to original levels to facilitate natural restoration and recolonisation of habitat. Adhere to OPW EMP and SOP and consider integration of design as part of blue/green infrastructure plans and habitat enhancement where possible
Temporary displacement of otters, birds, fish and other fauna during the construction period	Good planning, good timing of works and sensitive construction methods are essential. Adherence to NRA construction guidelines, e.g. on Crossing of Watercourses, on Treatment of Otters etc., Eastern Regional Fisheries Board Requirements for 'Protection of Fisheries Habitat during Construction and Development Works at River Sites' and IFI 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters'. Proposed measures should be designed to minimise impact on otter habitat and shall include otter passes and fishways / ladders where possible. Pre-construction otter survey on all watercourses and any derogation licences applied for, where necessary. Adhere to OPW EMP and SOP.
Impact on European sites, habitats and species from construction or operation of FRM scheme.	Good planning and timing of works, and good construction and management practices to keep impacts to a minimum. Site and species specific mitigation provided in NIS for the FRMP including site specific surveys, timing of works etc. Provide local, connected, compensatory habitat if loss of area of Natura site is unavoidable. Adhere to OPW EMP and SOP.
Spread of invasive species during construction.	Pre-construction survey for invasive species along all watercourses and adjoining lands where necessary, e.g. for Himalayan balsam and Japanese knotweed. Cleaning of equipment and machinery along with strict management protocols to combat the spread of invasive species. Preparation of invasive species management plan for construction and maintenance-related activities, if invasive species are recorded during the pre-construction surveys. Any imported materials will need to be free from alien invasive species. Post-construction survey for invasive species. Adhere to OPW EMP and SOP.
Culverting impacts on faunal passage, where applicable.	Ledges and adequate access may be required for some culverts to allow continued passage of fauna. Consideration will be given to setting back walls from the river bank as an alternative to culverts where feasible. Adhere to OPW EMP and SOP.
Impacts on Freshwater Pearl Mussel	Where freshwater pearl mussels may be impacted an appropriate FPM expert should be consulted for surveys and in planning, scheme design and project level mitigation. Any relevant FPM Management Plans and SOPs should be adhered to.
Dredging impacts on biodiversity, flora and fauna.	Minimise requirement for in-stream works through good planning. Good dredging practices should be implemented, along with consultation with environmental bodies e.g. IFI, on methodology and appropriate timing to cause the least amount of damage, habitat loss, and sedimentation. Dredging works should be carried out during low flow conditions and should cease during heavy rainfall and flood conditions, to reduce suspended solids in the river. Spoil and removed vegetation material from the river should be stored back from the river and a vegetation buffer zone is to be retained, in order to reduce the run-off of suspended solids back into the watercourse. In stream works should be phased to leave undamaged refugia to maintain aquatic macroinvertebrates populations within the river channel. No machinery should be allowed to operate within the

	river flow without full consultation and approval of the methodology of the proposed works by the relevant statutory bodies. Scoping or relevant specialist ecological surveys during the planning stage and prior to any construction works. Adhere to OPW EMP and SOP.
Construction disturbance to the local population.	Disturbances can be kept to a minimum with good working practices, planning and timing. Adoption of Construction Best Practice and measures outlined in the CEMP and implementation of traffic and pedestrian management planning during construction.
Health and Safety risk to the local population during construction works.	Good construction management practices and planning of works. Adoption of Construction Best Practice and measures outlined in the CEMP.
Increased flood risk to or loss of access to agricultural soil resource.	Consultation and agreement with local landowners on detailed designs and residual impacts of flooding. Potential for requirement of compensation for increased inundation.
Removal of soil and rock material via dredging and excavation works during construction.	Re-use material where possible on site for either embankments or landscaping. Consideration for use of material such as geojute or coir mesh on embankments above rivers or streams to hold the soil allowing time for vegetation to establish, while avoiding erosion. Where applicable it is recommended that coarse aggregates (cobble and gravel) removed from the river channel should be stockpiled for replacement and rehabilitation in the reformed river bed. Such material will be stored away from the river bank to ensure that runoff from the material does not affect water quality in the river in the form of increased suspended solids.
De-watering during construction may cause temporary draw down of water table close to works.	Ensure that only small areas of excavation works are open at any one time to reduce the potential volumes of groundwater to be removed.
Temporary disturbances of water quality during the construction phase	Good management and planning to keep water quality disturbance to a minimum. Any potential water quality issues from construction should be contained and treated to ensure no damage to natural waterbodies. Dredging and construction will have to be planned appropriately, using Best Available Techniques / Technology (BAT) at all times, to ensure water quality issues are kept to a minimum, with no significant adverse effects. Guidelines such as CIRIA Document C532 - Control of Water Pollution from Construction Sites and CIRIA documents C521 - SUDS -Design manual for Scotland and NI, and C523 - SUDS -Best Practice Manual to be adhered to. Development and consenting of environmental management plan prior to commencement of works. Adhere to OPW EMP and SOP.
Potential for pollution incidents during the construction phase.	Minimise requirement for in-stream works through good planning. Strict management and regulation of construction activities. Provision of good facilities in construction areas to help prevent pollution incidents. Preparation of emergency response plans. Good work practices including; channelling of discharges to settlement ponds, construction of silt traps, construction of cut-off ditches to prevent run-off from entering watercourse, hydrocarbon interceptors installed at sensitive outfalls, appropriate storage of fuel, oils and chemicals, refuelling of plant and vehicles on impermeable surfaces away from drains / watercourses, provision of spill kits, installation of wheel wash and plant washing facilities, implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste and regular monitoring of surface water quality. Adhere to OPW EMP and SOP.
Potential requirement for maintenance dredging as siltation of the channel and	Design should aim to ensure WFD objectives are not compromised and all options will be subject to a WFD Assessment. Any negative impact on the status of a water body

excess vegetative growth will naturally occur.	will only be permitted under the WFD if the strict conditions set out in WFD Article 4 are met. Where appropriate, watercourses affected by a scheme should be subjected to a River Hydromorphology Assessment Technique survey (RHAT) for pre and post scheme scenarios. Adhering to good work practices including; diversion of discharges to settlement ponds, construction of silt traps, construction of cut-off ditches to prevent run-off from entering excavations, granular materials placed over bare soils. If a channel is maintained on an as required basis, using good planning, timing and BAT, there should be only minimal temporary disturbance to the local water quality. Adhere to OPW EMP and SOP.
Alterations to coastal processes	Detailed surveys and hydrodynamic modelling to inform detailed design of coastal works to ensure no negative impacts on coastal processes.
Disturbances to local infrastructure during the construction phase, e.g. traffic, water and electricity.	Good site management practices, traffic and construction management plans and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice.
In the short term construction period there is the potential for damage to heritage features.	Where necessary Heritage Impact Assessment in accordance with the Framework and Principles for the Protection of the Archaeological Heritage (DAHGI, 1999) will be prepared in respect of any works to architectural or archaeological features in advance of any works being carried out to feed into detailed design. Consultation and agreement with DAHRRGA in advance of any works taking place in respect of protected archaeological or architectural features. Construction supervision by qualified project archaeologists, combined with sensitive construction methods and restoration would mean this damage could be kept to a minimum. Heritage features damaged could be restored / preserved. Statutory consents and notices may be required prior to works taking place.
Medium and long term impacts on the setting of heritage features	Impacts could be kept to a minimum through sensitive design and planning. Planning and design advice from qualified archaeologists. Statutory consents may be required prior to works.
Potential for undiscovered heritage to be impacted upon by construction and dredging operations.	Interpretation of side-scan sonar and bathymetry information, along with supervision of construction and dredging operations by qualified archaeologists will minimise any impacts or the possibility of destruction of underwater and undiscovered heritage features in areas of heritage potential.
Extent and severity of short term negative impacts on landscape from construction.	Impacts could be kept to a minimum through good site practice and planning (e.g. screened laydown areas and traffic management). Adoption of Construction Best Practice.
Extent and severity of medium to long term negative impacts on landscape from preferred FRM options.	Impacts could be kept to a minimum through sensitive design and planning (e.g. vegetative screening and landscape management planning). Landscape and visual assessment and advice during detailed design. Public consultation on draft designs.
Culverting, dredging and impoundment impacts on fisheries and potential to impede fish passage.	Instream works including any culverting, provision of sluice gates, penstocks and dredging operations to be undertaken during the period July to September inclusive, following consultation and agreement with IFI. All works affecting any watercourse both temporary and permanent will be agreed with the relevant drainage and fishery authorities. Project level aquatic ecology and fisheries surveys and assessment, based on detailed design, to be undertaken prior to consenting. Where possible bottomless culverts should be used so the natural

	stream bed can be retained. Proposed measures should be designed to minimise impact on fish spawning grounds, migration and fishery habitats. Adhere to OPW EMP and SOP.
Restricted access to river for recreational activities due to FRM scheme.	Sensitive design of the FRM scheme. Potential to improve recreational access, safety of access and improve local recreational and ecological linkages in the detailed design. Public and stakeholder consultation on draft designs.
Disturbances to local amenity, community and social infrastructure during the construction phase, e.g. shops and amenity areas.	Good site management practices, traffic and construction management plans and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice.

3.5.3 Mitigation Guidelines

The following guidelines should be consulted in further development of the preferred FRM options in the next detailed planning phase.

- 'Arterial Drainage Maintenance Service – Environmental Management Protocols and Standard Operating Procedures' (OPW, 2011).
- 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites', Eastern Regional Fisheries Board.
- 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters', IFI 2016.
- Best practice toolkit of freshwater morphology measures developed by the Freshwater Morphology Programmes of Measures and Standards (POMS) study under the Shannon International River Basin District (ShIRBD) project.
- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA).
- Pollution prevention guidelines and Best Practice Guidance in relation to a variety of activities developed by the Environmental Agency (EA), the Scottish Environmental Protection Agency (SEPA) and the Northern Ireland Environment Agency (NIEA).
- Framework and Principles for the Protection of the Archaeological Heritage, Department of Arts, Heritage, Gaeltacht and the Islands, 1999.

Section 6.6 of the Final Plan for the Barrow River Basin provides the mitigation adopted by OPW, to be carried forward into the next stages of implementing the Plan, which is detailed feasibility study and detailed design.

3.6 HOW CONSULTATION FEEDBACK HAS INFLUENCED THE FINAL PLAN

The draft Plan for the Barrow River Basin issued for public consultation was accompanied by the SEA Environmental Report and NIS. Many submissions were received on these documents. All plan and environmental submissions received have been addressed as comprehensively as possible. The submissions received on the draft Plan for the Barrow River Basin and how these submissions were actioned are detailed within the OPW Synthesis Report. All environmental submissions received and how they were actioned are provided in **Appendix B** of this SEA Statement. The main themes of the environmental comments received can be summarised as:

- More detail / information required on options and impacts of options.

- Requests for clarification on environmental assessment.
- Recommendations for mitigation of impacts.
- Recommendation of additional detailed information.
- Greater alignment of the Floods Directive and the Water Framework Directive.

Following the public consultation of the draft Plan for the Barrow River Basin the following amendments were made to the Final Plan:

- Environmental mitigation was added to Section 6 of the Plan.
- Acknowledgment of the environmental risks and benefits of FRM options was added to Section 7 of the Plan, specific to measures at each AFA.
- Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to Section 8 of the Plan, which outlines the numerous consents, surveys and studies that are still to be undertaken on any proposed physical flood relief works, before any physical works take place. This is to demonstrate that the outcome of the Plan is further detailed study and design.

4 PREFERRED SCENARIO AND REASON FOR CHOOSING THE FINAL PLAN

4.1 ALTERNATIVES CONSIDERED

As detailed in Section 7 of the Plan there are a wide range of different approaches or methods that can be taken to reduce or manage flood risk. These can range from non-structural methods that do not involve any physical works to prevent flooding but rather comprise actions typically aimed at reducing the impacts of flooding, to structural works that reduce flood flows or levels in the area at risk or that protect the area against flooding. The range of methods (Alternatives) for managing flood risk that were considered in the Final Plan can be summarised as follows:

Flood Risk Prevention Methods

- Sustainable Planning and Development Management
- Sustainable Urban Drainage Systems (SUDS)
- Voluntary Home Relocation
- Preparation of Local Adaptation Planning

Flood Protection Methods

- Enhance Existing Protection Works
- Flood Defences
- Increasing Channel Conveyance
- Diverting Flood Flows
- Storing Flood Waters
- Implementing Channel Maintenance Programmes
- Maintenance of Drainage Schemes
- Land Commission Embankments

Flood Preparedness (Resilience) Methods

- Flood Forecasting and Warning
- Emergency Response Planning
- Promotion of Individual and Community Resilience
- Individual Property Protection
- Flood-Related Data Collection

Continue Existing Regime / Do Nothing / Minor Measures

- Continue Existing Regime / Maintain
- Do Nothing
- Minor Measures

These alternatives were assessed via the methodology summarised in **Section 3** of this SEA Statement, which included environmental assessment and influence at all stages.

4.2 FINAL PLAN FLOOD RELIEF MEASURES

The Final measures to be progressed for further detailed study and design for the Barrow River Basin are given in Section 7.4 of the Final Plan, and can be summarised as follows:

4.2.1 Measures Applicable for All Areas

There are certain prevention and preparedness measures related to flood risk management that form part of wider Government policy. These measures, set out below under the themes of prevention, protection and preparedness, should be applied across all areas of the River Basin, including properties and areas outside of the AFAs, as well as within:

- **Prevention:** Sustainable Planning and Development Management - Application of the Guidelines on the Planning System and Flood Risk Management (DHPCLG/OPW, 2009)
- **Prevention:** Sustainable Urban Drainage Systems - Implementation of Sustainable Urban Drainage Systems (SUDS)
- **Prevention:** Voluntary Home Relocation - Voluntary Home Relocation Scheme
- **Prevention:** Local Adaptation Planning - Consideration of Flood Risk in local adaptation planning
- **Prevention:** Land Use Management and Natural Flood Risk Management Measures - Assessment of Land Use and Natural Flood Risk Management Measures

- **Protection:** Minor Works Scheme
- **Protection:** Maintenance of Arterial Drainage Schemes - There are no Arterial Drainage Schemes in the Barrow River Basin. The OPW has a statutory duty under the Arterial Drainage Act, 1945, and the Amendment of the Act, 1995, to maintain the Arterial Drainage and the flood relief Schemes. The local authorities should also maintain those flood relief schemes for which they have maintenance responsibility. This Plan does not amend these responsibilities to provide additional flood relief. The Plan therefore does not set out additional measures in this regard.
- **Protection:** Maintenance of Drainage Districts – There are 17 Drainage Districts within the Barrow River Basin, namely the Ballyadams, Barrow, Burren, Douglas, Douglas-Laois, Greese, Ireby, Kildare, Kilmannock, Lerr, Quinagh, Rathangan and Triogue Drainage Districts. The local authorities have a statutory duty to maintain the Drainage Districts, and this Plan does not amend these responsibilities to provide additional flood relief. The Plan therefore does not set out additional measures in relation to the maintenance of Drainage Districts.
- **Maintenance** of Channels Not Part of a Scheme - Work to develop guidance to clarify the rights and responsibilities of landowners in relation to the maintenance of water courses on or near their lands is being developed through the Inter-Departmental Flood Policy Review Group.

- **Preparedness:** Flood Forecasting - Establishment of a National Flood Forecasting and Warning Service
- **Preparedness:** Review of Emergency Response Plans for Severe Weather - Ongoing Appraisal of Flood Event Emergency Response Plans and Management Activities
- **Preparedness:** Individual and Community Resilience - Individual and Community Action to Build Resilience
- **Preparedness:** Individual Property Protection
- **Preparedness:** Flood-Related Data Collection

4.2.2 Sub- Catchment Measures

The Barrow Sub-catchment screening did not identify any feasible flood protection methods able to provide the required Standard of Protection. Storage and Hard Defences were found to be technically feasible however economically unviable and Improvement of Channel Conveyance was considered technically unviable. As no methods have been deemed potentially viable, the next steps in the process, such as identification of options or MCA appraisal have not been implemented at a sub-catchment scale.

4.2.3 Athy AFA Preferred Measure

Potentially viable flood relief works for Athy that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure consists of building hard defences, at risk properties in Athy would be protected by a series of hard defences consisting of flood embankments and walls. These hard defences would be set back from the river channel where possible and would protect to the 1% AEP fluvial flood event with an estimated average height of 1.2m and length of 2.9km. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential and commercial properties, NIAH buildings, transport links and social infrastructure/amenity sites for the current and future climate change scenarios. The preferred measure had similar scores to the other potential measure investigated and thus the selection of the preferred measure was based on the Local Authority's stated preference.

4.2.4 Carlow AFA Preferred Measure

A flood relief scheme has been implemented for Carlow AFA and is maintained by the Local Authority. In addition to the maintenance and upkeep of the existing scheme, additional measures are required to ensure full protection is provided. Potentially viable flood relief works for Carlow that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure consists of building hard defences, at risk properties would be protected by a series of flood embankments. These hard defences would protect to the 1% AEP fluvial flood event with an estimated average height of 1.1m and a total length of 276m. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential properties, an NIAH protected structure, 2 utilities, several social infrastructure assets and transport links for the current and future climate change scenarios. The preferred measure scored better environmentally and has a significantly higher benefit cost ratio than other potential measures which were investigated.

4.2.5 Castledermot AFA Preferred Measure

Potentially viable flood relief works for Castledermot that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a Benefit - Cost Ratio of less than unity. It is considered that the costs for certain works, or smaller schemes, is likely to be conservative in the Unit Cost Database. It is therefore recommended that the preferred measure for Castledermot is progressed to include a detailed

assessment of the costs to determine if an economically viable measure may exist that could justify the progression to full project-level assessment.

4.2.6 Graiguenamanagh AFA Preferred Measure

Potentially viable flood relief works for Graiguenamanagh that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure consists of building hard defences, at risk properties would be protected by a series of embankments and walls, sheet piled where necessary and set back where possible from the river channel. These hard defences would protect properties from the 1% AEP fluvial event and with estimated an average height of 1.56m and a total length of 1.31km. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential and commercial properties, NIAH buildings, transport links and social infrastructure/amenity sites for the current and future climate change scenarios. There was only one viable measure identified for this AFA, which is therefore the preferred measure.

In addition there is a Community Resilience Pilot Scheme on-going for Graiguenamanagh, to progress flood alert and community flood response schemes. This scheme is intended to facilitate a community based response to flood events by improving the resilience and preparedness of the local community. The scheme includes consideration of the provision of an early flood warning system and flood barriers for individual property protection in Graiguenamanagh. The pilot study includes a detailed building survey to identify all potential flow paths through the affected properties and the type of foundation and floor in affected property along with other factors which may affect the viability of any proposed measures.

4.2.7 Leighlinbridge AFA Preferred Measure

A flood relief scheme has been implemented for Leighlinbridge AFA. In addition to the maintenance of the existing scheme, additional measures are required to ensure full protection is provided. Potentially viable flood relief works for Leighlinbridge that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure consists of augmenting the existing defences with the construction of embankments, walls set back from the river where possible and the installation of automatic flood gates. The new hard defences would protect to the 1% AEP flood event with an estimated average height of 1.2m and a total length of 1.1km. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential and commercial properties, NIAH buildings, monuments and other architectural heritage, transport links and social infrastructure/amenity sites for the current and future climate change scenarios. There was only one viable measure identified for this AFA, which is therefore the preferred measure.

4.2.8 Mountmellick AFA Preferred Measure

Potentially viable flood relief works for Mountmellick that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure would protect at risk properties by a series of hard defences consisting of flood

embankments and walls. These hard defences would be set back from the river channel where possible and would protect to the 1% AEP fluvial flood event with an estimated average height of 1m and a total length of 2.4km. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential and commercial properties, a NIAH building, transport links and social infrastructure/amenity sites for the current and future climate change scenarios. There was only one viable measure identified for this AFA, which is therefore the preferred measure.

4.2.9 Portarlington AFA Preferred Measure

Potentially viable flood relief works for Portarlington that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. The preferred measure would protect at risk properties by a series of hard defences consisting of flood embankments and walls. These hard defences would be set back from the river channel where possible and would protect to the 1% AEP fluvial flood event with an estimated average height of 1.6m and a total length of 3.3km. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous residential and commercial properties, NIAH buildings, transport links and social infrastructure/amenity sites for the current and future climate change scenarios. There was only one viable measure identified for this AFA, which is therefore the preferred measure.

4.2.10 Portlaoise AFA Preferred Measure

Potentially viable flood relief works for Portlaoise that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a Benefit – Cost Ratio below unity. It is considered that the costs for certain works, or smaller schemes, is likely to be conservative in the Unit Cost Database. It is therefore recommended that the preferred measure for Portlaoise be progressed to include a detailed assessment of the costs to determine if an economically viable measure may exist that could justify the progression to full project-level assessment.

4.2.11 Suncroft AFA Preferred Measure

Potentially viable flood relief works for Suncroft that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a Benefit – Cost Ratio below unity. It is considered that the costs for certain works, or smaller schemes, is likely to be conservative in the Unit Cost Database. It is therefore recommended that the preferred measure for Suncroft is progressed to include a detailed assessment of the costs to determine if an economically viable measure may exist that could justify the progression to full project-level assessment.

4.3 MEASURES WITH A BENEFIT - COST RATIO BELOW UNITY

For the Castledemot, Portlaoise and Suncroft AFAs, no economically viable measure (i.e., a measure with a benefit - cost ratio of greater than 1.0) has been found through the analysis undertaken to date, but a technically viable measure has been identified with a benefit - cost ratio of between 0.5 and 1.0.

A more detailed assessment of the costs of such measures may indicate that the measure could be implemented at a cost below that determined through the analysis undertaken to date.

While it would not be prudent to progress such measures to full project-level assessment and planning / Public Exhibition based on the information available at present, a more detailed assessment of the costs can be progressed to determine if an economically viable measure may in fact exist that could justify the progression to full project-level assessment.

5 MEASURES TO MONITOR SIGNIFICANT ENVIRONMENTAL EFFECT OF IMPLEMENTING THE PLAN

Article 10 of the SEA Directive requires that monitoring be carried out in order to identify, at an early stage, any unforeseen adverse effects due to implementation of a Plan or Programme, and to be able to take remedial action. Monitoring is carried out by reporting on a set of indicators, which enable positive and negative impacts on the environment to be measured. The Environmental Monitoring Programme is based on these indicators and is discussed in more detail below. This monitoring is included within Section 8 of the Final Plan.

5.1 RESPONSIBILITIES FOR MONITORING

The OPW will monitor progress in the implementation of measures for which the OPW has responsibility on an ongoing basis as part of its normal business management processes.

The OPW will coordinate and monitor progress in the implementation of the Plans through an inter-departmental coordination group.

On a six-yearly cycle, the OPW will undertake a full review of the progress in the implementation of the Plan and the level of flood risk, and will report this progress publicly and to the European Commission as part of obligations of Ireland under the 'Floods' Directive.

In addition to monitoring of implementation of the measures set out in the Plan, monitoring will also be undertaken in relation to:

- Continued collection and analysis of hydro-meteorological data for improved flood flow and sea level frequency analysis and for observation of the potential impacts of climate change
- Ongoing recording of flood events through established systems, with photographs, peak water levels, duration, etc., for recording and publication on the National Flood Event Data Archive (www.floodmaps.ie)
- Monitoring of compliance with the Guidelines on the Planning System and Flood Risk Management through ongoing review of development plans, local area plans and other forward planning documents
- Changes that may affect the areas prone to flooding as shown on the flood maps, with the flood maps updated on an ongoing basis as necessary

5.2 SOURCES OF INFORMATION FOR MONITORING

The SEA Directive requires that the significant environmental effects of the implementation of a Plan are monitored in order to identify at an early stage unforeseen adverse effects and in order to undertake appropriate remedial action. The proposed monitoring programme from the SEA

Environmental Report is given in **Table 5.1** and is based on the Targets and Indicators established in the SEA Objectives. This has been adopted into the final Plan and the monitoring will then undertaken during development of the 2nd cycle of the Plan.

Detailed monitoring for specific schemes proposed should be re-scoped in consultation with the appropriate authorities at the detailed feasibility and design stages. This agreed detailed monitoring should then be undertaken before, during and after construction, where and when appropriate.

Table 5.1 Environmental Monitoring of Plan

SEA Topic	Objective	Sub-Objective		Indicator	Possible Data and Responsible Authority
Biodiversity, Flora and Fauna	Support the objectives of the Habitats Directive	i)	Avoid detrimental effects to, and where possible enhance, Natura 2000 network, protected species and their key habitats, recognising relevant landscape features and stepping stones	Area, condition and trend of European sites and species in the UoM (European sites to review are those identified by AA Screening.)	NPWS – Conservation Action Plans NPWS reporting on Irelands Habitats and Species – Article 17 Reports. NPWS reporting on the status of Irelands Birds – Article 12 Reports.
	Avoid damage to, and where possible enhance, the flora and fauna of the catchment	ii)	Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern	Area, condition and trend of national, regional or local conservation sites in the UoM (National sites to review are those identified in SEA Environmental Report.)	Local Authority – Local Area Plans and County Development Plans. NPWS - Status of Protected Sites and Species in Ireland Reporting
Population and Human Health	Minimise risk to human health and life	i)	Minimise risk to human health and life of residents	Residential property flooding in the UoM	OPW, Local Authority and Emergency Services Reporting.
		ii)	Minimise risk to high vulnerability properties	High vulnerability sites impacted by flooding in the UoM	OPW, Local Authority and Emergency Services Reporting.
Geology, Soils and Landuse	Minimise risk to agriculture	i)	Minimise risk to agriculture	Area of soil resource lost due to flooding and flood risk management in the UoM.	EPA - CORINE landcover mapping. Local Area Plans and County Development Plans – myplan.ie
Water	Support the objectives of the WFD	i)	Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives	Status and status trend of waterbodies, where FRM activities are within and upstream of a waterbody.	EPA / SERBD – WFD status reporting and RBMPs.
Climate	Ensure flood risk management options are adaptable to future flood risk	i)	Ensure flood risk management options are adaptable to future flood risk	Requirement for adaptation of FRM management activities for climate change in the UoM.	OPW and Local Authority reporting.
Material Assets	Minimise risk to transport &	i)	Minimise risk to transport infrastructure	Number and type of transport routes that have flooded in the UoM.	OPW, Local Authority and NRA reporting.

	utility infrastructure	ii)	Minimise risk to utility infrastructure	Number and type of utilities that have flooded in the UoM.	OPW, Local Authority, ESB, Eirgrid, Eircom, BGE, Irish Water and EPA reporting.
Cultural Heritage	Avoid damage to or loss of features, institutions and collections of cultural heritage importance and their setting	i)	Avoid damage to or loss of features, institutions and collections of architectural value and their setting.	Number of designated architectural heritage features, institutions and collections that have flooded in the UoM.	OPW, Local Authority and DAHRRGA reporting. Archaeological Survey of Ireland Sites and Monuments Records
		ii)	Avoid damage to or loss of features, institutions and collections of archaeological value and their setting.	Number of designated archaeological heritage features, institutions and collections that have flooded in the UoM.	OPW, Local Authority and DAHRRGA reporting. Archaeological Survey of Ireland Sites and Monuments Records
Landscape and Visual	Protect, and where possible enhance, landscape character and visual amenity within the river corridor	i)	Protect, and where possible enhance, visual amenity, landscape protection zones and views into / from designated scenic areas within the river corridor.	Length of waterway corridor qualifying as a landscape protection zone within urban areas of UoM. Change of quality in existing scenic areas and routes in the UoM. Loss of public landscape amenities in the UoM.	Local Authority – Landscape Character Assessments, County Development Plans and Local Area Plans. EPA - CORINE Landcover.
Fisheries, Aquaculture & Angling	Protect, and where possible enhance, fisheries resource within the catchment	i)	Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.	Improvement or decline in fish stocks and habitat quality in the UoM. Barriers to fish movement within the UoM.	IFI and WFD fish surveys and reports. Local fisheries reporting.
Amenity, Community & Socio-Economics	Minimise risk to community	i)	Minimise risk to social infrastructure and amenity	Social infrastructure and amenity assets impacted by flooding in the UoM.	OPW and Local Authority reporting.
		ii)	Minimise risk to local employment	Non-residential properties impacted by flooding in the UoM.	OPW and Local Authority reporting.

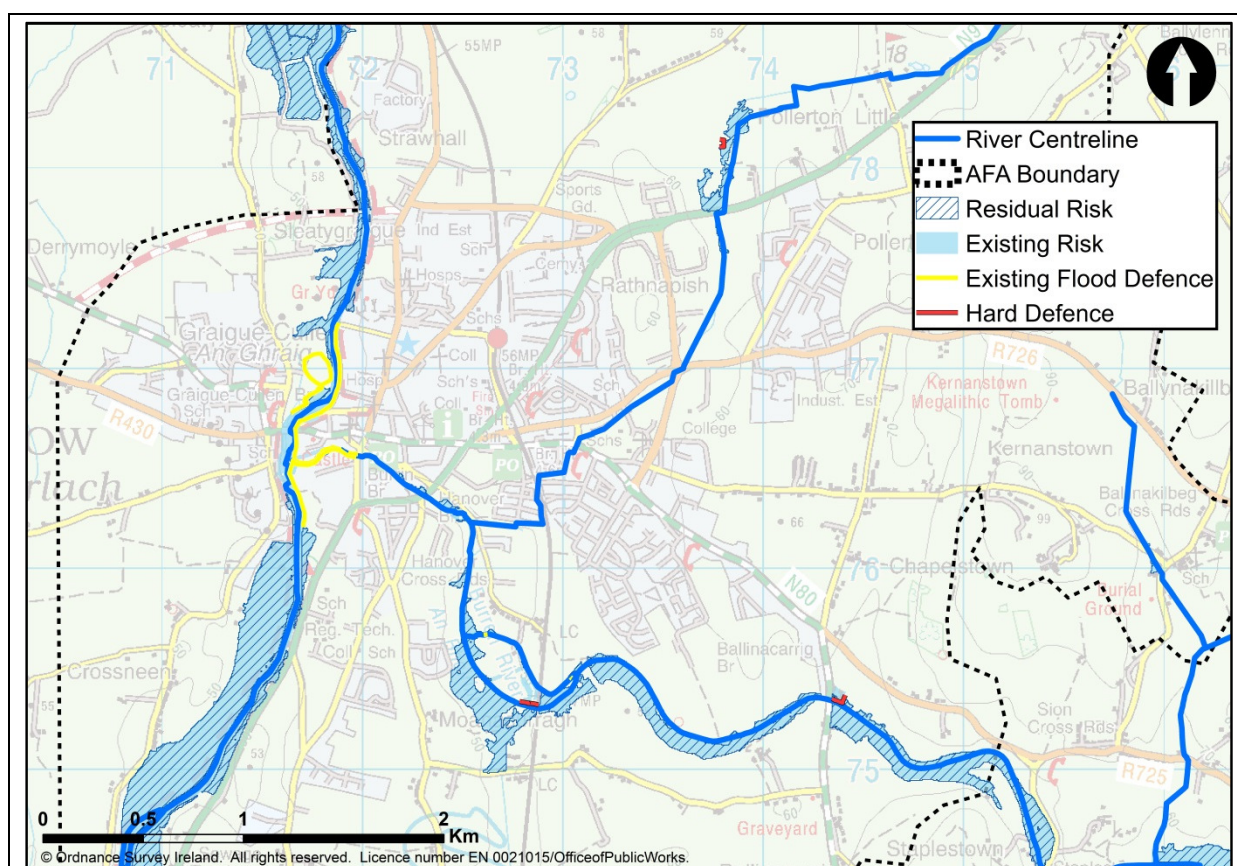
6 SCREENING AND CHANGES TO FINAL PLAN

While Carlow AFA has been subject to a previous flood relief scheme, this was constructed in phases and at present there is a short section adjacent to the River Burren at Kennedy Street which needs to be investigated. Flood waters in this area had been retained by the wall of an adjacent building which has now been demolished; therefore, the Standard of Protection of the embankment at this location needs to be confirmed. It was determined in the draft Plan for the Barrow River Basin that residual flood risk in the Carlow AFA would be managed through the Minor Works process rather than the Plan and therefore the Carlow AFA had no preferred measure and any assessment of the AFA was not documented in the draft Plan SEA Environmental Report and NIS.

However, following consultation on the draft Plan, as there are reasonable event damages and risks associated with Carlow AFA, it was subsequently agreed that it should be included as part of the South Eastern CFRAM Study and was therefore added to the final Barrow River Basin Plan. This preferred measure proposed has been added to the NIS in Section 4.3.2.9 and an impact assessment has been added to the NIS, Section 5.9. An assessment of the measure for the SEA is given in Section 6.1 of this SEA Statement. This option was originally assessed as part of the MCA for the Barrow River Basin draft Plan and as part of the SEA Environmental Report, however was not published in the SEA Environmental Report as the option was not taken into the draft Plan. The following section incorporates revised assessment from the NIS for the Barrow River Basin.

6.1 CARLOW

River Basin	Barrow
AFA	Carlow
Measure	Progress the development of a flood relief scheme for Carlow.
Code	IE14-IE-AFA-140190-0315-M33
Description	<p>Progress the project-level development and assessment of a Flood Relief Scheme for Portarlinton, including environmental assessment as necessary and further public consultation, for refinement and preparation for planning / Exhibition and, if and as appropriate, implementation.</p> <p>At risk properties would be protected by a series of 'Hard Defences' consisting of flood embankments. These hard defences would protect to the 1% AEP fluvial flood event with an average height of 1.1m and a total length of 276m.</p>



Total MCA-Benefit Score	Option Cost (€millions)	MCA-Benefit Score / Cost Ratio
651	0.21	3108.65

Economic Appraisal (Cost-Benefit Analysis) Outcomes - All figures €millions

Area NPVd (uncapped)	Option Cost	Option NPVb (capped)	Benefit - Cost Ratio
€8,482,650	€209,259	€846,524	4.05

Key Environmental Issues

- Much of the Carlow Town AFA is urbanised however the general landscape is primarily rural, with medium to quite large fields defined by well maintained and generally low hedges and occasional to frequent hedgerow trees. Landcover outside the urban area is intensively agricultural with a mix of grassland pasture and tillage.
- The River Barrow and River Nore SAC is within, upstream and downstream of Carlow. The Slaney River Valley SAC is over 6km east of Carlow, but is not hydraulically linked to the AFA.
- The AFA is within the Barrow Freshwater Pearl Mussel sensitive area. The Oakpark pNHA is within the AFA. The Barrow Valley at Tankardstown Bridge pNHA is over 7km upstream of the AFA, while the Cloghrick Wood pNHA is over 3km downstream of the AFA.
- Carlow town is a long established coarse angling centre. There is good general coarse fishing at a number of locations around the town with specimen perch and hybrids being taken regularly by anglers within the limits of the town. The town stretch in Carlow is a popular

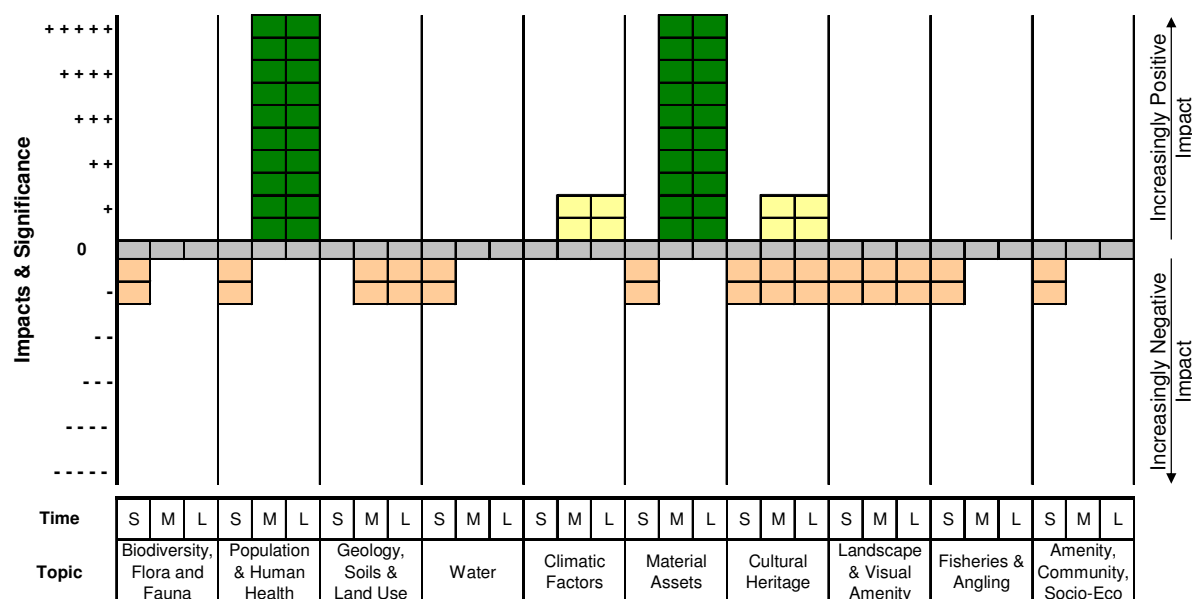
location which regularly produces good bags of dace, roach and hybrids. The River Barrow is renowned as a coarse and game angling river for bream, roach, dace, hybrids, rudd, perch, pike, brown trout, salmon and white trout.

- From the Carlow County LCA, Carlow Town is an urban area within the central lowlands of the county. Built up areas in the county are the least sensitive landscapes. There are no scenic routes or viewpoints in Carlow Town.
- There are 25 NIAH buildings of national, regional and local importance within the AFA. Several of these buildings are within close proximity to watercourses.
- There are 2 monuments in state care within the AFA, however are both of low vulnerability to flooding, being a tomb and a castle. There are also 63 monuments with no statutory protection within the AFA, which are mainly enclosures, raths, mills and religious sites. All are of low vulnerability to flooding.

Environmental Assessment

Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	5	5
Geology, Soils and Landuse (S)	0	-1	-1
Water (W)	-1	0	0
Climatic Factors (C)	0	1	1
Material Assets & Infrastructure (MA)	-1	5	5
Cultural, Architectural & Archaeological Heritage (H)	-1	-1 / 1	-1 / 1
Landscape & Visual Amenity (L)	-1	-1	-1
Fisheries & Angling (F)	-1	0	0
Amenity, Community & Socio-Economics (ACS)	-1	0	0

Summary Chart of Impacts



Discussion of Impacts

Biodiversity, Flora & Fauna

There is the slight potential for indirect downstream negative impacts to River Barrow and River Nore SAC from sedimentation during construction, including the potential for disturbance of species such as otter, salmon and lamprey. There is the slight potential for indirect downstream impacts to the Barrow Freshwater Pearl Mussel sensitive area from sedimentation during construction. There is also the potential localised loss and disturbance to flora and fauna in the footprint of works in urban and semi-rural areas. There are no designations in the direct vicinity of proposed works. Defences to be set back from the river where possible. Impacts can be mainly mitigated for with good planning and monitoring, appropriate timing of works and good construction practice. There is the potential for a direct temporary loss of undesignated habitat and disturbance of fish species and nesting birds. There is unlikely to be any permanent or recurring negative impacts in the medium and long term.

The NIS details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect impacts of proposed FRM works at the Carlow AFA on the following European site:

- River Barrow and River Nore SAC (002162)

The Appropriate Assessment investigated the potential direct and indirect impacts of the proposed works on the integrity and interest features of the above European site, alone and in-combination with other plans and projects, taking into account the site's structure, function and conservation objectives. Where potentially significant adverse impacts were identified, a range of mitigation and avoidance measures have been suggested to help offset them. Engagement with stakeholders throughout the process of FRM option development ensured that the potential for significant in-combination and cumulative impacts was minimised, however they will be further assessed at the project stage. Mitigation measures include avoidance of concurrent FRM work at nearby AFAs. As a result of this Appropriate Assessment it has been concluded that, following the avoidance and mitigation measures suggested, the FRM measures at Carlow AFA will not have a significant adverse impact on the above European site.

The recommendations of the Barrow Freshwater Pearl Management Plan will need to be adhered to in any proposed works at the Carlow AFA.

Project level assessments will be undertaken based on option designs and site surveys to further consider the attributes and targets of site specific conservation objectives.

Population & Human Health

There is the potential for temporary minimal disturbance impacts during the construction phase of this option. However in the medium and long term there will likely be highly significant positive impacts as 35 ground floor properties will benefit due to the increased protection from up to 1% AEP fluvial flooding events. There are no additional upper floor properties or highly vulnerable properties benefiting with this option in place.

Geology, Soils & Landuse

There is unlikely to be short term impacts on the soil resource. There is the potential for medium and long term minimal negative impacts with a slight increase of flood extents to agricultural land.

Water

There is the potential for short term construction phase, slight negative impacts during the creation of hard defences, set back from the non-sensitive waterbody where possible. There is the potential for short term, indirect, sedimentation impacts during the construction phase. There is unlikely to be any permanent or recurring impacts in the medium and long term with this option, although there will be increased protection to flooding from up to 1% AEP fluvial events.

Climatic Factors

There is unlikely to be any impacts on climatic factors in the short term construction phase. This Option is adaptable to climate change, however at a significant cost, resulting in the potential for minimal positive impacts in the medium and long term.

Material Assets & Infrastructure

There is the potential for short term disturbance impacts to local infrastructure during the construction phase of this option. There are five transport links and one utility that will benefit with this option in place in the medium and long term, through protection from up to 1% AEP fluvial flooding events.

Cultural, Architectural & Archaeological Heritage

There is the potential for medium and long term increased protection to one NIAH protected feature, Culm Crusher, however hard defences may be in close proximity to the feature and impact on its setting, prior to the establishment of screening. There is the potential for impacts on the setting of and potentially slightly increasing flood risk to the Chapelstown enclosure. There is the potential for direct physical impacts on the Chapelstown Bridge monument, from tie in of hard defences that could have minimal negative impacts on its setting.

Landscape & Visual Amenity

There is the potential for construction phase slight negative impacts during the creation of hard defences prior to the establishment of screening. There is the potential for medium and long term, minimal negative impacts which will limit views of the river on those to be protected. There is unlikely to be impacts on the wider landscape or wider views.

Fisheries & Angling

There is the potential for short term, indirect, downstream impacts from sedimentation during the construction works. Impacts can be mainly mitigated for with good planning, appropriate timing of works and good construction practice. There is unlikely to be any permanent or recurring negative impacts in the medium and long term.

Amenity, Community and Socio-Economics

There is the potential for short term, minimal negative, disturbance impacts to the local community during the construction phase and the potential for minimal, temporary negative impacts on access for commercial activity during construction. In the medium and long term, there are no additional

commercial properties or social infrastructure/amenity sites benefiting with this option in place, with a reduced flood risk from 1% AEP fluvial flooding events.

Potential sources of in-combination effects identified as part of this assessment include:

- The Barrow Drainage Works 2012-2014 by the OPW involved maintenance on those channels altered through schemes implemented following the 1945 Arterial Drainage Act. These activities, in combination with the proposed FRM measures, could result in adverse cumulative impacts on designated habitats and species at this site. It is recommended that no additional arterial maintenance is carried out in the channels where FRM work is being undertaken during the construction phase. Good planning and timing of works should be able to eliminate the potential for cumulative or in-combination negative effects.
- The Barrow Freshwater Pearl Management Plans (Aughavard Barrow, Ballymurphy Barrow and Mountain Barrow) (Second Draft, NS2, 2010) recognise that it is the combination of the negative effects of a number of pressures that are acting together to leave the freshwater pearl mussel habitat in unfavourable condition. These include peat exploitation, agricultural activities (overgrazing, direct access to watercourses, nutrient addition through slurry or fertiliser additions), forestry activities and wastewater treatment. Existing pressures in the catchment that can result in an increased sediment load can be considered as cumulative impacts with the potential sediment load from FRM measures, owing to the unfavourable status of the species and its sensitivity to sedimentation.
- The draft South Eastern River Basin District Management Plan, 2015-2021 and associated Programmes of Measures lists European sites in the Water Framework Directive 'Register of Protected Areas' for protection. The OPW will work with the EPA, local authorities and other agencies to identify, where possible, measures that will have benefits for both WFD and flood risk management objectives and thus negative in-combination effects are unlikely.
- The Carlow County Development Plan 2015-2021 has the potential for impacts in relation to planned new infrastructure. No significant in-combination effects with the FRMP are predicted at plan level; additional detail on potential interactions between infrastructure and FRA schemes will be captured and assessed at project level when project-specific design information is available.
- Generic mitigation and monitoring measures have been developed, including the avoidance of undertaking FRM work on adjoining reaches of rivers for different AFAs or other parallel projects simultaneously. Provided the timing of FRM works is managed correctly, no significant in-combination impacts are anticipated.

Key Conclusions:

There is the potential for short term, minimal negative impacts on biodiversity, flora, fauna, water, community, amenity, fisheries and angling from the construction of hard defences set back from the non-sensitive waterbody where possible. These impacts are direct and indirect construction phase disturbances that could be mitigated for with good planning and management. There is the potential for medium and long term minimal negative impacts on the soil resource with a very slight local increase of flood extents on agricultural land. There is the potential for medium and long term minimal negative impacts on the setting of heritage features; however there is also the positive impact of medium and long term protection of one NIAH protected feature. There is also the potential for short, medium and long term, minimal negative impacts on views of the river, on those to be protected. Aside from short term disturbance impacts to population, human health, and material assets, there is likely to be highly significant, medium and long term impacts on these topic areas from reduced flood risk. The NIS has concluded that, following the avoidance and mitigation measures suggested, the FRM measures at Carlow AFA will not have a significant adverse impact on European sites.

No other significant amendments were made between the draft and Final Plans for the Barrow River Basin, so no further environmental screening of changes to the Plan were required. Following receipt

and review of all environmental submissions on the draft Plan, SEA Environmental Report and NIS, minor amendments were however made to the SEA Environmental Report and NIS to provide greater clarity on assessment and to ensure these documents were as complete as possible. No additional assessment of FRM options was however undertaken for the Barrow River Basin in these environmental reports.

7 CONCLUSIONS AND NEXT STEPS

The SEA and AA processes carried out during the preparation of the Plan for the Barrow River Basin have ensured that the potential significant environmental impacts associated with implementation of the Plan have been identified and that they have been given appropriate consideration. Consultation on the draft Plan, Environmental Report and NIS has further contributed to the development and finalisation of the Plan for the Barrow River Basin.

In accordance with the requirements of the EU 'Floods' Directive, the PFRA, flood maps and Plans will be reviewed on a six-yearly cycle, with the first reviews of the PFRA, maps and final Plans due by the end of 2018, 2019 and 2021 respectively.

The review of the flood maps, on an ongoing basis and formally by the end of 2019, will take account of additional information received and/or physical amendments such as the construction of new infrastructure, and, where appropriate, the amendment of the flood maps.

This review of the Plans shall include any changes or updates since the publication of the Plans, including:

- A summary of the review of the PFRA and the flood maps, taking into account the potential impacts of climate change, including where appropriate the addition or removal of AFAs
- An assessment of the progress made towards the achievement of the flood risk management Objectives
- A description of, and an explanation for, any measures foreseen in the final version of the Plan which were planned to be undertaken and have not been taken forward
- A description of any additional measures developed and/or progressed since the publication of the Plan

The Review of the Plan, which will include assessments under the SEA and Habitats Directives as appropriate, taking into account new information available at that time (e.g., as available from the Environmental Monitoring Framework and from the www.catchments.ie website), will be published in line with relevant legislation, following public and stakeholder engagement and consultation.

8 GLOSSARY OF TERMS

Appropriate Assessment An assessment of the effects of a plan or project on European sites. European sites comprise Special Protection Areas under the Birds Directive and Special Areas of Conservation under the Habitats Directive.

Areas for Further Assessment (AFAs) Existing urban areas with quantifiable flood risk.

Assessment Unit Defines the spatial scale at which flood risk management options are assessed. Assessment Units are defined on four spatial scales ranging in size from largest to smallest as follows: catchment scale, Assessment Unit (AU) scale, Areas for Further Assessment (APSR) and Individual Risk Receptors (IRR).

Biodiversity Word commonly used for biological diversity and defined as assemblage of living organisms from all habitats including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part.

Birds Directive Council Directive of 2nd April 1979 on the conservation of wild birds (79/409/EEC).

Catchment A surface water catchment is the total area of land that drains into a watercourse.

Catchment Flood Risk Management Plan (CFRMP) A large-scale strategic planning framework for the integrated management of flood risks to people and the developed and natural environment in a sustainable manner.

Estuary A semi-enclosed coastal body of water with one or more rivers or streams flowing into it, and with an open connection to the sea.

Flood An unusual accumulation of water above the ground caused by high tide, heavy rain, melting snow or rapid runoff from paved areas. In this Study a flood is marked on the maps where the model shows a difference between ground level and the modelled water level. There is no depth criterion, so even if the water depth is shown as 1mm, it is designated as flooding.

Flood Defence A structure (or system of structures) for the alleviation of flooding from rivers or the sea.

Flood Risk Refers to the potential adverse consequences resulting from a flood hazard. The level of flood risk is the product of the frequency or likelihood of flood events and their consequences (such as loss, damage, harm, distress and disruption).

Flood Risk Management Method Structural and non-structural interventions that modify flooding and flood risk either through changing the frequency of flooding, or by changing the extent and consequences of flooding, or by reducing the vulnerability of those exposed to flood risks.

Flood Risk Management Option Can be either a single flood risk management method in isolation or a combination of more than one method to manage flood risk.

Floodplain Any area of land over which water flows or is stored during a flood event or would flow but for the presence of flood defences.

Geographical Information System (GIS) a computer-based system for capturing, storing, checking, integrating, manipulating, analysing and displaying data that are spatially referenced.

Geomorphology The science concerned with understanding the form of the Earth's land surface and the processes by which it is shaped, both at the present day as well as in the past.

Groundwater All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. This zone is commonly referred to as an aquifer which is a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow a significant flow of groundwater or the abstraction of significant quantities of groundwater.

Habitats Directive European Community Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Flora and Fauna and the transposing Irish regulations (The European Union (Natural Habitats) Regulations, SI 94/1997 as amended).. It establishes a system to protect certain fauna, flora and habitats deemed to be of European conservation importance.

Heavily Modified Water Body Surface waters that have been substantially changed for such uses as navigation (ports), water storage (reservoirs), flood defence (flood walls) or land drainage (dredging).

Individual Risk Receptors (IRR) Essential infrastructure assets such as a motorway or potentially significant environmentally polluting sites.

Mitigation Measures Measures to avoid/prevent, minimise/reduce, or as fully as possible, offset/compensate for any significant adverse effects on the environment, as a result of implementing a plan or project.

Natura 2000 European network of protected sites which represent areas of the highest value for natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community. The Natura 2000 network will include two types of area. Areas may be designated as Special Areas of Conservation (SAC) where they support rare, endangered or vulnerable natural habitats and species of plants or animals (other than birds). Where areas support significant numbers of wild birds and their habitats, they may become Special Protection Areas (SPA). SACs are designated under the Habitats Directive and SPAs are classified under the Birds Directive. Some very important areas may become both SAC and SPA.

Natural Heritage Area An area of national nature conservation importance, designated under the Wildlife Act 1976 (as amended), for the protection of features of high biological or earth heritage value or for its diversity of natural attributes.

Non Structural Options Include flood forecasting and development control to reduce the vulnerability of those currently exposed to flood risks and limit the potential for future flood risks.

Ramsar Site Wetland site of international importance designated under the Ramsar Convention on Wetlands of International Importance 1971, primarily because of its importance for waterfowl.

River Basin Districts Administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD.

Scoping (AA) the process of deciding the content and level of detail of an Appropriate Assessment under the Habitats Directive, including the key environmental issues, likely significant environmental effects and alternatives which need to be considered, the assessment methods to be employed, and the structure and contents of the Natura Impact Statement.

Scoping (SEA) the process of deciding the content and level of detail of a SEA under the SEA Directive, including the key environmental issues, likely significant environmental effects and alternatives which need to be considered, the assessment methods to be employed, and the structure and contents of the Environmental Report.

Screening (AA) The determination of whether implementation of a plan or project would be likely to have significant environmental effects on the Natura 2000 network.

Screening (SEA) The determination of whether a plan or programme is likely to require a SEA.

SEA Directive Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment'.

Sedimentation The deposition by settling of a suspended material.

Significant Effects Effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

Special Area of Conservation (SAC), Candidate Special Area of Conservation (cSAC) A SAC is an internationally important site, protected for its habitats and non-bird species. It is designated, as required, under the EC Habitats Directive. A cSAC is a candidate site, but is afforded the same status as if it were confirmed.

Special Protection Area (SPA) A SPA is a site of international importance for breeding, feeding and roosting habitat for bird species. It is designated, as required, under the EC Birds Directive.

Statutory Instrument Any order, regulation, rule, scheme or byelaw made in exercise of a power conferred by statute.

Structural Options Involve the application of physical flood defence measures, such as flood walls and embankments, which modify flooding and flood risk either through changing the frequency of flooding, or by changing the extent and consequences of flooding.

Surface Water Means inland waters, except groundwater, which are on the land surface (such as reservoirs, lakes, rivers, transitional waters, coastal waters and, under some circumstances, territorial waters) which occur within a river basin.

Sustainability A concept that deals with mankind's impact, through development, on the environment. Sustainable development has been defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland, 1987). Sustainability in the flood risk management context could be defined as the degree to which flood risk management options avoid tying future generations into inflexible or expensive options for flood defence. This usually includes consideration of other defences and likely developments as well as processes within a catchment.

The Office of Public Works (OPW) The lead agency with responsibility for flood risk management in Ireland.

Tidal Related to the sea and its tide.

Transitional waters Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their vicinity to coastal waters, but which are substantially influenced by freshwater flows.

Water Body A discrete and significant element of surface water such as a river, lake or reservoir, or a distinct volume of groundwater.

Water Course Any flowing body of water including rivers, streams etc.

Zone of Influence the area over which ecological features may be subject to significant effects as a result of the proposed Plan and associated activities. This may extend beyond the Plan area, for example where there are ecological or hydrological links beyond the Plan boundary. The zone of influence may vary for different ecological features depending on their sensitivity to an environmental change.

APPENDIX A

STAKEHOLDER AND PUBLIC

ENGAGEMENT AND CONSULTATION

APPENDIX A.1

Membership of the National CFRAM Steering Group

- Office of Public Works
- County and City Managers Association
- Dept. Housing, Planning, Community and Local Government
- Dept. Agriculture, Food and the Marine
- Dept. of Arts, Heritage and the Gaeltacht
- Environmental Protection Agency
- Electricity Supply Board
- Geological Survey of Ireland (Dept. of Communications, Energy and Natural Resources)
- Irish Water
- Met Eireann
- Office of Emergency Planning
- Rivers Agency (Northern Ireland)
- Waterways Ireland

APPENDIX A.2

Membership of the South Eastern CFRAM Steering Group

- Office of Public Works
- RPS
- Environmental Protection Agency
- WFD Local Authorities Water and Communities Office LAWCO
- Southern Regional Assembly
- Carlow County Council
- Cork County Council
- Kildare County Council
- Kilkenny County Council
- Laois County Council
- Limerick County Council
- Offaly County Council
- Tipperary County Council
- Waterford County Council
- Wexford County Council
- Wicklow County Council

APPENDIX A.3

Organisations Invited to Meetings of the National Stakeholder Group

Table A.3 *Organisations Invited to Meetings of the National Stakeholder Group*

An Bord Pleanála	Iarnród Éireann	Irish Small and Medium Enterprises Association
An Taisce	Industrial Development Agency	Irish Water
Association of Consulting Engineers of Ireland (ACEI)	Inland Fisheries Ireland	Irish Water and Fish Preservation Society
Badgerwatch	Inland Waterways Association of Ireland	Irish Wildlife Trust
Bat Conservation Ireland	Institute of Professional Auctioneers and Valuers	IRLOGI
BirdWatch Ireland	Insurance Ireland	Landscape Alliance Ireland
Bord Gáis Networks	Irish Academy of Engineering	Macra na Feirme
Bord na Mona	Irish Angling Development Alliance	Marine Institute
Canoeing Ireland	Irish Business and Employers Confederation (IBEC)	National Anglers Representative Association
Chambers Ireland	Irish Co-Operative Organisation Society	National Roads Authority
CIWEM Ireland	Irish Countrywomen's Association	Native Woodland Trust
Coarse Angling Federation of Ireland	Irish Creamery Milk Suppliers Association (ICMSA)	Recreational Angling Ireland
Coastal and Marine Resources Centre	Irish Farmers Association (IFA)	Rivers Agency (NI)
Coastwatch Ireland	Irish Federation of Pike Angling Clubs	Rowing Ireland
Coillte	Irish Federation of Sea Anglers	Royal Town and Planning Institute (RTPI)
Construction Industry Federation (CIF)	Irish Marine Federation / Irish Boat Rental Association	Society of Chartered Surveyors of Ireland (SCSI)

Council of Cultural Institutes	Irish National Committee of Blue Shield	St. Vincent de Paul
Dublin City Council / Dublin Flood Forum	Irish National Flood Forum	Sustainable Water Network (SWAN)
Eircom	Irish Natural Forestry Foundation	Teagasc
EirGrid	Irish Peatland Conservation Council	The Heritage Council
Engineers Ireland	Irish Planning Institute (IPI)	Trout Anglers Federation of Ireland
Health Services Executive (HSE)	Irish Red Cross	

APPENDIX A.4

Organisations Represented at Meetings of the South Eastern CFRAM Stakeholder Group

Table A.4 *Organisations Represented at Meetings of the South Eastern CFRAM Stakeholder Group*

Scoping Phase	16.11.2011	Bord Gais
Scoping Phase	16.11.2011	SERA
Scoping Phase	16.11.2011	EPA
Scoping Phase	16.11.2011	NTCC
Scoping Phase	16.11.2011	Eirgrid
Scoping Phase	16.11.2011	AMA of I
Scoping Phase	16.11.2011	Waterways Ireland
Scoping Phase	16.11.2011	Dept. Agriculture
Scoping Phase	16.11.2011	OPW
Scoping Phase	16.11.2011	SWAN
Scoping Phase	16.11.2011	DAHG
Scoping Phase	16.11.2011	Port of Waterford
Scoping Phase	16.11.2011	Laois Co Co
Scoping Phase	16.11.2011	Inland Fisheries Ireland
Scoping Phase	16.11.2011	NPWS
Scoping Phase	16.11.2011	STCC
Mapping Phase	08.07.2015	Wexford Co Co
Mapping Phase	08.07.2015	Tipperary Co Co
Mapping Phase	08.07.2015	OPW
Mapping Phase	08.07.2015	Eircom
Mapping Phase	08.07.2015	SRA
Mapping Phase	08.07.2015	Laois Co Co
Mapping Phase	08.07.2015	Carlow Co Co
Mapping Phase	08.07.2015	NPWS
Mapping Phase	08.07.2015	Teagasc

Mapping Phase	08.07.2015	IFA
Options Phase	07.04.2016	Tipperary Co Co
Options Phase	07.04.2016	Kildare Co Co
Options Phase	07.04.2016	Waterways Ireland
Options Phase	07.04.2016	Wexford Co Co
Options Phase	07.04.2016	Offaly Co Co
Options Phase	07.04.2016	Kilkenny Co Co
Options Phase	07.04.2016	Carlow Co Co
Options Phase	07.04.2016	LAWCO
Options Phase	07.04.2016	Laois Co Co
Options Phase	07.04.2016	Dept. AHG
Options Phase	07.04.2016	Coastwatch Ireland
Options Phase	07.04.2016	IFA
Draft Plan Phase	13.10.2016	Carlow County Council
Draft Plan Phase	13.10.2016	Tipperary County Council
Draft Plan Phase	13.10.2016	Inland Fisheries Ireland
Draft Plan Phase	13.10.2016	National Parks and Wildlife Service
Draft Plan Phase	13.10.2016	Office of Public Works
Draft Plan Phase	13.10.2016	Wexford County Council
Draft Plan Phase	13.10.2016	Kilkenny County Council
Draft Plan Phase	13.10.2016	Wicklow County Council
Draft Plan Phase	13.10.2016	Offaly County Council
Draft Plan Phase	13.10.2016	Waterways Ireland
Draft Plan Phase	13.10.2016	Irish Farmers' Association

APPENDIX A.5

Public Consultation Days Held at the Flood Mapping Stage in the UoM14 River Basin

Table A.5 *Flood Mapping PCDs Held in the UoM14 River Basin*

AFA	Date	Venue	No. Attendees
Allenwood	19.03.2015	ACDAL	7
Athy	30.03.2015	Clanard Court Hotel	3
Leighlinbridge	18.02.2015	Leighlinbridge Community Hall	2
Castledermot	31.03.2015	Castledermot Community Centre	6
Daingean	26.03.2015	Daingean Town Hall	3
Graiguenamanagh	03.03.2015	Graiguenamanagh Library	12
Carlow	31.03.2015	Áras an Chontae	12
Monasterevin/ Suncroft	05.03.2015	Monasterevin Library	7
Mountmellick	18.03.2015	Mountmellick Develop Association	4
New Ross	04.03.2015	New Ross Town Council	33
Portarlinton	26.03.2015	Portarlinton Community Centre	21
Portlaoise	18.03.2015	Portlaoise Library	9
Rathangan	19.03.2015	Rathangan Library	2

APPENDIX A.6

Public Consultation Days Held at the Flood Risk Management Optioneering Stage in the UoM14 River Basin

Table A.6 *Flood Risk Management Optioneering PCDs Held in the UoM14 River Basin*

AFA	Date	Venue	No. Attendees
Athy	22.02.2016	Clanard Court Hotel	5
Leighlinbridge	29.02.2016	Lord Bagenal Hotel	6
Castledermot	24.02.2016	Castledermot Community Centre	6

Daingean	08.03.2016	Daingean Town Hall	7
Graiguenamanagh	01.03.2016	Graiguenamanagh Library	15
Carlow	24.02.2016	Áras an Chontae	18
Monasterevin/ Suncroft	25.02.2016	Monasterevin Library	5
Mountmellick	03.03.2016	Mountmellick Develop Association	10
Portarlinton	08.03.2016	Portarlinton Community Centre	21
Portlaoise	07.03.2016	Laois County Council	12

APPENDIX B

Draft Plan Consultation – UoM14 Environmental Submissions

Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA).

Subject	Comment	Response
SEA/AA Public Consultation: Archaeology	Specific projects need to be routed through the appropriate development control legislation, whether the Planning and Development Acts or Arterial Drainage Acts etc., and consultation with and referral to the National Monuments Service will need to take place.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
SEA/AA Public Consultation: Archaeology	EIA requirements need to be implemented in regard to specific projects and the EIA process (and EIS) needs to fully and appropriately address archaeological issues.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
SEA/AA Public Consultation: Archaeology	All notification, consent and licensing requirements under the National Monuments Act need to be fully adhered to.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
SEA/AA Public Consultation: Archaeology	It is recommended that the OPW engage the services of a Project Archaeologist to oversee all proposed areas covered in the submitted UoM. They should advise on the necessary archaeological assessment for each area and liaise with National Monuments Service of DAHRRG on each scheme and particular work arising.	Revised mitigation included in Section 10 of the SEA to incorporate this. High level mitigation included within Section 6 of the Final FRMP.
SEA/AA Public Consultation: Archaeology	Records of Monuments and Places (RMP), known archaeological sites listed at www.archaeology.ie , the national inventory of shipwrecks, and records of the National Museum of Ireland should be considered at the earliest opportunity in the planning and design of flood relief works so as to avoid such sites if possible (see pages 2, 21 and 39).	Recommendation passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
SEA/AA Public Consultation: Archaeology	National policy on the protection of the archaeological heritage in the course of development is set out in Framework and Principles for the Protection of the Archaeological Heritage (Government of Ireland, 1999). Key aspects of this should be noted as follows: (See page 3/22/40).	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
SEA/AA Public Consultation: Archaeology	For more details on the circumstances in which archaeological assessment in advance of development is considered appropriate, reference should be made to the <i>Framework and Principles for the Protection of the Archaeological Heritage</i>	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.

SEA/AA Public Consultation: Archaeology	It should be noted that if work commences at or in relation to any monument included in the Record of Monuments and Places as established under section 12 of the National Monuments (Amendment) Act 1994, and such work has not been notified to the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs whether by way of a specific notice or as part of a referral to the Minister under development control legislation, then a serious breach of the National Monuments Acts will have occurred. The monuments included in the RMP include a number of historic towns.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
SEA/AA Public Consultation: Archaeology	Adequate time must be allowed for applications for consents and licences under the National Monuments Acts to be processed. Activities requiring consent under the Acts include alteration of, or ground disturbance around or in proximity to, National Monuments owned by a local authority, and historic bridges owned by local authorities and National Monuments in the guardianship or ownership of the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs may be considered to be within the scope of this requirement.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
SEA/AA Public Consultation: Nature Conservation	It is unclear from the NIS whether the assessment adequately considered the attributes and targets of site specific conservation objectives.	Site-specific conservation objectives for designated habitats/species were taken into account insofar as plan-level details allowed. A more detailed assessment will be undertaken at project level. Text amended in 3.4.1.4 of NIS for European Sites– Selection for Preliminary Screening of Methods & Options to reflect this.
SEA/AA Public Consultation: Nature Conservation	Despite a statement in section 7.4 of the draft FRMP that 'The outputs of the stage 2 AA were integrated into the SEA Environmental Report and subsequently into the FRMP' the SEA and NIS do not appear to have amended the Plan. It is critical that mitigation measures, particularly those from the NIS, are reflected in the content and objective of the FRMP. Given that no hydrometric data exists for UoM 13, for which the OPW and its consultants have proposed flood measures of hard defences for Wexford and Baltinglass AFAs as shown on maps, it is unclear if the flood measures proposed for these AFAs will be needed to be modified. This needs to be clarified.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.

SEA/AA Public Consultation: Nature Conservation	It is unclear what types of habitat may suffer a direct loss from the proposed measures of walls and embankments. Once the proposed measures are shown on maps, as in this draft Plan, then it should be possible to look at the habitat types that may be lost and the amount of same and therefore to better assess the possible impacts of the draft FRMP.	This is a strategic-level study, and the exact location and design of FRM measures have not been decided. Further assessment and quantification of potential impacts will be made at the project stage. SEA and NIS recommend that defences be set back from waterbodies and sensitive environmental habitats and species as far as possible.
SEA/AA Public Consultation: Nature Conservation	The SEA has focused mainly on designated sites and it is not clear whether impacts on protected species have been adequately assessed.	Section 6.2 of each SEA has been amended to include protected species that occur outside of designated sites. Text in the 'Biodiversity, flora and fauna' part of Section 9 for each AFA has been reviewed and amended to include more information on species.
SEA/AA Public Consultation: Nature Conservation	Due to the large numbers of FRMPs notified or referred to this Department, in addition to on-going referrals from other public authorities, the Department are prioritising the preparation of submissions on a small number of the plans. The OPW is advised to have regard to this submission in its decision-making (including its appropriate and strategic environmental assessments) on all 29 FRMPs, as many of the points raised within may be applicable to all.	Recommendation passed to OPW.
SEA/AA Public Consultation: Nature Conservation	OPW must complete an appropriate assessment for the FRMPs. The Department welcomes the clarification received from the OPW that this consultation is also to serve as the consultation required with the Minister, pursuant to the European Communities (Birds and Natural Habitats) Regulations 2011, for the purposes of the OPW's appropriate assessment.	OPW to note consultation timescale comment.
SEA/AA Public Consultation: Nature Conservation / NIS: Nature Conservation	NIS is titled "Habitats Directive Assessment (Natura Impact Statement)'. 'Natura Impact Statement' is used or defined in the Regulations and it is recommended that terminology be used in a manner that is consistent with the Regulations and corrected or amended where necessary, including in the glossary.	Document to be renamed - Natura Impact Statement
SEA/AA Public Consultation: Nature Conservation	FRMP Approving authorities should have regard for Regulation 42 (21) of the 2011 Regulations, including the provision for the undertaking of joint assessments, when more than one authority is required to undertake an appropriate assessment.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.

SEA/AA Public Consultation: Nature Conservation	In addition to the undertaking of joint assessments, where practicable, a further mitigation for timeline risks would be for the OPW to ensure all subsequent approving authorities are aware of these obligations where multiple authorisations arise so that they know to prepare accordingly.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
SEA/AA Public Consultation: Nature Conservation	Ensure all documentation on which an AA is based meets the standard required to ensure the authorities compliance with the Habitats Directive.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
SEA/AA Public Consultation: Nature Conservation	Consider Regulation 27 of the 2011 Regulation with regard to European sites that should be reflected in the plan commitments and associated assessments. Public authorities are advised to incorporate obligations into their plans and programmes, and associated assessments, as required and relevant. This could usefully include the development of systems that will monitor and ensure the compliance of 'downstream' projects with these obligations, which is particularly relevant to the delivery mechanisms for the preferred measures of the FRMPs, as well as any internal mechanisms that may be needed to ensure the appropriate assessments for the Plans meet the standards required by the Directives and the national transposing Regulations.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. High level mitigation included within Section 6 of the Final FRMP.
SEA/AA Public Consultation: Nature Conservation	The SEA and NIS for the AA should influence the content of a Plan in a positive way. The Department recommends that the mitigation from the assessments, and any proposed monitoring and compliance check programmes should be incorporated into the Plan itself to ensure that they are carried forward and implemented as part of the Plan implementation programme.	Additional text on benefits of FRM measures added to section 7 of the FRMP. Mitigation and monitoring included within sections 6 and 8 of the FRMP.
SEA/AA Public Consultation: Nature Conservation	While the restoration and improved management of European sites and other areas important for wildlife may not, on its own, reduce flood risk to the desired levels, they should form part of the overall package of measures from which complementary preferred options can be drawn. Where applicable the potential contribution of intact/restored peatlands, including raised and blanket bogs as well as other habitats such as alluvial woodlands, to the sustainability of land use practices and water retention should form part of the analysis to be undertaken in choosing the final preferred FRM options.	Land use management measure and NFM text added to Section 7.4.1.5 of the FRMP to acknowledge this. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.

SEA/AA Public Consultation: Nature Conservation	The OPW might consider if the proposed measure should be expanded to include working with Agencies and Departments whose land-use policies may contribute towards increased flood risk and/or undermine the landscape's natural ability to retain or attenuate water.	Land use management measure and NFM text added to Section 7.4.1.5 of the FRMP to acknowledge this. Sustainable planning and development text also added to section 7.4.1.1 of the FRMP. Recommendation also passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
NIS: Nature Conservation	The Department notes the reference to the guidance on AA produced by the DEHLG and revised in 2010. The statement in section 3.4.1.1 of the NIS that "As recommended in the AA of plans and projects in Ireland - Guidance for Planning Authorities (DEHLG, 2010), all European sites within a 15km precautionary buffer area of the NWNB CFRAM study area were included in the screening". This is in fact part 2 of the 3 part advice on what should be included. It is acknowledged however that the NIS does address the potential for water quality impacts at a greater distance than 15km. However, a distance of greater than 15km should also be considered where birds are concerned.	3.4.1.1 of the NIS has been edited to make the mechanism for selection of sites more clear and acknowledge that project-level data collection may result in new sites being screened in.
NIS: Nature Conservation	The Department acknowledges that detailed design has not yet taken place and, as stated on page 8 of the NIS, that 'it is stressed that the SEA and AA undertaken in relation to the FRMP are plan-level assessments.' Notwithstanding this statement there needs to be some consideration in this FRMP as to what will happen if, at project stage, the options prove unviable ecologically. Insofar as is possible, the assessment at Plan stage needs to ascertain that this would not happen.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. High level mitigation included within Section 6 of the Final FRMP.
NIS: Nature Conservation	It is stated on page 61 of the draft Plan that there are 4 freshwater pearl mussel catchments and 8 freshwater pearl mussel sensitive areas in UoM 14 but it does not appear to state where these are in any of the documentation. This needs to be clarified. Within the Barrow catchment there are 3 Sub-Basin Management Plans for Freshwater Pearl Mussel which are for the Mountain, Aughavad and Ballymurphy. While there are currently no conservation objectives for freshwater pearl mussels (<i>Margaritifera margaritifera</i>) for the River Barrow and River Nore SAC, the OPW and its consultants should refer to a site such as SAC 000197 which does have such site specific objectives which gives an indication of the main	Additional detail on FPM -related mitigation has been added to impact assessment tables in Chapter 5 of NIS for each of the AFAs in FPM sensitive areas.

	<p>issues. It is vital that the OPW and its consultants can show that this draft Plan will not jeopardise the survival of this species and will help achieve the conservation objectives.</p>	
NIS: Nature Conservation	<p>With regards to downstream impacts and sediment travel in rivers, it is stated on page 25 of the NIS that no specific distance limit was applied to downstream impacts and these were reviewed on a case-by-case basis. It is unclear how this works in practice or what the evidence is. This needs to be clarified. It would be useful to have details of the expected distance of travel for the type of sediment that could be released into the water as a result of proposed measures. It is not clear if expectation of no significant impacts is due to proposed mitigation measures totally removing the threat of sedimentation or partially removing the threat of sedimentation to a threshold where it is no longer likely to have an impact or any suspended sediment released as a result of measures would not travel that far. Once sediment gets into a river, while it may deposit out in time, it can get remobilised again during flood events. Therefore the aim should be to not allow extra sediment into the system where Nore freshwater pearl mussels are an issue.</p>	<p>This is a strategic-level study, and the exact location and design of FRM measures have not been decided. Therefore, quantification of sediment release and its expected travel is difficult to discern at this stage. Further assessment and quantification of potential impacts will be made at the project stage. Sediment mitigation for sensitive areas, such as FPM sensitive areas, should include a provision to ensure that the detailed FRM design and sediment mitigation must prevent additional sediment from entering the watercourse. This is included within SEA and NIS mitigation. Table 5.2.3 in NIS has been revised to clarify that careful design (setting back of hard defences) will help reduce pollution risk and when combined with recommended mitigation measures to prevent sediment loss and release of pollutants, will further reduce risk to insignificant levels.</p>
NIS: Nature Conservation	<p>Tables in section 5 detail Qualifying Interests (Q.I.s), potential sources of impact, pathways, potential impacts on attributes, avoidance/mitigation measures and residual impacts. It is unclear however which attribute from the conservation objectives is being referred to. This needs to be clarified.</p>	<p>NIS text heading in impact tables amended to Potential Impact. Please note this is a strategic-level assessment. Project level assessments will be undertaken based on detailed designs and site surveys to further consider the attributes and targets of site specific conservation objectives.</p>

NIS: Nature Conservation	<p>Section 5.1 of the three draft FRMPs state that, with regard to the hydrological analysis, there was a fair degree of potential uncertainty due to a lack of hydrometric gauge data. This was mitigated as much as possible in line with recent CFRAM guidance, however, a risk assessment to deal with areas of uncertainty is to be taken forward and built upon with the ultimate aim of providing a rationalised single error margin for the flood extent maps on an AFA by AFA basis. This Department therefore understands that the flood maps presented may need to be treated with caution. If this is the case then, given that no hydrometric data exists for UoM 13, for which the OPW and its consultants have proposed flood measures of hard defences for Wexford and Baltinglass AFAs as shown on maps, is it likely that the flood measures proposed for these AFAs will be modified? This needs to be clarified.</p>	Technical query passed to hydrology / hydraulics.
NIS: Nature Conservation	<p>Sandbags do not appear to have been mentioned in this UoM. In UoM 25/26 they are flagged as potential sources of pollution which have a potential for likely significant effects and they were assessed at Plan level. The OPW and its consultants should ensure consistency between the UoMs with regard to such measures.</p>	Sandbags were not considered as a strategic FRM measure within this CFRAM study.
NIS: Nature Conservation	<p>It is noted in Section 3.1.3 that the proposed measures in the draft FRMP may be subject to some amendment prior to implementation. The OPW and its consultants should note that if the draft FRMP is amended the amendments should be subject to AA screening and, if necessary, an amended NIS produced.</p>	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
NIS: Nature Conservation	<p>Section 5 does not appear to consider alien invasive species although it does mention adherence to best practice, protocols and SOPs. Alien invasive species are mentioned in Section 6 dealing with additional mitigation measures. The measures listed at Section 6.2 propose steam cleaning footwear. However, machinery will also need to be cleaned and any imported material will need to be free from alien invasive species.</p>	Where schemes are proposed in AFAs within or immediately adjacent to European sites, potential impacts/mitigation for invasive species at that potentially affected European site will be included in the impact table in Chapter 5. Invasive species row added to impact tables where AFA is in or immediately adjacent to SAC or SPA. Revision to invasive species mitigation in section 6, to include machinery and imported material.
NIS: Nature Conservation	<p>The OPW and its consultants should note that where there are impacts on protected species and their habitats, resting or breeding places, licenses may be required under the Wildlife Acts or derogations under the Habitats Regulations. In particular, bats and otters and cetaceans are strictly protected under annex IV of the</p>	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of

	Habitats Directive ... (See pages 9/28/45).	future works also provided in section 6.6 of FRMP.
NIS: Nature Conservation	In addition, licences will be required if there are any impacts on other protected species or their resting or breeding places, such as protected plants, badger setts or bird's nests. Where possible, hedges and trees should not be removed during the nesting season (i.e. from the 1st March to the 31st of August). In order to apply for any such licences or derogations the results of a survey should be submitted to the NPWS of this Department. Such surveys are to be carried out by appropriately qualified person/s at an appropriate time of the year. Details of survey methodology should also be provided. Such licences should generally be applied for in advance of planning to avoid delays and in case project modifications are necessary.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
NIS: Nature Conservation	It is not clear as to whether OPW and its consultants have considered cumulative impacts with Local Authority Plans e.g. County Development Plans. It cannot be assumed that because another plan has undergone AA that there will be no cumulative effects with it.	Text amended in NIS to clarify this. In section 5 - Removed ...[plan] has undergone AA and instead added "No in-combination effects are predicted at plan level. The preferred option will be re-screened at the project level." Included the following text below first paragraph in each "In-combination Effects" section: The potential for cumulative impacts was considered throughout the process of option development. Engagement with stakeholders ensured that the potential for in-combination and cumulative impacts at plan level was minimised. Cumulative effects will be further assessed at the project stage. Included as first bullet point in same section In-combination effects with FRM works, or parallel projects being carried out at other AFAs or locations in the UoM. Generic mitigation and monitoring measures have been developed, including the avoidance of undertaking FRM work on adjoining reaches of rivers for different AFAs or other parallel projects simultaneously. Provided the FRM works are timed correctly, no significant in-combination impacts are anticipated.
NIS: Nature Conservation	It is not clear whether the planned project level works in other AFAs, within and	Text amended in NIS to clarify this. In section 5 - Included the following

	<p>outside of this UoM, have been assessed for potential in-combination effects. Avoidance/ mitigation measure (Section 6.106) states that FRM works on adjoining reaches of rivers in different AFAs should not be scheduled to occur simultaneously with each other, or with other parallel projects. This needs to be explained.</p>	<p>text below first paragraph in each "In-combination Effects" section: The potential for cumulative impacts at plan level was considered throughout the process of option development. Engagement with stakeholders ensured that the potential for in-combination and cumulative impacts was minimised. Cumulative effects will be re-assessed at the project stage when project-specific information has been captured.</p> <p>Included as first bullet point in same section In-combination effects with FRM works, or parallel projects being carried out at other AFAs or locations in the UoM. Generic mitigation and monitoring measures have been developed, including the avoidance of undertaking FRM work on adjoining reaches of rivers for different AFAs or other parallel projects simultaneously. Provided the timing of FRM works is correctly planned and managed, no significant in-combination impacts are anticipated.</p>
NIS: Nature Conservation	<p>The Department is aware of a number of plans and projects which have been adopted or proposed which are not included in table 3.3.1. These include plans which may affect the effectiveness of the proposed measure. These include: Food Wise 2025; Irish Water's Water Service Strategic Plan as well as its plans for Sludge Management, Lead Mitigation, amongst others; and the OPW's Arterial Drainage Maintenance Programme. (Also see pages 10/29/46 for list of projects which may also affect certain sites).</p>	<p>Plans and programmes added as required to SEA and NIS.</p>
NIS: Nature Conservation	<p>It would be useful for the OPW to set out in the FRMP what systems will be put in place to enable more detailed analysis to be undertaken of the cumulative effects that may arise from works undertaken by landowners and public authorities (currently or in planning) to address flood risk/flood events that are outside the scope of the FRMPs, and to ensure the effects of such works are considered when identifying the most suitable preferred measures for the FRMPs.</p>	<p>Text added to sections 8.1.3, 8.1.4, and 7.4.1.13 of the FRMP to provide more clarity on this.</p>
NIS: Nature Conservation	<p>It should be noted in the NIS and draft FRMP that any other works proposed in future, such as any minor works scheme carried out by the LA, or advice given in future to householders that there will be potential for cumulative impacts with this draft Plan and this will need to be assessed at that project stage.</p>	<p>Text added to sections 8.1.3, 8.1.4, and 7.4.1.13 of the FRMP to provide more clarity on this.</p>

NIS: Nature Conservation	<p>The FRMP was assessed to identify the elements that could have adverse effects on European sites, even though project details are not yet available. Mitigation measures are then specified in the NIS and these are intended by the OPW and its consultants to ensure that no adverse effects would result from the projects arising from the FRMP. While this type of approach may be valid at plan level, it is advised that mitigation measures outline the general procedural steps to be followed, noting that the cumulative or in-combination effects of other plans and projects must always be taken into account (See page 16/36/56/75).</p>	<p>Mitigation and monitoring proposed in SEA Environmental Report and NIS. This includes avoidance of undertaking FRM work at nearby AFAs simultaneously. Provided the FRM work is timed correctly, cumulative impacts are not expected. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.</p>
NIS: Nature Conservation	<p>It is critical that all mitigation measures, particularly those from the NIS, are reflected in the content and objectives of the FRMP. If there is reliance on mitigation measures in the NIS or any other source, clear cross-referencing is required in all relevant elements and sections of the main plan document.</p>	<p>Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.</p>
NIS: Nature Conservation	<p>Targeted mitigation measures should be developed to guide future FRMP projects and demonstrate that they will be captured for effective screening and project-specific assessment, in addition to providing a robust basis for assessing the potential cumulative effects of each successive project in combination with other plans and projects of relevance. The necessary expertise, procedures and resources should be available within the OPW and any other consenting/approving authority, including as future project proponents, to ensure that planning, design, screening, assessment and decision are: based on best practice, and robust scientific evidence and analysis; consistent with proper planning and sustainable development; and meet the stringent tests of appropriate assessment in particular.</p>	<p>Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.</p>

NIS: Nature Conservation	OPW is advised to review the mitigation proposed in relation to potentially adverse effects on integrity of sites at the project level.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
NIS: Nature Conservation	Species such as otter, Nore freshwater pearl mussels and kingfishers are of qualifying interest in some European sites and may be impacted by plan implementation. Effects on otters of FRM measures, as well as of other measures, such as ongoing drainage maintenance, must be assessed in the NIS and AA. There should be an acknowledgement that survey work needs to be conducted by an ecologist with otter surveying experience. The survey should include holts and couches (over ground resting sites) as well as spraint.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.
NIS: Nature Conservation	Avoidance/mitigation measures for potential sources of impact are given in tables such as 5.4.3 of the NIS. They consist of a number of measures for suspended sediment and changes to nutrient levels/pollutant release (see p.76). While acknowledging that this is at Plan stage, this Department would have expected a more in depth analysis to show how the above mitigation and avoidance measures would prevent any sediments getting into the river for example.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. NIS impact tables have added further info on requirement to prevent sediment reaching watercourse during construction. During operation sedimentation should not be affected. Section 6.2 relates to mitigation of suspended solids and a requirement that measures are monitored for effectiveness is also now included in chapter 6.
NIS: Nature Conservation	With regard to the mitigation to assess the need for silt management procedures and implement in consultation with NPWS, the OPW and its consultants should note that there should not be any mitigation to supplement inadequate information in an assessment. Please refer to Circular Letter PD 2/07 and NPWS 1/07 on this issue (see p.76).	Recommendation passed to OPW.

NIS: Nature Conservation	Mitigation is given in the tables in section 5 such as table 5.1.3. Mitigation for physical disturbance of otters and lamprey refer to best practice protocols and SOPS and to see also measures in section 6. The OPW and its consultants should note that this Department has expressed concerns regarding the adequacy of some of these as mitigation measures in the past when commenting on arterial drainage maintenance plans.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. NIS Chapter 6 has been revised and new table 6.1 .1 also makes reference to adoption of best practice at the time of option development.
NIS: Nature Conservation	The proposed FRMPs will have the potential to impact on many species and habitats. It is stated in section 6 of the NIS that mitigation will include ecology surveys and ecological assessments. The OPW and its consultants should note however that surveys and assessments would not be considered as mitigation but would provide information as to the types of mitigation that would be necessary. This should be clarified.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.
NIS: Nature Conservation	In section 6 a general measure has been given (see page 13, 32 and 48) regarding Construction Management Plans. The OPW and its consultants should note that there should not be any mitigation to supplement inadequate information and assessment . Please refer to Circular Letter PD 2/07 and NPWS 1/07 on this issue.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.
NIS: Nature Conservation	The Department would consider that a construction management plan (CMP) should be part of a project specification to be submitted at planning/consent stage with detailed design to demonstrate that CMPs and other such plans are adequate and effective mitigation, supported by scientific information and analysis, and that they are feasible within the physical constraints of the site. If these are undetermined at time of the assessment, all potential effects of the development on the site are not being considered. If applicants are not in a position to decide the exact location and details of these at time of application, then they need to consider the range of options that may be used in their assessment so that all issues are covered.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.

NIS: Nature Conservation	The Department recommends that a mitigation measure of ecological expertise is added whereby the OPW would ensure that adequate ecological expertise is available to them at the implementation stage. If deemed useful an ecological clerk of works could be appointed for each project. In particular, where Nore and/or freshwater pearl mussels are known to be or could be present and could potentially be impacted, a freshwater pearl mussel expert should be consulted.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.
NIS: Nature Conservation	When the OPW concludes its appropriate assessment, it should take account of the NIS, as well as any queries, concerns and issues raised regarding any likely effects on European sites in submissions such as this. The decision-making authority's appropriate assessment must demonstrate how any differing scientific opinions were addressed, and must give the particular reasons for preferring one view over another.	Recommendation passed to OPW.
SEA: Environment Report	FRMP objectives are detailed in table 4.3 of the SEA, and haven't only concentrated on designated sites. However, Table 10.2 (monitoring) appears to concentrate on designated sites only. In addition, the discussion of impacts in section 9 for each AFA under the headings of 'Biodiversity, Flora and Fauna' does not seem to discuss species. A key species would include otter for example which is protected under the Wildlife Acts 1976-2012 and listed on Annexes II and IV of the Habitats Directive. The SEA doesn't really address biodiversity issues, such as nesting birds, otters, etc. but appears to rely on the NIS findings.	Text added to SEA Environmental Report - Section 9 and Table 10.2 (monitoring) to provide clarity that species assessed.
SEA: Environment Report	Section 4.6 mentions difficulties and data gaps while section 6 details baseline and relevant environmental issues. However, it is not clear what baseline data was consulted and what data gaps exist (See page 16, 34 and 50). P.16 lists available data sources.	SEA Scoping document detailed the main datasets to be used in assessment. Section 6 of SEA Environmental Report gives the environmental baseline information used. Data used was as up to date as possible at time of assessment.
SEA: Environment Report	Under the discussion of impacts for Biodiversity, Flora and Fauna for each AFA in section 9 of the SEA it is stated that the recommendations of the Barrow Freshwater Pearl Management Plan will need to be adhered to in any proposed works at the AFAs (see page 104 for example). This however does not seem to have been included in section 10 dealing with mitigation and monitoring. Presumably this reference to the Barrow Freshwater Pearl Management Plan relates to all three of the sub-catchment Plans and	Generic mitigation and monitoring measures have been developed which includes measures to protect freshwater pearl mussel.

	the terminology may need to be amended. The OPW and its consultants should ensure that all the mitigation measures in section 9 are included in section 10. In addition it does not seem to be a mitigation measure in the NIS. The OPW and its consultants should ensure that all relevant mitigation measures from the SEA are also in the NIS.	
SEA: Environment Report	Section 6.2 focuses mostly on sites or areas that are covered by a designation and does not address wider countryside species issues, protected or otherwise. There is only a brief reference to some species, including some outside designated sites, in two of the bullet points under the heading of 'key issues'.	Section 6.2 of the SEA Environmental Report has been amended to provide further clarity on protected species that occur outside of designated sites, which were included within the assessment.
SEA: Environment Report	As stated above under NIS, Sandbags do not appear to have been mentioned in this UoM. In UoM 25/26 they are flagged as a potential source of pollution which has a potential for likely significant effects and they were assessed at Plan Level. The OPW and its consultants should ensure consistency between UoMs with regard to such measures.	Sandbags were not considered as a strategic FRM measure within this CFRAM study.
SEA: Environment Report	Appendix B details multi-criteria scorings and weighting used in the SEA. However, the biodiversity flora and fauna objectives 1(i) and 2(i) do not equate to the SEA objectives. In particular, the sub-objective of 2 (i) omits species. It is therefore unclear whether the analysis gave consideration to species.	Objective 1(i) sub-objective refers to 'protected species and their key habitats'. Guidance on option scoring also refers to 'Annex IV (Habitats Directive) species of flora and fauna, and their key habitats'. Objective 2(i) sub-objective refers to 'Avoid damage to, and where possible enhance, the flora and fauna of the catchment'
SEA: Environment Report	The proposed mitigation for impacts on the SEA topic of Biodiversity, Flora and Fauna is detailed in table 10.1 on page 118. The proposed mitigation for the destruction of vegetation is replanting and landscaping following construction. The OPW and its consultants should note however that this may not be appropriate and that allowing revegetation occur naturally may be more appropriate in some cases	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP.
SEA: Environment Report	The proposed mitigation for impacts on the SEA topic of Biodiversity, Flora and Fauna is detailed in table 10.1. It is noted that mitigation includes the OPW, EMP and SOP. The OPW and its consultants should note that this department has expressed concerns regarding the adequacy of some of these as mitigation measures in the past when commenting on arterial drainage maintenance plans.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. Within the FRMP Section 8.1 added on implementation of the Plan. Fig. 8.1 for progression of Physical Works. Section 6.6 also applies. Wording on measures amended and status/level of the plan re-emphasised in various locations.

SEA: Environment Report	Surveys are mentioned in passing in table 10.1. However, there should be some narrative regarding appropriate surveys to be carried out that would indicate the necessary mitigation and what licences may need to be obtained where necessary.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. Within the FRMP Section 8.1 added on implementation of the Plan. Fig. 8.1 for progression of Physical Works. Section 6.6 also applies. Wording on measures amended and status/level of the plan re-emphasised in various locations.
SEA: Environment Report	With regard to impacts on species such as otters and freshwater pearl mussels, the OPW should refer to the comments above under the NIS heading with regard to licences.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. Within the FRMP Section 8.1 added on implementation of the Plan. Fig. 8.1 for progression of Physical Works. Section 6.6 also applies. Wording on measures amended and status/level of the plan re-emphasised in various locations.
SEA: Environment Report	The OPW and its consultants should ensure that the proposed mitigation measures are the same in both the SEA and the NIS where appropriate.	Mitigation and monitoring proposed in SEA Environmental Report and NIS was updated following consultation submissions, to include this recommendation. OPW have added some mitigation to section 6 of FRMP. Within the FRMP Section 8.1 added on implementation of the Plan. Fig. 8.1 for progression of Physical Works. Section 6.6 also applies. Wording on measures amended and status/level of the plan re-emphasised in various locations.
SEA: Environment Report	Monitoring is dealt with in section 10.2. Details are provided in table 10.2 for biodiversity flora and fauna objective and sub-objectives. The indicators however relate to designated sites and protected species are not included. The data and responsible authorities mentioned refer mainly to reports on habitats and species reports for the Birds and Habitats Directives. The OPW and its consultants need to consider how to monitor species in the objective of 'Avoid damage to, and where possible enhance, the flora and fauna of the catchment' and its subobjective to 'avoid damage to or loss of, and where possible to enhance, nature conservation sites and protected species or other known species of conservation concern.	Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.

SEA: Environment Report	It is stated that the monitoring programme has been adopted into section 10 of the draft FRMP and will be undertaken during development of the 2nd cycle of the FRMP. This needs to be clarified as it is unclear what or when the 2nd cycle refers to. Does it mean for example in 6 years' time when the FRMP will be reviewed?	Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.
SEA: Environment Report	In addition the OPW and its consultants should set out how the OPW/Dept. of Public Expenditure and Reform/Las will act on results of the monitoring programme and take remedial action as and when the monitoring programme indicates it is necessary.	Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.
SEA: Environment Report	Section 6.2 details the different types of nature conservation designations, including some that are not within this UoM. Although not within this UoM, additional types of designation which could be included are Refuges for Flora and Fauna designated under the Wildlife Acts, Biogenetic Reserves (Council of Europe) and UNESCO Biosphere Reserves. The Wildlife Acts 1976-2012 and the European Communities (Birds and Natural Habitats) Regulations 2011-2015 could be added to Table 7.1	Section 6.2 has been amended to include: Refuges for Flora and Fauna designated under the Wildlife Acts, and UNESCO Biosphere Reserves for relevant UoMs. The following pieces of legislation have been added to Table 7.1 and Appendix F: Wildlife Acts 1976-2012, European Communities (Birds and Natural Habitats) Regulations 2011-2015.
NIS: Nature Conservation / SEA: Environment Report	Consideration of how and whether "soft" and non-structural measures, or improvements in the sustainability of land-use practices may complement structural/engineering measures to address flood risk.	Recommendation passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.
SEA: Environment Report	A full appraisal should be made of peatlands (and other wetlands) within the catchment in relation to their ability to attenuate flooding downstream. Whilst such measures may not be considered to be sufficient on their own to address the worst-case projections for flood risk, it is hoped that they could be examined as part of the package of complementary measures that will be progressed under the Plans. This could involve the restoration of habitats that would contribute to water attenuation or to improvements to land-use policies that undermine such attenuation.	Recommendation passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes. Additional text also added to Section 7.4.1.5 of the FRMP.

NIS: Nature Conservation	It is unclear what types of habitat may suffer a direct loss from the proposed measures of walls and embankments. Once the proposed measures are shown on maps, as in this draft Plan, then it should be possible to look at the habitat types that may be lost and the amount of same and therefore to better assess the possible impacts of the draft FRMP.	Please note this is a strategic-level study, and the exact location and design of FRM measures have not been decided. Further assessment and quantification of potential impacts will be made at the project stage. Additional text added to NIS 3.4.1.1. Paragraph 5&6 - The potential physical flood relief works or 'Schemes' set out in the Plans that have been developed through the CFRAM Programme are to an outline design, and are not at this point ready for construction. Further option design through a project-level of assessment will be required for such works before implementation. At the project level, where physical measures are to be developed, local information that cannot be captured at the Plan-level of assessment, such as project-level environmental surveys and assessments, will be used to inform the Appropriate Assessment of the potential physical flood relief works or 'Schemes'. The capture of additional local information may result in the identification of European sites within the Scheme's Zone of Influence that were not apparent during the plan screening process.
NIS: Nature Conservation	Figure 4.2.1 on page 39 references the Boyne, it should be the Barrow.	Amended in NIS

Environmental Protection Agency (EPA)

Subject	Comment	Response
Additional Observations	Each Plan should include in the title the timescale over which the Plans will be operational.	Amended on final FRMP cover.
Additional Observations	Each Plan should include a summary description of the key findings, including recommendations and mitigation measures, from the SEA and AA. A summary should also be provided showing how these have been incorporated in the Plans.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP. Section 6 of FRMP details environmental assessment influence on plan.
Additional Observations	The SEA ERs for all Plans should include the information set out in Annex I (a) to (j) of the SEA Directive. The full range of effects on the environment should be assessed and reported on.	The FRMPs were fully assessed and all anticipated significant environmental impacts were reported by topic.

Additional Observations	The Non-Technical Summary should reflect the information under Annex II of the SEA Directive. Suitable maps and Figures and summary tables should be included as appropriate.	Information included.
Additional Observations	We welcome the consistent approach adopted in setting of objectives, targets, indicators and assessment weightings across the series of CFRAM Plans. There is also merit in considering a similar approach to the SEA process, associated methodology and preparation of the SEA ERs, including the assessment of Strategic Environmental Objectives. In some CFRAMS, for instance, for the related SEA ERs a number of the technical and economic objectives have been included. This would facilitate a more consistent approach to the SEA process both for the initial series of the plans and subsequent reviews of the plans. IT would also help inform a national approach to FRMP implementation related monitoring.	Recommendation for OPW for inclusion in synthesis report.
Additional Observations	The baseline environment description should reflect the most recently available environmental monitoring data and published reports. The date(s) of the data should be clearly stated.	The baseline environmental description was based on the best available data at the time of assessment. Any future plans or projects will need to consider the most up to date information available.
Additional Observations	The EPA's publication Ireland's Environment 2016 - An assessment is due to be published shortly. The SEA ERs should reflect the relevant updated information in this report. The Chapters on Nature, Water, Climate, Agriculture and Environmental Challenges and Emerging Issues will be of particular relevance to the Plans.	The baseline environmental description was based on the best available data at the time of assessment. Any future plans or projects will need to consider the most up to date information available.
Additional Observations	As new information and monitoring data becomes available during implementation, including through the Environmental Monitoring Framework and Preliminary Flood Risk Assessment review, this should be integrated, where relevant, to inform the on-going implementation of the Plans.	Recommendation for OPW for inclusion in synthesis report.
Additional Observations	The Plans, subsequent reviews and associated SEA ERs should take into account, where appropriate, the most recently available information on flooding within the individual Plan areas. This information will be particularly relevant in the review of the PFRA.	Recommendation for OPW for inclusion in synthesis report.

Additional Observations	EPA's recently launched website catchments.ie provides comprehensive GIS based data and information resource on Risk, Water Quality, Environmental Pressures, Protected Areas, and Susceptibility. This information should be taken into account particularly in the detailed design of project level water related mitigation measures. This is with a view to ensuring the implementation of the Plans does not compromise the overall objectives of the WFD.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. www.catchments.ie link added to Section 6.6.1
Additional Observations	There would be merits in considering integrating, where possible, the relevant catchments. i.e. map-based information with the OPW's CFRAM generated series of flood related mapped information, including flood extent, flood zone, flood depth, flood velocity and flood hazard. This could become a very useful tool in developing waterbody specific mitigation measures. It could also provide a framework against which the impacts of implementation of individual and combinations of flood risk management related projects, and the effectiveness of project specific mitigation measures, could be monitored. In addition, it would assist in delivering on the requirement, under Article 9 of the Floods Directive, for coordination between the application of the Floods and WFD.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. www.catchments.ie link added to Section 6.6.1
Additional Observations	In describing the key environmental characteristics of the Plan area, where relevant, a description of existing environmental problems associated with specific topics should be included.	Information included.
Additional Observations	Where data gaps or technical deficiencies have been encountered during the SEA process, these should be highlighted along with the implications for the Plan and SEA. Where relevant, recommendations should be put forward to address specific aspects identified either prior to implementation or at the project level assessment stage.	Information included.
Additional Observations	In considering options for individual AFAs, it should be ensured the selection of preferred options is suitably justified with reference to the relevant Environmental Objectives and the MCA scores.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP, along with reasons for option selection.
Additional Observations	Where the preferred MCA option is not selected, clear justification should be provided for the selection of the preferred alternative.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP, along with reasons for option selection.

Additional Observations	There would be merits in considering including a summary table indicating the overall outcome of the MCA by AFA and SEA topics in section 9 of the ER.	Information included.
Additional Observations	The overall positive aspects of the Plans to population and communities should be highlighted in both the SEA ER and the Plans. This should also be captured in the associated Plan implementation and environmental related monitoring and associated reporting.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP, along with reasons for option selection.
Additional Observations	Where there is potential for significant cumulative negative effects associated with implementation of the Plans, this should be acknowledged in the SEA ERs and also reflected in the Plans. This is of particular relevance in the context of water quality and biodiversity including fisheries.	The potential for cumulative impacts was considered throughout the process of option development and engagement with stakeholders ensured that the potential for in-combination and cumulative impacts was minimised. No significant in-combination impacts are anticipated. Generic mitigation and monitoring measures have been developed. These include avoidance of undertaking FRM work at nearby AFAs simultaneously. Provided the FRM work is timed correctly, cumulative impacts are not expected.
	The mitigation measures proposed should also seek to address, where possible, potential catchment/subcatchment level negative cumulative effects. This could for example include phasing of proposed measures and related construction and/or environmental enhancement.	Mitigation and monitoring proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.
Additional Observations	The interrelationship between the relevant environmental issues should also be considered in the overall environmental assessment.	Any interrelationships between the relevant environmental issues were taken into consideration in the multi-staged environmental assessment. If significant inter-relationship impacts were identified they were noted.
Additional Observations	The potential impacts of the Plans on wider biodiversity should be considered.	Wider biodiversity impacts were attempted to be included within SEA Objective 2(i).
Additional Observations	It would be useful to clarify the extent to which flood prevention options such as re-zoning or de-zoning existing undeveloped local authority zoned lands at high risk of flooding has been considered.	Strategic planning report being completed for each FRMP using local area plan and development zone information as part of the CFRAM study.
Additional Observations	Reference should be included to a number of key relevant national and sectoral plans/programmes, some of which are in preparation and will be finalised during the lifetime of the Plans (See page 5 for list).	Information included.

Additional Observations	It is acknowledged that more detailed assessments will be required at the options development and project level stages, which will determine more specific details on mitigation. Notwithstanding this, where significant adverse environmental impacts are identified for the preferred options, where possible, detailed descriptions of plan-level mitigation measures should be provided. These should provide more certainty on the effectiveness of the mitigation measures to prevent, reduce and as fully as possible offset any significant adverse effects, including residual effects, on the environment during Plan implementation.	Mitigation proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.
Additional Observations	The Plans and SEA ERs should promote a standardised approach to the application of appropriate buffer zones between features of biodiversity and proposed projects. The specific details should be considered at project level assessment stages (including EIA and Habitats Directive). Where the application of buffer zones is being considered, the NPWS and Inland Fisheries Ireland should be consulted.	Mitigation proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.
Additional Observations	Where opportunities exist for environmental enhancement, these should be incorporated in project specific design and implementation. These should be developed in consultation with the relevant statutory authorities, including as appropriate, NPWS, Inland Fisheries and relevant local community groups, and the resulting positive effects should be monitored and reported.	Mitigation proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.
Additional Observations	The proposed Monitoring Programme should incorporate trigger levels for specific environmental aspects which would determine when remedial actions would need to be implemented in response to adverse effects identified. These should take into account relevant environmental objectives. This approach should also be reflected at project level environmental monitoring. CEMPs and the suggested EMS and associated EMPS based approach, would need to reflect the relevant trigger levels for remedial action for specific environmental topics.	Environmental monitoring proposed in SEA ER incorporated into FRMP section 8. Recommendation for inclusion in OPW synthesis report and Project Handover Notes.
Additional Observations	Monitoring of the effectiveness of mitigation measures required to be put in place should be captured in the overall monitoring framework.	Environmental monitoring proposed in SEA ER incorporated into FRMP section 8. Recommendation for inclusion in OPW synthesis report and Project Handover Notes.

Additional Observations	The relevant key findings and recommendation in the HDA should be incorporated into the SEA ERS and the Plans. There should be consistency between the findings of the biodiversity, flora and fauna elements and related environmental aspects, such as water, of the SEA and the HDA Findings.	Information included.
Additional Observations	Where HDA related monitoring is proposed, this should also be reflected in the overall Monitoring Framework for the Plans. This should also include cumulative/in combination effects and the effectiveness of the mitigation measures proposed.	Information included. Environmental monitoring proposed in SEA ER incorporated into FRMP section 8. Recommendation for inclusion in OPW synthesis report and Project Handover Notes.
Additional Observations	The terminology used in relation to the assessment process, and the associated stages and outputs, should reflect the terminology in the European Communities (Birds and Habitats) Regulations 2011.	Text amended accordingly.
Additional Observations	For all UoMs covered by the CFRAM Plan Area, a prioritised programme of installation of any proposed additional gauging stations should be coordinated with the EPA via the National Hydrometric Working Group. Where proposed, the additional gauges will provide more comprehensive hydrometric data, which will in turn inform more evidence based assessments and modelling along with increased certainty in on-going flood risk assessment and review of measures.	Recommendation for OPW for inclusion in synthesis report.
Additional Observations	Where AFAs are located in urban areas, it is recognised that channels may already be significantly modified. Where this is the case, this should be reflected in the Plans and SEA ERs.	Each AFA is an urban area, and the majority of channels have existing modifications. This is outlined in the SEA ER.
Additional Observations	Where the preferred options/measures will introduce additional channel modifications, these should be described along with any associated environmental implications. It is important, where relevant, that the hydromorphological impact is considered and assessed, e.g. the % change in channel modification. This aspect should also be considered, where relevant, at project level assessment stage.	This has been attempted in the SEA at a strategic level based on outline information. Further detailed analysis, including hydromorphological and WFD assessment have been recommended and will be required at the project level based on more detailed information. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.

Additional Observations	The hydrological regime is an important quality element in the process of identifying and designating 'Heavily Modified Water Bodies'. The impacts of the selected options/measures on the flow regime should be described and assessed, where relevant. A requirement for more detailed hydrological assessments should be included for any future EIAs arising out of implementing the Plans. This would provide greater clarity on how the options/measures will align with the WFD objectives.	This has been attempted in the SEA at a strategic level based on outline information. Further detailed analysis, including hydromorphological and WFD assessment have been recommended and will be required at the project level based on more detailed information. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
Additional Observations	Mitigation measures should address the potential long term effects of increased sediment on the fluvial geomorphological conditions which are needed to support habitats which in turn, can impact the overall WFD ecological status.	Mitigation and monitoring proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.
Additional Observations	(Following on from above comment) Where this issue is not considered to be a significant threat, this should be stated and reasons given.	Recommendation for OPW synthesis report.
Additional Observations	The Plans should address the potential for increased sediment in receiving water bodies during on-going channel maintenance activities arising out of any preferred options/measures. The potential environmental impacts and associated possible mitigation measures should be described. Where other key plans/programmes address these aspects, this should be described in the plans.	Mitigation and monitoring proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP. Recommendation for OPW synthesis report.
Additional Observations	Invasive Species Management as part of the suggested Construction Environmental Management Plans should cover both construction and maintenance-related activities. This is particularly relevant for species such as Himalayan balsam and Japanese knotweed. This is an important given the environmental implication of invasive species on both water quality and biodiversity.	Mitigation and monitoring proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP. Recommendation for OPW synthesis report.

Additional Observations	The SEA ERs and Plans should emphasise the requirements for the protection of existing and proposed critical service infrastructure (wastewater, waste, drinking water, electricity etc.) from risk of flooding. Where relevant, greater detail could be provided on the extent to which storm water and combined sewer overflow infrastructure are considered in the Plans. This is in terms of potential water quality and related human health and ecological impacts arising from flood events affecting the sewer network.	This has been included within Env assessments where assets will be protected by a measure. This protection however may be incidental as it is the asset owners responsibility to manage flood risk to their own assets.
Additional Observations	A clear commitment is required to protect key critical service infrastructure in implementing the Plans. Where particular Water Treatment Plants or Waste Water Treatment Plants are at significant flood risk, or are situated near environmentally sensitive receptors which may be significantly impacted by flooding, these areas should be highlighted and specific mitigation measures considered, where appropriate.	This has been included within Env assessments where assets will be protected by a measure. This protection however may be incidental as it is the asset owners responsibility to manage flood risk to their own assets.
Additional Observations	Information on historic flooding of treatment plants would also be useful to consider in relation to options and measures selection. Irish Water should be consulted to obtain information on historical flooding of drinking water and wastewater treatment plants where available.	OPW are to provide this flood risk information to the asset owners so that they can manage the flood risk to their assets. Recommendation for OPW synthesis report.
Additional Observations	The Plans should acknowledge the environmental, financial and social implications associated with restoring flood impacted treatment plants. The Plans should clearly acknowledge the need for specific measures to prevent reoccurrences of flooding to be implemented in partnership with other relevant stakeholders, in particular Irish Water. As part of the Water Safety Planning process being implemented by Irish Water, one of the hazards considered relates to identification of risk of flooding of water treatment plants.	OPW are to provide this flood risk information to the asset owners so that they can manage the flood risk to their assets. Recommendation for OPW synthesis report.
Q1	You should update the reference to the Draft National Landscape Strategy for Ireland, to reflect its adopted status.	Scoping Comment already addressed or passed onto OPW.
Q1	At regional level, the following plans/programmes may be relevant: Regional Waste Management Plans	Scoping Comment already addressed or passed onto OPW.
Q1	Location of waste management infrastructure within the region should be assessed relative to identified flood risk and flood alleviation options considered.	Scoping Comment already addressed or passed onto OPW.

Q1	Flood Alleviation options should seek to minimise potential for ingress into licensed waste and hazardous waste facilities.	Scoping Comment already addressed or passed onto OPW.
Q1	Wastes associated with construction, operation and maintenance of flood alleviation options should be carried out in accordance with relevant waste management plans.	Scoping Comment already addressed or passed onto OPW.
Q1	The Plan should take into account significant additional long term infrastructural projects proposed or underway in the Plan area and associated implications of flood risk and associated mitigation (if required).	Scoping Comment already addressed or passed onto OPW.
Q1	In Appendix C - Plans and Programmes of the Scoping Report, the text relating to the requirements of the WFD should be updated as follows: "aims to improve water quality and quantity within inland surface waters (rivers and lakes) transitional waters, coastal waters and groundwater".	Scoping Comment already addressed or passed onto OPW.
Q1	It is also worth including a paragraph on the ongoing review of the RBMPs and preparation of the second cycle of these plans and associated timeline to take into account.	Scoping Comment already addressed or passed onto OPW.
Q1	In terms of setting the Policy Framework, it would also be useful to consider referencing the key relevant national legislation transposed for each specific Directive.	Scoping Comment already addressed or passed onto OPW.
Q1	It would also be useful to consider describing the policy context within which projects arising out of implementation of the Plan will need to conform to i.e. provide measures to protect water quality, biodiversity, and landscape character. Where these aspects (including natural and cultural heritage, infrastructure etc.) are provided within the respective LA County Development Plans within which flood alleviation works are proposed, this should be referred to and adhered to.	Scoping Comment already addressed or passed onto OPW.
Q1	Additionally, given that the Plan needs to inform relevant land use plans within the Plan area, the influence of the Plan in relation to LA land use plans should be considered and described. The relationship to the proposed Regional Spatial Economic Strategies should also be considered.	Scoping Comment already addressed or passed onto OPW.

Q1	Key national infrastructure projects such as roads, wind farms and the electricity interconnectors should be set in the context of flood risk implications. Recommendation should be made for collaboration with relevant stakeholders in the siting, design, operation and maintenance aspect of these key infrastructure projects.	Scoping Comment already addressed or passed onto OPW.
Q1	Chapter 2 - Flood Risk in Ireland considered the wider context of CFRAMS. It would be useful to identify where formal requirements exist for consideration on the linkages between the WFD and Floods Directive (for example) to ensure that potential for conflict between Directives is minimised.	Scoping Comment already addressed or passed onto OPW.
Q1	It would be useful to clarify whether operational ESB activities relating to hydropower generation are to be included in Table 2.1	Scoping Comment already addressed or passed onto OPW.
Q1	The Plan should promote the need to collaborate with respective planning authorities and state agencies etc. to ensure flood risk management is integrated appropriately.	Scoping Comment already addressed or passed onto OPW.
Q2	Section 3 - Scoping for the Eastern CFRAM Study could make greater reference to regional considerations and cumulative issues in the context of catchment level implications of any flood risk management proposals. This may be in the context of addressing an issue in the upper catchment may cause problems further downstream, for Floods Directive implementation, or the implementation of other Directives, such as WFD, Habitats etc.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	In relation to water related aspects, it would be useful to clarify whether issues such as potential impacts of freshwater flooding in estuaries or potential impacts from silt movement are to be considered.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	There would be merits in including reference to AA requirements also in Figure 3.1	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	In Table 3.4 - Potential Inter-relationship between SEA Topics; some, or potentially all, of the 'no interaction' criteria could potentially be changed, where relevant, to 'interrelationship anticipate' e.g. if water tables rise (climatic factors), this could impact on archaeological sites or monuments (cultural heritage).	Scoping Comment already addressed or passed onto OPW.

Q3 and Q4	Additional considerations in relation to Biodiversity/Flora/Fauna include: coastal squeeze impacts on biodiversity associated with sea level rise; changes to the flooding regime may have an impact on habitats and species which require particular inundation periods or in the case of groundwater dependent ecosystems (e.g. fens) particular water supply mechanisms and water chemistry.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	Geology/Soil and Land Use: The relationship with forestry and forest management should be taken into account also in terms of potential influence on flood risk; change in land use based on risk to water quality, quantity and flooding, thus reducing value of land either by limiting development potential or requiring a change in land use or reduced activity or an existing use; in relation to aspects pertaining to soil, we recommended that the permeability of the soils be summarised, given that from a flood risk perspective, this is potentially of greater relevance than soil type. For example, gley soils are typically low permeability and will contribute to great surface runoff.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	Water: for groundwater related aspects, it would be useful to provide an aquifer classification map where possible; the issue of rejected recharge should be considered in the context of the unproductive aquifers. These aquifers have low permeability, storage and transmissivity which may contribute to greater surface runoff during storm events; the role of wetlands and peatlands for the attenuation of flood waters should be considered.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	In the SE CFRAMS, one specific issue to be aware of related to a regulatory requirement to maintain levels/flows at both Rathvilly, Co. Carlow on R. Slaney and Athy, Co. Kildare on R. Barrow (based on a court judgement).	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	Whilst effects on wind farms are referred to, it may also be useful to consider additional national energy related infrastructure such as powerstations, hydroelectric dams, pylons, sub-stations etc.	Scoping Comment already addressed or passed onto OPW.
Q3 and Q4	Flood related social or socio-economic issues: Local Authority Planning and Development, Land Use Zoning; proposed Regional Spatial economic Strategies (Due to commence?)	Scoping Comment already addressed or passed onto OPW.

Q5	The EPA has published an environmental spatial data inventory that can be used to inform the preparation of SEA Environmental Reports and the associated environmental assessments.	Scoping Comment already addressed or passed onto OPW.
Q5	Table 4.1 Summary of Proposed Environmental Baseline Data and Sources should include Groundwater Bodies under Water. These should be listed as regional drainage could impact on Quantitative WFD objectives.	Scoping Comment already addressed or passed onto OPW.
Q6	In Chapter 4 (Baseline and Environmental Problems), we acknowledge the data sources provided in Table 4.1. A number of additional data sources are provided below to be considered as appropriate - Biodiversity: DAFM; DCENR; National Biodiversity Data Centre; Inland Fisheries Ireland; Loughs Agency; Heritage Council, Local Authority Biodiversity Plans; Coillte; Bord na Mona; Irish Peatlands Conservation Committee.	Scoping Comment already addressed or passed onto OPW.
Q6	Population: Consider taking account of the Regional Planning Guidelines (and Regional Economic and Spatial Strategy once prepared), as these set out population targets up to 2022 and identify key areas for growth and development.	Scoping Comment already addressed or passed onto OPW.
Q6	Human Health; Location data on known combined sewer overflows should also be incorporated in terms of potential pathogens exposure which may arise from flood related discharges. In addition, LA data on the location of Section 4 discharges should be considered for inclusion along with the location of Irish Water assets (plants and networks).	Scoping Comment already addressed or passed onto OPW.
Q6	Geology, Soils and Landuse: In relation to land use, the DECLG application MyPlan.ie may be useful to highlight areas which are potentially zoned.	Scoping Comment already addressed or passed onto OPW.
Q6	Amenity, Tourism and Recreational Use: proposed amenities such as cycle ways such as Sutton-Sandycove cycleway/promenade, Dublin to Galway Cycleway may be useful to consider in terms of route selection and flood risk related aspects/implications/flood alleviation option considerations; inland fisheries Ireland; Fáilte Ireland; water and relevant land related sports organisations - canoeing, surfing, field sports?	Scoping Comment already addressed or passed onto OPW.

Q6	Water: Waterways Ireland; Local Authorities; Inland Fisheries Ireland; a national risk screening data set is available on the WFD Application which is available through the Eden portal. Further risk data will become available through the sub-catchment and catchment reports that are currently being prepared, to inform the second cycle of River Basin Management Plans. There should be ongoing liaison with EPA on the status of the WFD Application and related outputs.	Scoping Comment already addressed or passed onto OPW.
Q7	In terms of the flood risk management methods table shown in Chapter 5 - Framework for Assessing Environmental Effects, to what extent will all these methods be considered under the scenarios to be assessed?	Scoping Comment already addressed or passed onto OPW.
Q7	A number of the methods e.g. flood warning/forecasting, Public Awareness Campaign are likely to be relevant for all areas at risk of flooding and could potentially be excluded from screening. In addition, it would be useful to clarify whether aspects such as 'managed coastal retreat' have been considered as potential options?	Scoping Comment already addressed or passed onto OPW.
Q7	For table 5.4: Description of MCA/SEA Environmental Impact Scores; are the scores and descriptions set out to be applied for each of the CFRAMS currently underway? Additionally, have the descriptions been defined for specific environmental topics?	Scoping Comment already addressed or passed onto OPW.
Q7	Figure 5.2 - Example Output of Environmental Assessment. Do 'Geology, Soils and Land Use' aspects include potential effects on agricultural land?	Scoping Comment already addressed or passed onto OPW.
Q8	Social: In terms of minimising risk to human health and life of residents, this may also include issues relating to drinking water/waste water which may arise from flooding of associated critical service infrastructure.	Scoping Comment already addressed or passed onto OPW.
Q8	Geology, Soils and Landuse: May be useful to consider a sub-objective to protect high value agricultural lands where possible, in addition to the 'protect soil function' objective.	Scoping Comment already addressed or passed onto OPW.

Q8	In Figure 5.2 Example Output of Environmental Assessment, it would be useful to clarify what is meant by including two metrics under a given impact assessment e.g. 'Short Term Impacts +2/-1'. Does this imply 'Slight positive environmental impacts' for Global Issues and 'Minimal negative environmental impacts' for Local Issues and where a single figure appears, it applies to both global and local issues?	Scoping Comment already addressed or passed onto OPW.
Q8	In relation to Environmental Objective C - "Support the objectives of the WFD", the associated sub-objective states: "provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of waterbody objectives". The wording of the sub-objective does not appear to be as robust as that set out in the WFD. The sub-objective should reflect the terminology of the WFD; therefore the following sub-objective should be considered to replace that currently proposed: "prevent deterioration, protect and where appropriate, enhance and restore bodies of water".	Scoping Comment already addressed or passed onto OPW.
Q8	In Appendix D - Social and Environmental MCA Scorings and Weightings, in relation to Objective C - Support the objectives of the WFD, we recommend that associated sub-objective is also amended as above under Appendix C - Environmental Objective C.	Scoping Comment already addressed or passed onto OPW.
Q8	The scoring process is stated to be guided by professional judgement and the likely impacts of measures on water body status. This scoring approach should take into consideration the outcomes of the WFD Characterisation process i.e. the risk of not achieving WFD objectives.	Scoping Comment already addressed or passed onto OPW.
Q9	The Regional Planning Guidelines (RPGs), and the proposed Regional Spatial and Economic Strategies which are intended to replace the RPGs should be taken into consideration. The second cycle of the River Basin Management Plans (and associated programme of measures) should also be taken into account and, the relevant aspects should be integrated. The updated RBMP(s) will provide updates of recommendations to achieve the requirements of the WFD.	Scoping Comment already addressed or passed onto OPW.
Q9	Additionally, Irish Water and the National Federation of Group Water Schemes should also be consulted, in terms of assessing potential flood risk and flood	Scoping Comment already addressed or passed onto OPW.

	alleviation option assessments.	
Methodology and Approach	The application of a standardised MCS approach has guided the selection of preferred options. There is, however, a need for national coordinated oversight to ensure that the methodology has been applied and followed through in a consistent manner across the CFRAM series of studies and Plans. This will also contribute to a consistent approach to prioritisation at implementation phase.	Section 7.3.4 Appraisal by MCA reworded in FRMP. Recommendation to be added to OPW Synthesis Report.
Methodology and Approach	While the overall objective of the Plans is to manage flood risk, the need to ensure key aspects of the environment are not compromised in achieving these objectives will also need to be embedded throughout the Plans and associated monitoring. It will be important to ensure they key findings and recommendations of the SEA and HDA are clearly integrated and reflected in the final Plans.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP. Proposed environmental monitoring added to section 8 of the FRMP.
Flood Risk Management Methods	Combination of preferred solutions implemented on a prioritised and timely basis (see page 19).	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
Flood Risk Management Methods	The potential for Green/Blue infrastructure to contribute to flood risk management solutions, while captured to an extent in the measures, should be highlighted as a possible approach to be explored at local authority plan level. This could be relevant for Land Use Plans and for the proposed Local Authority Adaptation Strategies. A number of local authorities have prepared green infrastructure strategies which have been incorporated into development plans. These should be taken into account, where relevant, in the implementation of specific measures. Existing green infrastructure strategies could also be updated, where relevant, to reflect the updated findings and information in the Plans.	Recommendation included under measures 7.4.1.2 & 7.4.1.4 & 7.4.1.5. Additional text referencing blue/green infrastructure added to 7.4.1.1 of FRMP.
Flood Risk Management Methods	We recognised that individual flood protection measures will be subject to site specific design, and where required, project level assessments. Project design should reflect the relevant Mitigation Actions in the SEA ERs.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP.

Flood Risk Management Methods	Flood Preparedness: It is recommended that the development of CFRAM/Plan Specific Flood Preparedness Strategies be considered as an action/measure in the Plans. This would guide a coordinated catchment based approach to increased community awareness of, and confidence in, flood forecasting and warning, as well as contributing to individual property and community protection.	Recommendation included under measures 7.4.1.10 - 7.4.1.13 in FRMP.
Relationship with the WFD	The Plans should include a detailed description of the linkages between the WFD and the Floods Directive and their respective Plans and measures. This could be supplemented by the inclusion of a suitable schematic to set out the interactions at development and implementation stages. This is in keeping with the requirement for coordination between the application of the Flood Directive and the WFD as set out in Article 9 of the Flood Directive. This coordination is relevant at the stages of flood mapping, the development of the first FRMPs, and their respective subsequent reviews.	Included in section 6.5 of FRMP.
Relationship with the WFD	The prepared measures selected in the Plans should not compromise the requirements of the WFD to protect surface water, groundwater, coastal and estuarine water resources and their associated habitats and species, including fisheries. Where it is identified that potential likely significant effect on water quality or hydromorphology may arise in implementing the measures, the mitigation measures proposed to ensure WFD objectives are not compromised should, where feasible, be described in more detail. Where the preferred measures are likely to result in channel modifications, the potential impacts on hydromorphology should be assessed in greater detail, including any future project level assessments arising during implementation.	Acknowledgment of environmental risks and benefits added to section 7 of FRMP. Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
Relationship with the WFD	The Plans and any subsequent project level assessment(s), should examine the interrelationships between the proposed flood risk management measures and the WFD Programmes of Measures for individual water bodies which may be impacted during the implementation of the Plan. Implementation related and project specific environmental monitoring will allow any adverse impacts on water bodies to be identified and, where necessary, suitable remedial action to be taken.	Included in 6.5.4 - Coordination on Measures

Linkages with other sectors	Of particular importance will be the integration of the relevant measures and associated mapping into the hierarchy of land use plans, including the proposed National Planning Framework, Regional Spatial and Economic Strategies and local authority land use plans.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets
Linkages with other sectors	There would be merit in exploring the potential for linkages between the Dept. of Housing, Planning, Community and Local Government's MyPlan.ie online resource (land use zoning data) and the CFRAM related flood risk mapping. This has the potential to identify re-zoning/de-zoning options for undeveloped zoned areas identified as being at significant risk of flooding.	Strategic planning report being completed for each FRMP using local area plan and development zone information as part of the CFRAM study.
Integration of SEA and AA in the Plans	The Plans should include a detailed account of how the SEA and HDA processes have influenced and informed their preparation. Recommendations and Mitigation Measures should be clearly described in the Plans. They should be taken into account in project level assessments incorporated into detailed project specific design	Acknowledgment of environmental risks and benefits added to section 7 of FRMP. Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
Integration of SEA and AA in the Plans	A strong commitment should be included in the Plans to ensure that, in implementing the Plans, the requirements of the WFD, Habitats Directive and where appropriate, EIA Directive, will be fully complied with during the implementation of the Plans and associated measures and related projects.	Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
Integration of SEA and AA in the Plans	It is recommended that consideration be given to preparing a standard manual for FRM Mitigation Measures for the full suite of measures likely to be implemented. This could be prepared at a national and/or CFRAM/Plan (UoM) level as appropriate. It should include relevant aspects of environmental topic specific guidelines. This Manual could be referenced in any tender documentation and would inform the development of detailed design specifications for individual flood management projects incorporating the relevant Mitigation Measures. This could be incorporated into an Environmental	Mitigation proposed in SEA Environmental Report and NIS to reflect this recommendation. OPW have added some mitigation to section 6 of FRMP.

	Management System (EMS)/Environmental Management Plan (EMP based approach for the roll out of individual or suites of Plan measures.	
Integration of SEA and AA in the Plans	The requirement for contractors to prepare Construction Environmental Management Plans (CEMPs) should be considered. These could include a requirement for related plans to be prepared, as appropriate, for project implementation, such as Erosion and Sediment Control, Invasive Species Management, Emergency Response, Traffic and Safety Management, Dust and Noise Minimisation and Stakeholder Communication Plans.	Mitigation proposed in SEA Environmental Report and NIS to reflect this recommendation. OPW have added some mitigation to section 6 of FRMP.
Integration of SEA and HDA in the Plans	Monitoring measures should be incorporated into the CEMP, and as appropriate, EMS/EMP. This should also be captured in the overall Plan/SEA monitoring programme to ensure the Plan is being implemented effectively and in accordance with relevant environmental legislation and obligations.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Monitoring included in section 8 of FRMP.
Monitoring, Reporting and Review	The section on Monitoring and Review of the FRMP should also include any proposed HDA-related monitoring. Provisions should also be included for links with project specific monitoring.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Monitoring included in section 8 of FRMP.
Monitoring, Reporting and Review	Relevant existing national environmental monitoring programmes should be reflected in the Monitoring Framework. WFD related monitoring and relevant aspects of Article 17 Reporting under the Habitats Directive are of relevance in this context.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Monitoring included in section 8 of FRMP.
Monitoring, Reporting and Review	The Monitoring Programme should be reviewed at regular intervals during implementation, and updated, where necessary, to address any specific issues that arise and any new information/datasets that become available.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Monitoring included in section 8 of FRMP.
Monitoring, Reporting and Review	Detailed provisions for reporting on Plan Implementation and related environmental monitoring should be included in the Plans. This should capture implementation at relevant scales: CFRAM level, UoM, AFA and IRR level. The monitoring should incorporate potential positive and negative, temporary and permanent, and cumulative effects associated with Plan implementation.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Monitoring included in section 8 of FRMP.

Monitoring, Reporting and Review	We recommend the inclusion of a commitment in the Plans to report on a mid-term basis, at the end of year 3 of the six-year implementation cycle, on the implementation of the Plans and the associated environmental monitoring. This will provide a formal mechanism for review of specific aspects of Plan implementation, including the effectiveness of mitigation measures. It will also signal the need for remedial actions to be introduced where Plan related adverse environmental effects have been identified during implementation.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets
Monitoring, Reporting and Review	The inclusion of reporting provisions will also make the Plans more robust and provide for increased accountability and transparency during implementation. The Plan implementation and associated environmental monitoring reports, along with a summary of key progress and findings and relevant data and mapping, should be made available to statutory authorities, key stakeholders and communities.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets
Monitoring, Reporting and Review	The requirement to review the Plans on a six yearly cycle is welcomed. The requirements for SEA and HDA will also need to be incorporated into cycle 2 and subsequent Plans. This will be of particular relevance where the updated PFRA identifies additional AFAs to be addressed in subsequent Plans.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets
Overall Governance and Implementation	With 29 Plans and 300 AFAs and associated measures, implementation of the Plans will pose a significant challenge for the OPW and local authorities. To ensure their effective delivery, strong governance structures will need to be put in place that provide for collaboration, coordination and clear designation of responsibilities and accountability. The EPA recommends a new chapter of Governance and Implementation be included in each Plan. This should include a description of the governance arrangements and mechanisms to oversee implementation of the Plans and associated measures.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. Included within section 8.1 of FRMP.

Overall Governance and Implementation	There would be merit in considering preparing an overall national level CFRAM Implementation Programme, reflecting priority measures for implementation at national CFRAM, FRMP, UoM, AFA and IRR level. Key responsibilities (including lead department/authority), priority measures/combination of measures, estimated cost and timescales could be set out alongside each of the measures in the Plans. This would assist the Inter Departmental Flood Policy Coordination Group and any CFRAM/UoM level Coordination Implementation Groups established in delivering the Measures. It would also inform reporting obligations to the wider public and to the European Commission in accordance with obligations under the Floods Directive.	Recommendation for OPW for inclusion in synthesis report. Note that FRMPs to be accompanied by National FRS Capital Investment Programme
Overall Governance and Implementation	Strong commitments to governance and robust implementation structures will provide an element of certainty at a national, regional and local level on the sequence of implementation. Relevant aspects of the approach taken by the Department of Agriculture, Food and the Marine in implementing Food Wise 2025 Environmental Sustainability Actions could be considered. The model set up by the Department of Communications, Climate Action and Environment for the implementation of the Offshore Renewable Energy Development Plan may also be of interest in this regard.	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. Included within section 8.1 of FRMP.
Overall Governance and Implementation	We acknowledge the proactive approach adopted by the OPW and the CFRAM teams to public consultation and stakeholder engagement at key stages throughout the programme development. This positive approach to stakeholder engagement should continue at the implementation stage and during subsequent Plan cycles.	Section 8.1.4 added to FRMP on Public & Stakeholder Consultation & Engagement
Other Matters	Where amendments to the Draft Plans are proposed, these should be screened for likely significant effects on the environment in accordance with SEA Regulations. They should also be screened for the purpose of Habitats Directive Assessment. The SEA and HDAs should be updated to reflect any changes related to the assessment. Where additional mitigation is proposed, this should be reflected in the updated plans.	Comment passed to OPW for note and inclusion in synthesis report.

Other Matters	Following adoption of the respective Plans, an SEA Statement should be prepared for each plan that summarises the following: how environmental considerations have been integrated into the plans; how the environmental report, submissions, observations and consultations have been taken into account during the preparation of the Plan; the reasons for choosing the Plan adopted in the light of other reasonable alternatives dealt with; and the measures decided upon to monitor the significant environmental effects of implementation of the Plan.	SEA Statements to be completed based on final FRMPs
Other Matters	A copy of the SEA Statement should be sent to any environmental authority consulted during the SEA process.	Noted - SEA Statements to be sent to any environmental authority consulted during the SEA process.

Sustainable Water Network (SWAN)

Subject	Comment	Response
Impacts of Flood Works on WFD Objectives	It is important that these 'significant physical changes' (see page 13) are considered in both the FRMPs and the RBMPs, since they potentially impact both hydromorphological and biological conditions of affected waterbodies and hence their WFD ecological status. It is important to emphasise that any activity that will negatively impact the WFD status of a water body is only permitted under the WFD if the strict conditions, set out in Article 4 and described in the previous section are met: (See page 14).	Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Comment also noted for OPW synthesis report.
Impacts of Flood Works on WFD Objectives	It is important to note that the reasons for any exemptions must be set out in the RBMPs (See page 14)	Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Text added throughout the plan re-emphasising the level of the Plan and the further assessment and approval required. Comment also noted for OPW synthesis report.
Impacts of Flood Works on WFD Objectives	It is unclear as to whether there has been any legal analysis on the potential application of WFD exemptions to flood protection developments.	Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Text added throughout the plan re-emphasising the level of the Plan and the further assessment and approval required. Comment also noted for OPW synthesis report.

Coordination of Flood Directive with the WFD	Ultimately, coordination is vital so as to ensure that all pressures and potential impacts of proposed measures included in these FRMPs are included in the characterisation process for the WFD and thus in the river basin management planning process, with strict application of exemption criteria where proposed measures will compromise WFD mandatory requirements.	Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Text added throughout the plan re-emphasising the level of the Plan and the further assessment and approval required. Comment also noted for OPW synthesis report.
Coordination of Administration Arrangements of the WFD	The draft FRMP describes this coordination as occurring via bilateral meetings, cross-representation on management groups, exchange of information and coordination on measures. The information provided on these in the draft FRMP is vague in that it just outlines the process but not how/if effective coordination of implementation is being achieved. Further detail is required regarding the on-going collaborative decision-making process for dovetailing implementation of these directives.	Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.
Coordination of Administration Arrangements of the WFD	It would appear to SWAN that operational coordination is minimal since the measures proposed in the draft FRMPs have, to our knowledge, not thus far been included in the WFD characterisation process, despite the significant hydromorphological and ecological impacts these may have on affected water bodies. Nor is there any indication in the FRMPs, or in the public domain, of on-going regular operational collaboration between scientists working on implementation of the FD with those working on the WFD.	Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.
Coordination of FRMP and RBMP	In line with what the Commission has highlighted, because Ireland has different competent authorities for the FD and WFD, it is vital that there be effective coordination at the critical stage of developing the flood risk management measures. From the draft FRMP, it is evident that this coordination has been very limited, calling into question how effective these measures will prove.	Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.
Coordination of FRMP and RBMP	(See pages 18 and 19) Although the objectives of the WFD may have been 'embedded' into the process, this demonstrable does not ensure that the management measures proposed will not have significant negative impacts on the achievement of WFD objectives, as is evidenced by the FRMP SEA.	Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Comment also noted for OPW synthesis report.

Coordination of FRMP and RBMP	SWAN welcomes the fact that the OPW has been liaising with the EPA and LAWCO on 'win-win' measures however it is difficult to ascertain the effectiveness of this as given that there are few measures proposed in the FRMP that would have such benefits in particular natural water retention measures.	Section 6.5 of the final FRMP details co-ordination with the WFD. Text included in Measure 7.4.1.5 - "The work will include seeking, and where possible implementing, pilot studies in coordination with LA WFD Offices and other agencies. Comment also noted for OPW synthesis report.
Coordination of FRMP and RBMP	Apart from recommending mitigation measures in the SEA, there is no explanation in the FRMP as to how 'measures that may otherwise cause conflict between the objectives of the two directives' are being addressed, given that the FRMP SEA has identified many significant negative impacts on water quality and the aquatic environment which would result from the physical modifications that are being proposed as part of the FRM measures.	Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Processes for Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Information on progression of measures and assessment of future works also provided in section 6.6 of FRMP.
Coordination of FRMP and RBMP	Article 7 (3) of the WFD requires that the FRMPs take the characteristics of the river basin into account and also to promote sustainable land use practices and the improvement of water retention. Thus, the FRMPs, along with the WFD RBMPs, should be based around integrated RBM and so benefit greatly from being developed in coordination with the RBMPs. Indeed, the development of the FRMPs are required to be coordinated with the reviews of the WFD RBMPs under Article 9 (2) of the FD which states: (See page 20)... Swan understands that for various political and other reasons, the development of both these plans is happening over different timescales. It is our position that this, along with having separate Competent Authorities, has resulted in a serious lack of coordination in the implementation of the two Directives, as is evidenced in the Plans by the reliance on structural measures for FRM which will have a negative impact on WFD objectives.	Section 6.5 of the final FRMP details co-ordination with the WFD. Measure 7.4.1.5 includes Land Use & NFM Measures.
AFA Scale Options	It is important that, as the FRMP objective states, any proposed measures 'provide no impediment' to achieving good status, as the waterbodies in the UoM are already at risk of not meeting WFD objectives and additional pressure would further exacerbate this risk. There are 26 AFAs for this UoM, 19 of which have proposed options in the FRMP, both of which include hard defences as measures. The FRMP SEA found that, of the 18 options which were assessed all would have negative	Comment noted.

	impacts on the water quality... (See page 21)...	
AFA Scale Options	Any negative impacts on aquatic species such as the Freshwater Pearl Mussel, must be taken into account when assessing WFD impacts as they are intrinsic element of the ecological status of the waterbody. It is not fully clear if this has been taken into account in the assessment. This point is not just relevant to this FRMP but to all the FRMPs.	FPM assessed under Objectives 3A and 3B of the FRMP and Objectives 1(i) and (ii) of the SEA ER. Note that full WFD assessment will be undertaken at the next stage of detailed feasibility. Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes. Text also included under section 6 of FRMP, including interactions and coordination with WFD.
AFA Scale Options	The draft FRMP (pg. 54) states that: (see page 22)... Although the impacts on water status of implementing the proposed measures and the mitigation measures are outlined in the SEA, the FRMP itself should have at least included this information.	Section 7 of the final FRMP updated to include acknowledgments of wider environmental risks and benefits of implementing FRM schemes.
AFA Scale Options	Even if it is recommended to apply avoidance and mitigation measures in these sensitivity water bodies experience has shown that mitigation applied in respect to the Freshwater Pearl Mussel in OPW Flood Works is not effective and is being questioned by the European Commission but mostly there is no follow up to assess the effectiveness of mitigation or even if it has been implemented and this is unacceptable.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. NIS has added additional FPM mitigation into impact tables of all AFAs in FPM sensitive catchments. Comment also noted for OPW synthesis report and Project Handover Notes.
AFA Scale Options	SWAN welcomes the mention of WFD assessments at the next stage of option development, however 'may involve' is not adequate and it is vital that WFD assessments must be included if compliance with WFD objectives is to be achieved.	Section 6.5.4 of the final FRMP co-ordination with the WFD. Particular reference to a detailed appraisal under Article 4(7) .
AFA Scale Options	The projects will be subject to the applicable planning and/or consent process, however there are no regulatory controls on physical modifications to water bodies. This is in spite of the WFD Article 11 (See page 23)...It is extremely worrying that the required regulatory system for their control has not been introduced.	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.

AFA Scale Options	The RBMPs further state that...(see page 22) ...a 'formal legal mechanism' to address morphological pressures on the coastal environment including 'coastal defence, built structures (urbanisation and ports and harbours) and dredging' will be provided by a 'proposed amendment to the legislative framework, to regulate physical modifications having an adverse impact on the water environment'. However, these regulations have yet to be introduced six years later, as highlighted by the DECLG's recent SWMI document (see page 22).	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.
AFA Scale Options	It is furthermore of extreme concern that significant structural options are being proposed in the FRMPs despite this acknowledged 'current poor understanding of the relationship between morphological alterations to surface waters and the ecological impacts'. It is difficult to understand how an adequate EIA of such projects can be conducted, especially in terms of the impacts on the aquatic ecology given this poor understanding. The lack of both regulatory controls and understanding of ecological impacts is even more reason to apply the precautionary principle when it comes to mitigation.	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.
AFA Scale Options	As the LAs will be responsible for implementing the proposed options, SWAN members have raised doubts about the decisions that LAs have made in the past in not proceeding with EIA and AA screening when required in the case of physical modifications to rivers, and also that there is no follow up assessment/monitoring of projects to ensure that mitigation has been implemented.	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Fig 8.1 on processes for progressing measures included. Wording on P.42 for responsible body and implementation.
AFA Scale Options	The current planning and consent process in relation to flood relief schemes, arterial drainage schemes and the proposed measures in the FRMPs is unclear. There are a number of issues which need to be clarified. Will the proposed measures be subject to WFD and EIA assessment, who decides this, who conducts the screening, who would conduct the assessment? Who authorises the project based on the results of the assessment? How are current flood relief schemes and minor works assessed in relation to WFD, EIA and AA? Who decides this on screening? Who would conduct the assessment? Who authorises the project based on the results of the assessment? The planning and consent process needs to be set out clearly including what/how projects are exempt	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Fig 8.1 on processes for progressing measures included. Wording on P.42 for responsible body and implementation.

	from any of the Environmental Assessments.	
AFA Scale Options	This measure on the application of the Guidelines on the Planning System and FRM (See page 24)... SWAN welcomes the inclusion of this measure, however enforcement of the guidelines is needed to ensure their proposer application. Currently it is unclear which body can provide such enforcement.	Text included under measure 7.4.1.1 of final FRMP. Also text included in 8.2 on monitoring of compliance with the Planning Guidelines. Comment also noted for OPW synthesis report.
AFA Scale Options	(See page 24)...In this context, it is of utmost concern to SWAN that the draft FRMP (Page 63) states that: (See page 24)... SWAN members strongly disagree with this proposal and recommend that there be no further development in any flood-prone areas, notwithstanding the 'Justification test'.	Text included under measure 7.4.1.1 of final FRMP. Also text included in 8.2 on monitoring of compliance with the Planning Guidelines. Comment also noted for OPW synthesis report.
AFA Scale Options	Apart from the above measure on the Application on the Guidelines on the Planning System specific reference should also be made in the FRMPs on ensuring the Application of the EIA (Agricultural) Regulations 2011 and the Planning and Development (Amendment) (No 2.) Regulations. This has relevance for FRM as the EIA (Agriculture) Regulations are intended to control agricultural land drainage, which reduced the capacity of the land to store water and further increases the volume of water flow in streams and rivers, which then requires the continuance of arterial drainage schemes and other FRM measures. The EIA (Agriculture) Regulations have the potential to provide additional flood protection at a catchment scale if they are implemented correctly.	Comment noted for OPW synthesis report. Recommendation for future policy that may currently not be in OPW remit. EIA regulations currently to be considered as per Fig 8.1.

SUDS	<p>The draft FRMP (pg. 63 states:...(See page 26)... SWAN welcomes the inclusion of the SuDS measures, however in relation to new housing developments in the Guidelines stated that...(See page 27)...However, the review of this document has still not been published. This review is urgently required, in particular due to the increase in proposed housing developments. The Guidelines also state...(see page 27)...This poses a significant pressure in terms of increased urban run-off and renders the recommendation in the draft FRMP that 'planning authorities should seek to reduce the extent of hard surfacing and paving' 'in accordance with the Guidelines' in order to 'reduce the potential impact of development on flood risk downstream' somewhat redundant. It is an oversight that this lacuna is not identified in the draft FRMP and SWAN recommends that this is rectified, with a recommendation in the final Plan to address the lacuna.</p>	<p>Included under Measure 7.4.1.2 of final FRMP. Comment also noted for OPW synthesis report.</p>
Ongoing Maintenance of Arterial Drainage Schemes	<p>There is little information on the existing Arterial Drainage Schemes in place in these UoMs, other than a list of the schemes and that these will be maintained as part of the UoM measures as mentioned in the FRMP and SEA.</p>	<p>Arterial drainage schemes referenced as ongoing activities that are subject to separate assessment. Acknowledged for potential in-combination and cumulative impacts, however mitigation advice provided.</p>
Ongoing Maintenance of Arterial Drainage Schemes	<p>Arterial Drainage Schemes typically involve increasing the conveyance capacity (e.g. dredging), which can impact on aquatic ecology of the watercourse. The impact of these schemes on water bodies as a whole (including those outside of Natura sites) also needs to be taken into account. Although the schemes are not a part of the CFRAM Study, they are provided as a measure in the FRMP and therefore need to be assessed for their impact on the WFD status of affected waterbodies along with other proposed measures. It is not clear if these were taken into account in the MCA analysis or SEA for the FRMP WFD objective.</p>	<p>Arterial drainage schemes referenced as ongoing activities that are subject to separate assessment. Acknowledged for potential in-combination and cumulative impacts, however mitigation advice provided.</p>
Ongoing Maintenance of Arterial Drainage Schemes	<p>The environmental assessments relating to arterial drainage schemes are available on the OPW websites, and given the significance of these schemes in terms of physical modifications of the affected watercourse, this should have been mentioned in the FRMP.</p>	<p>Arterial drainage schemes referenced as ongoing activities that are subject to separate assessment. Acknowledged for potential in-combination and cumulative impacts, however mitigation advice provided.</p>

Ongoing Maintenance of Arterial Drainage Schemes	(See page 28)... SWAN appreciates the recognition of the role that natural features play in flood defence but would like to know how these features will be protected and what enhancement is being proposed. It is important that any enhancement of existing structural features must be WFD compliant.	Comment noted for OPW synthesis report.
Land-Use Management and Natural Water-Retention Measures	SWAN welcomes the fact that the OPW is liaising with the EPA 'to identify, where possible' NWRMs which would have benefits for both FRM and WFD objectives. However, the assessment of these measures should be well progressed by this stage, with at least some initial specific measures presented in the FRMP. It is disappointing that, to SWANs knowledge, work with the EPA on these measures has not yet started, or at best is in its infancy, with the result that no NWRMs have either been identified or put forth in the FRMP.	Text included in final FRMP - Measure 7.4.1.5 - "The work will include seeking, and where possible implementing, pilot studies in coordination with LA WFD Offices and other agencies. Also under section 6.5.4 of final FRMP.
Natura Sites	While implementing proposed mitigation measures will reduce the impacts of FRMs on NATURA 2000 sites, all AFA FRMs have a potential impact on the River Barrow and Nore SAC, as do several AFAs within UoM15. The majority of these impacts are due to increases in sediment load, which may impact Salmon and Freshwater Pearl Mussel spawning grounds as well as reducing the conservation status of "Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation [3260]". Cumulative impacts on this NATURA 200 site are therefore a concern for this UoM and have not been properly assessed.	Cumulative impacts were assessed at the strategic level in line with the level of information in the FRMP. Further detailed analysis will take place on more detailed information at the next stage of feasibility study. Mitigation proposed in SEA Environmental Report and NIS to minimise potential for cumulative impacts. OPW have added some mitigation to section 6 of FRMP. Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent and assessment processes required before development of schemes.
Natura Sites	While implementing proposed mitigation measures will reduce the impacts of FRMs on NATURA 2000 sites, all AFA FRMs have a potential impact on the River Barrow and Nore SAC and River Nore SPA. Cumulative impacts are therefore a concern for this UoM. Culverts are proposed at 2 AFAs, Freshford and Mountrath. Culverts have poor climate change adaptability, sterilise a portion of the river and may cause otter to drown during high floods. Culverts should be considered only as a last measure; SWAN recommends that other FRM options are considered.	Comment noted for OPW synthesis report and Project Handover Notes.
Natura Sites	See Table 5.1 outlining assessment of likely impacts from FRM measures within UoM12/UoM14/UoM15/UoM17 from	Noted

	SWAN review in comparison to AA review.	
Natura Sites	Athy, Castledermot, Graiguenamanagh, Leighlinbridge, Mountmellick, Portarlinton, and Suncroft: AFA is within the Barrow Freshwater Pearl Mussel sensitive area. Potential for impacts within and adjacent to the River Barrow and River Nore SAC.	Included with environmental assessments. Additional text added to section 7 of final FRMPs to acknowledge environmental risks and benefits of implementing schemes in these areas.
Natura Sites	Athy, Castledermot, Graiguenamanagh, Leighlinbridge, Mountmellick: Potential for impacts within and adjacent to the River Barrow and River Nore SAC.	Included with environmental assessments. Additional text added to section 7 of final FRMPs to acknowledge environmental risks and benefits of implementing schemes in these areas.
Natura Sites	Portarlinton: May be intermittent flood event impacts associated with the storage method	Included with environmental assessments. Additional text added to section 7 of final FRMPs to acknowledge environmental risks and benefits of implementing schemes in these areas.
Mitigation	The principle mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. visual appearance, alignment of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors. Where this can give rise to a reduction in the significant of the identified negative environmental effects.	This is already in the NIS 6.1, though habitats appearance is less important than location and footprint <i>The principal mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. alignment and footprint of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors.</i>
Mitigation	Before any works are carried out, detailed method statements and management plans (construction and environmental) should be prepared, including timing of works and information on the specific mitigation measures to be employed for each works area. Works should only be carried out once the method statements have been agreed with relevant authorities such as the NPWS and IFI. At the project level, it will not be sufficient to defer the production of construction method statements. These should be completed in the detailed design stage and should be subject to further AA where potential impacts have been identified in the NIS for the FRMP.	This has been added to the NIS 6.1, paragraph 4

Mitigation	Consideration should be given to the planning and timing of construction works. FRM works on adjoining reaches of rivers in differed AFAs should not be scheduled to occur simultaneously with each other, or with other parallel projects.	This is already in the NIS 6.1 paragraph 5, but should be changed to <i>consideration will be given</i> . [Not should].
Mitigation	Direct instream works such as culvert upgrades or proposed measures along the riverbank have the greatest potential for negative impacts during spawning/breeding and early nursery periods for aquatic protected species. No instream or potentially significant damaging out of river works should occur during restricted periods for relevant species and consultation should be undertaken with IFI in this regard.	This is already in the NIS, 6.1 paragraph 6
Mitigation	Further mitigation measures are laid out under the headings: avoidance of impacts by selecting alternative options and/or design solutions, mitigation of loss of habitats and species; mitigation in relation to Lamprey and Salmonids; mitigation of suspended solids pollution; mitigation of other pollution; guidelines to be consulted during detailed planning of the works phase.	These are already in the NIS Chapter 6 but have been amended slightly from draft FRMP.
Mitigation	Otter are found widely throughout Ireland's waterways and can use quite heavily modified and polluted waterways. In particular, we have found that otters will move from rural through urban areas to forage in coastal areas. Therefore, otter surveys should be done at all AFAs and otter SOPs put in place.	This has been recommended in NIS chapters 5 & 6 and in FRMP generic mitigation table
Mitigation	Avoid unnecessary vegetation clearance, particularly trees	NIS added to 6.1.2.1 § <i>Avoid unnecessary vegetation clearance, particularly trees. Where possible, retain vegetated buffer strips. Ensure that reinstatement of appropriate, local riparian vegetation is carried out once works are completed.</i>
Mitigation	Reinstatement of appropriate, local riparian vegetation once works completed	NIS added to 6.1.2.1 § <i>Avoid unnecessary vegetation clearance, particularly trees. Where possible, retain vegetated buffer strips. Ensure that reinstatement of appropriate, local riparian vegetation is carried out once works are completed.</i>
Mitigation	Use of carbon-neutral concrete for all structural walls	Comment too detailed for strategic level assessment, however passed to OPW for consideration.

Mitigation	Ensure best practice with regard to invasive species prior, during and after construction	NIS: Invasive species potential impacts added to impact tables in chapter 5 and general mitigation in chapter 6 (6.1.2.1)
Mitigation	Qualified and experience ecologist on site during construction. Any changes in method statements and management plans must be signed off by relevant experts and authorities	NIS: requirement for an Environmental Manager in penultimate paragraph of 6.1 and requirement for method statements to be approved in 4th paragraph. Although not explicitly stated in the NIS no single ecologist is likely to be qualified to undertake all the necessary surveys and impact assessments for any single scheme, therefore the role of the Environmental Manager would be to coordinate all the various specialists.
Mitigation	Any improvements to channel conveyance should be carried out in stages (sections of river channel, dredging from one bank at a time) to allow undamaged refugia to maintain aquatic macroinvertebrates populations (prey for fish including salmon) within the river channel.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Mitigation	All AFAs are within the Barrow Freshwater Pearl Mussel sensitive area. The recommendations of the Barrow Freshwater Pearl Management Plan will need to be adhered to.	Recommended in environmental assessments and FPM management plans acknowledged in final FRMP. Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Mitigation	Athy, Castledermot, Graiguenamanagh, Leighlinbridge, Mountmellick, Portarlinton, Portlaoise, Suncroft: In addition to AA mitigation - Implement FWPM SOP	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Mitigation	Athy, Castledermot, Graiguenamanagh, Leighlinbridge, Mountmellick, Portarlinton, Portlaoise, Suncroft: Survey by a qualified ecologist prior to commencement of the FRM work, to ensure no FWPM in vicinity of downstream of works.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Mitigation	Athy, Castledermot, Graiguenamanagh, Leighlinbridge, Mountmellick, Portarlinton, Portlaoise, Suncroft, Callan, Inistioge, Rathdowney, and Thomastown: Ensure all mitigation proposals are carried out and monitored.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Mitigation	Portlaoise: Option 1 (no storage) has better environmental score and may be preferable.	Comment noted for OPW synthesis report and Project Handover Sheets.

Mitigation	FRMPs at all AFAs have the potential to impact on the River Barrow and Nore SAC. The cumulative impact of these works has not been assessed in terms of long term changes in flow rate and sedimentation. The timing of the works timing of works at AFAs should not be scheduled to occur simultaneously. However in order to avoid disturbing spawning salmon and lamprey the period of time in which the works may occur in is limited. If works are to occur together or within a short time period of each other, the cumulative effects of the works must be assessed.	Cumulative impacts were assessed at the strategic level in line with the level of information in the FRMP. Further detailed analysis will take place on more detailed information at the next stage of feasibility study. Mitigation proposed in SEA Environmental Report and NIS to minimise potential for cumulative impacts. OPW have added some mitigation to section 6 of FRMP. Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent and assessment processes required before development of schemes.
Recommendation	When an AFA is in close proximity to Natura sites, ecological surveys must ensure that no designated habitats are lost or species impacted on.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Comment also noted for OPW synthesis report and Project Handover Sheets.
Recommendations	Given the need to protect existing human settlements, much of the proposed flood management work is structural. Within the draft FRMP non-structural measures were not considered in the development of options based on structural measures. However, we believe non-structural measures should be evaluated in the earliest plans and should have bearing on the development of structural measures and not simply be complementary to them. Integrated flood management using the best mix of structural and non-structural measures, including addressing objectives at a basin level rather than isolated flood management options should be the starting point of FRMPs.	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Recommendations	Ireland needs a strategy to implement NFM which aims to work with natural hydrological and morphological processes, features and characteristics to manage the sources and pathways of floodwaters. These are given lip service in the FRMPs but need to be fully realised. Such strategies include: (see page 59).	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Recommendations	Consider the results of international projects such as 'Slowing the Flow' and 'Room for the River' to see if aspects can be adapted to Irish waterways.	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Recommendations	Public Consultation days influence the choice of preferred FRMO. Environmental groups need to have a stronger presence	Section 8 of the final FRMP, Implementation of Measures & details further public consultation. Comment also noted for OPW

	at these.	synthesis report.
Recommendations	Monitoring of baseline environmental conditions and significant effects on the environment as a result of the implementation of the FRMO must be transparent and the results of such should be made available online throughout the project. Results from these should be available as part of a meta-review of case studies of mitigation options to help interest groups assess the effectiveness of proposed mitigation.	Proposed strategic level environmental monitoring of the final FRMP included in section 8. Comment also noted for OPW synthesis report.
Recommendations	Maintenance of completed projects should strictly adhere to AA recommendations. Any unforeseen maintenance should be subject to AA.	Recommendation noted for OPW synthesis report and project handover notes.
Recommendations	To prevent driving further climate change, where structural flood protection is deemed necessary, all concrete used for the structural works should be carbon-neutral (i.e. slag-based rather than Portland cement based).	Recommendation noted for OPW synthesis report and project handover notes.
Recommendations	As a large number of FRMs have the potential to impact on the River Barrow and Nore SAC there is a serious concern regarding cumulative impacts. A number of the AFAs are within the River Barrow and Nore SAC, increasing the likelihood of cumulative impacts. FRMPs at all AFAs in UoM14 also have the potential to impact on the River Barrow and Nore SAC. The majority of these impacts are due to increases in sediment load, which may impact Salmon and Freshwater Pearl Mussel spawning grounds as well as reducing the conservation status of “Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachium vegetation [3260]”. Cumulative impacts on this NATURA 200 site are therefore a concern for this UoM and have not been properly assessed. The timing of works must be clearly laid out during detailed planning of the works phase and strictly adhered to.	Cumulative impacts were assessed at the strategic level in line with the level of information in the FRMP. Further detailed analysis will take place on more detailed information at the next stage of feasibility study. Mitigation proposed in SEA Environmental Report and NIS to minimise potential for cumulative impacts. OPW have added some mitigation to section 6 of FRMP. Progression of Measures Involving Physical Flood Relief Works flow chart added to section 8.1 of the FRMP, which demonstrates the consent and assessment processes required before development of schemes.
Integrated Flood-Risk Management	Taking a catchment based approach represents a more sustainable way of dealing with floods.	Comments noted for OPW synthesis report. Catchment based approach taken by CFRAM studies.
Catchment-Based Approach	The full potential of taking an integrated catchment management approach has not been realised in the FRMP, as there has been a lack of full coordination with the WFD and integration and alignment with	Comments noted for OPW synthesis report. This is the first cycle of approaching flood risk management in an integrated catchment based approach through the CFRAM

	the development of the RBMP.	studies.
Catchment-Based Approach	SWAN acknowledges that in some instances, structural engineering solutions may be, for various reasons, either the only option, or necessarily part of the solution required to address flood risk. However, at present the plans as presented are overly reliant on such options, neglecting to fully consider the catchment-based approach, which would mandate increased use of measures such as NWRMs and other win win options for both the WFD and FD. In fact, there are a significant number of measures that could be taken to reduce the risk of flooding that could also contribute to achieving WFD objectives. These win-win measures include:(see page 61/62). In terms of an illustrative example, the catchment-based approach proved key to the success of the Farming Floodplains for the Future project in England.	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Catchment-Based Approach	It is negligent and demonstrative of worryingly narrow thinking that such catchment-based approaches to land-use management and NWRMs, incorporating for example agri-environmental schemes has so far been excluded to the extent that it has from the FRMP measures.	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Natural Water-Retention Measures	The Commission has given examples of natural flood-management strategies that could meet the requirements of the FD and WFD as follows: (see page 62).	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Natural Water-Retention Measures	Ireland-applicable examples of natural approaches in reducing flooding, including NWRMs, and which should be included as measures in the FRMP are presented in table 6.1 (see page 41).	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Natural Water-Retention Measures	The negative impact that hard engineering can have on water quality and ecosystems makes it all the more important that other solutions that work with nature are given more prominence than at present in the FRMP.	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
Natural Water-Retention Measures	The restoration of floodplains and wetlands are an example of NFWM and should be included as a measure in the FRMP. This is the type of measure that could contribute to achieving both FD and WFD objectives (see page 64 for examples of successful implementation).	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.

Integrated Governance	One of the major obstacles when it comes to water management in Ireland is the lack of coherent legislation and integrated governance. This was highlighted in the FRMP SEA for the Shannon UoM 25/26 but could equally apply to UoM 06 (See page 65)	Comment noted for OPW synthesis report. Recommendation for future policy.
Integrated Governance	SWAN has made a number of submissions to the Department regarding integrated governance, a detailed discussion of which is beyond the scope of this submission,. However, suffice to say here that the proposed new governance system, which has been developed by the Department, does not provide the mechanisms necessary for the best practice Integrated Catchment Management approach being promoted by the EPA; that is mechanisms to facilitate catchment level decisions regarding selection and implementation of water management measures, at a catchment level, including flood management. So it is regrettable that the OPW appears to play a particularly peripheral role in the new water management arrangements with very little on-going day-today collaboration with the EPA Catchment Management Unit. Furthermore, it is unclear whether and how the role of Local Authorities in implementing the FRMPs will be incorporated into the new water governance system.	Comment noted for OPW synthesis report. Recommendation for future policy. Final FRMP section 6.5 provides WFD co-ordination.
Integrated Governance	(See page 44)... It is unclear how this coordination will be achieved and how an integrated catchment-based approach to flood management will be achieved given that implementation is the responsibility of authorities whose borders are administrative rather than catchment based. This appears to represent perpetuation of the fragmented approach to water management criticised in the 2010 RBMPs.	Comment noted for OPW synthesis report. Recommendation for future policy. Final FRMP section 6.5 provides WFD co-ordination.
Public Participation	It is SWANs contention that the OPW's public engagement on the draft FRMPs is unsatisfactory and flawed in a number of fundamental ways. These relate to the requirements of the Aarhus Convention and the Floods Directive regarding, relatively, early and effective opportunities for the public to participate in decision-making and the requirement to encourage active public involvement.	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.

Public Participation	In addition to the specific obligations in the Flood Directive, discussed below, the FRM Plan has numerous environmental dimensions and consequently requires the application of demonstrable rigorous public participation as described in Article 6 of the Ashus Convention, which specifically refers to public participation rather than consultation (see page 66).	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Public Participation	The FD requires only that Member States makes drafts of the PFRAs, flood-hazard maps and flood-risk maps available to the public. However, as well as making the FRMP publicly available, there is an additional specific obligation to 'encourage active involvement of interested parties in the production, review and updating of the FRMPs'. It furthermore requires that the FRMP include a summary of the public information and consultation measures/actions taken.	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Public Participation	A diverse range of mechanisms and particular techniques can be employed to actively involve the public which the OPW could be guided on by a relevant independent professions. Some simple distinctions are commonly recognised which broadly reflect the direction of communication and the flow of information (see page 67).	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Public Participation	In light of the above, to fulfil the requirements of effective and meaningful participation, certain conditions need to be met. Briefly, it requires that those whose interests are, or may be affected by the matter concerned are: (see page 68).	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Public Participation	When examined against the above criteria from the literature, including the need for ongoing dialogue and collaborative development of the plan with stakeholders, it is clear that the OPW has not delivered opportunities for effective public participation in the development of the FRMPs. It has limited its engagement to information and consultation exercises and done almost nothing to encourage the involvement of stakeholders in the development of the Plan. There is no evidence of a genuine wish to develop a partnership approach with stakeholders, and there appears to be a clear democratic deficit particularly due to a culture of traditional minimalist consultation processes in the OPW, exacerbated by the fact that the new water governance	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.

	structures are not yet fully in place, so that no mechanism exists by which to attempt to secure more stakeholder scrutiny and involvement.	
Public Participation	In relation to provisions for basic consultation, it is SWAN's position that the public consultation on the Plans is wholly inadequate. The OPW has, by default, limited the ability of stakeholders to respond in a meaningful or significant way. The consultation on the first of these complex plans started in mid-July for a period of only ten weeks over the holiday period. This is far too short a period for stakeholders to review and assimilate the contents of the Plans and make a full response to them.	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Public Participation	SWAN requested a longer consultation period, which if the FRMPs had been aligned with the consultation on the second cycle WFD RBMPs (let it be noted that Article 7 (3) of the FD requires the coordination of the FD with the WFD when it comes to the 'active involvement of all interested parties'), then both consultations should have occurred concurrently for a period of at least six months. It is regrettable that the request for a longer consultation period was denied due to political pressure to have the plans completed by the end of 2016.	Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report.
Conclusion	We make our submission with the explicitly reproach that flawed processes such as these not only disenfranchise the very communities they're meant to serve, but are emblematic of problem-solving strategies fatally distanced from exactly those environmental management approaches that will be most needed as manmade climate change threatens to push weather patterns in unpredictable directions beyond the palliative brink of mechanical ingenuity.	Comment noted.
Conclusion	SWAN would urge the OPW in conjunction with the DHPCLG to develop and begin delivering a programme of public participation for the FRMP's development and implementation, in co-ordination with WFD implementation, as a matter of urgency.	Final FRMP section 8.1.4. and section 6.5.4 WFD co-ordination amended to reflect this. Comment also noted for OPW synthesis report.



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