

# Strategic Environmental Assessment Statement

Avoca – Vartry

# Strategic Environmental Assessment Statement

For

## River Basin (10) Avoca – Vartry Flood Risk Management Plan

*Areas for Further Assessment included in the Plan:*

<i>An Caisleán Nua</i>	<i>Newcastle</i>
<i>Na Clocha Liatha &amp; máguaird</i>	<i>Greystones &amp; Environs</i>
<i>Áth na Fuinseoige &amp; Ráth Naoi</i>	<i>Ashford &amp; Rathnew</i>
<i>Bré</i>	<i>Bray</i>
<i>An tInbhear Mór</i>	<i>Arklow</i>
<i>Eachroim</i>	<i>Aughrim</i>
<i>Abhóca</i>	<i>Avoca</i>
<i>Cill Chomhghaill</i>	<i>Kilcoole</i>
<i>Baile Uí Lachnáin</i>	<i>Loughlinstown</i>
<i>Seanchonach / Wilford</i>	<i>Old Connaught / Wilford</i>
<i>Cill Mhantáin</i>	<i>Wicklow</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.



# Eastern CFRAM Study

## UoM10

### Strategic Environmental Assessment

### Statement

# DOCUMENT CONTROL SHEET

Client	OPW					
Project Title	Eastern CFRAM Study					
Document Title	IBE0600Rp0071_E_SEA_Statement_UoM10_D01					
Document No.	IBE0600Rp0071					
OPW Document No.	E10_SEA_Statement_PART01					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	1	1	38	1	1	2

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
D01	Draft	Various	R. Bingham	G. Glasgow	Belfast	2/08/2017
D02	Draft	Various	R. Bingham	G. Glasgow	Belfast	14/08/2017

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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
- Cavan County Council
- Dún Laoghaire – Rathdown County Council
- Dublin County Council
- Fingal County Council
- Kildare County Council
- Louth County Council
- Meath County Council
- Offaly County Council
- South Dublin County Council
- Westmeath County Council
- Wexford County Council
- Wicklow County Council
- Mid-East Regional Authority
- Dublin and Mid-Eastern Regional Authority
- The Environmental Protection Agency
- Met Éireann
- All members of the National CFRAM Steering and Stakeholder Groups

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<b>APPENDIX B – Draft Plan Consultation – UoM10 Environmental Submissions</b>	<b>74 Pages</b>

## 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 10 (UoM10 - Avoca-Vartry River Basin) under the 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 Eastern CFRAM study area includes four Units of Management (UoM) / Hydrometric Areas (HAs). The UoMs constitute major catchments / river basins (typically greater than 1000km<sup>2</sup>) 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 Eastern CFRAM Study area. These are HA/UoM 07 (Boyne), HA/UoM 08 (Nanny-Delvin), HA/UoM 09 (Liffey-Dublin Bay) and HA/UoM 10 (Avoca-Vartry). There is a high level of flood risk within the Eastern CFRAM Study area with significant coastal and fluvial flooding events having occurred in the past. The Avoca-Vartry River Basin covers an area of approximately 1,248 km<sup>2</sup> and includes parts of counties Wicklow, Wexford, and Dublin.

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, 2007<sup>1</sup>).

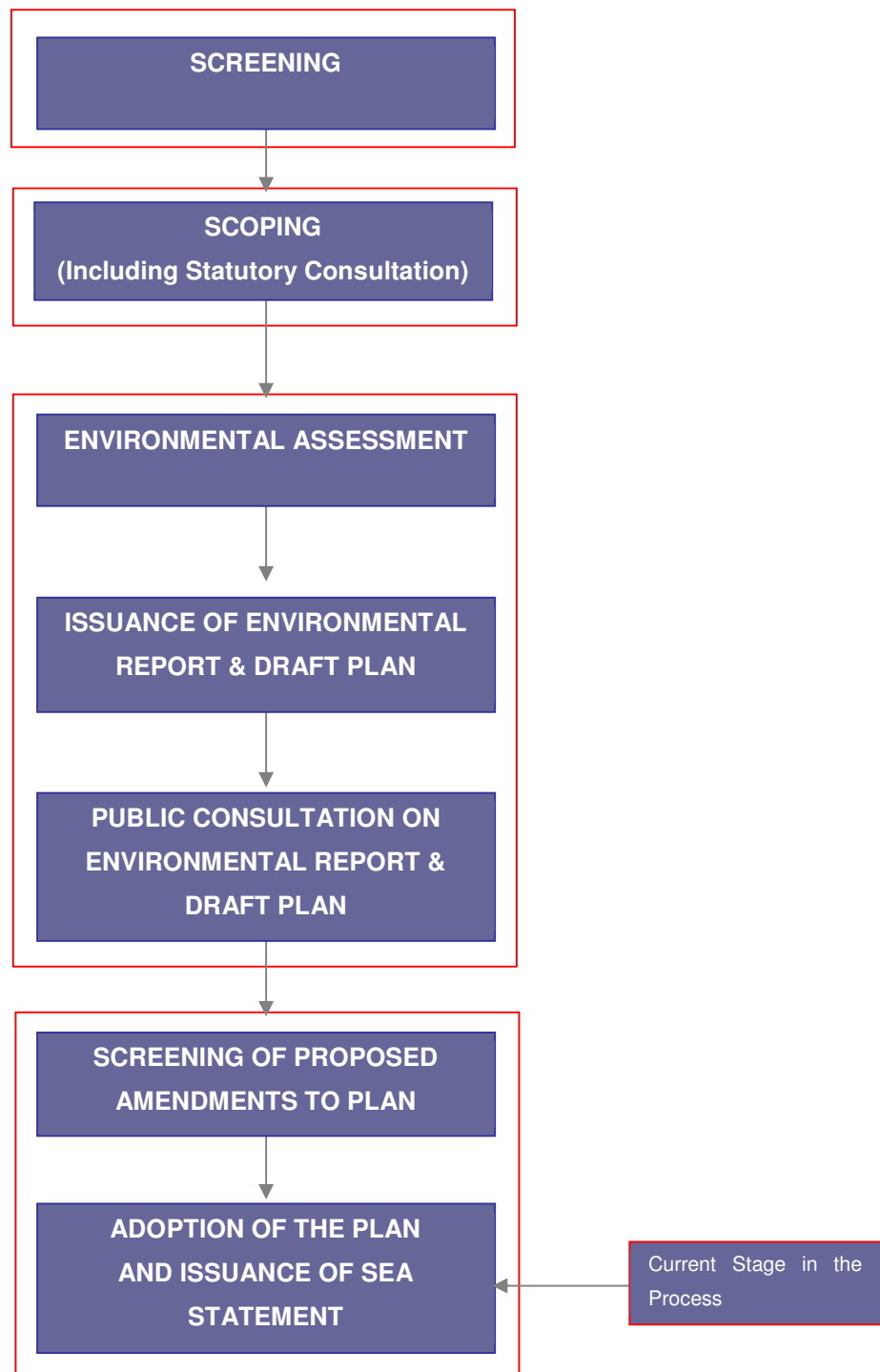
This SEA Statement has been prepared in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [S.I. 435/2004] and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 [S.I. 436/2004], and their recent amendments 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 Avoca-Vartry River Basin, the SEA Environmental Report, and the Natura Impact Statement (NIS) are available for download on the Eastern CFRAM website: <http://east.cfram.com/>

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<sup>1</sup> 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 km<sup>2</sup> 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://east.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 Eastern CFRAM Study. The purpose of the Scoping Report and associated documents was to provide sufficient information on the 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 Eastern CFRAM Study can be found at:

<http://east.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 Avoca-Vartry River Basin. The preparation of an Environmental Report on the likely significant effects on the environment of the Plan for the Avoca-Vartry 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 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 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 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 Avoca-Vartry 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 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 Avoca-Vartry 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 majority of the proposed draft FRM measures in the Avoca-Vartry River Basin Plan will not have significant adverse impacts on any European sites. However the proposed FRM measures at the Wicklow and Ashford & Rathnew AFAs have the potential for residual impacts on The Murrough Wetlands SAC and The Murrough SPA. This relates to the potential for damage and disturbance to wetland habitats in the Tinakelly area through the construction of hard defences. The significance of the potential impacts would need investigated further at the detailed design phase, with site-specific hydrological, ecological and bird surveys required to undertake a detailed Stage 2 Appropriate Assessment.

## 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 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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry River Basin within the 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 Avoca-Vartry 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 be an engineered scheme with works required on the ground at a specific geographic location.

**Table 3.1 Flood Risk Management Methods**

Method	Description	
<b>Do Nothing</b>	Implement no new flood risk management measures and abandon any existing practices.	<b>Non-Structural Methods</b>
<b>Maintain Existing Regime</b>	Continue with any existing flood risk management practices, such as reactive maintenance.	
<b>Do Minimum</b>	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.	
<b>Planning and Development Control</b>	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.	
<b>Building Regulations</b>	Regulations relating to floor levels, flood-proofing, flood resilience, sustainable drainage systems, prevention of reconstruction or redevelopment in flood-risk areas, etc.	
<b>Catchment Wide Sustainable Drainage Systems (SuDS)</b>	Implement SuDS on a catchment wide basis.	
<b>Land Use Management (NFM)</b>	Creation of wetlands, riparian buffer zones, etc.	
<b>Strategic Development Management</b>	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.)	
<b>Flood Warning / Forecasting</b>	Installation of a flood forecasting and warning system and development of emergency flood response procedures.	
<b>Public Awareness Campaign</b>	Targeted public awareness and preparedness campaign.	
<b>Upstream Storage</b>	Single or multiple site flood water storage, flood retardation, etc.	<b>Structural Methods</b>
<b>Improvement of Channel Conveyance</b>	In-channel works, floodplain earthworks, removal of constraints / constrictions, channel / floodplain clearance, etc.	
<b>Hard Defences</b>	Construct walls, embankments, demountable defences, Rehabilitate and / or improve existing defences, etc.	
<b>Relocation of Properties</b>	Relocation of properties away from flood risk.	
<b>Diversion of Flow</b>	Full diversion / bypass channel, flood relief channel, etc.	
<b>Other works</b>	Minor raising of existing defences / levels, infilling gaps in defences, site specific localised protection works, etc.	
<b>Individual Property Flood Resistance</b>	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 Eastern CFRAM Study. The outcomes of all Preliminary Screenings for the UoM were included within Appendix E of the draft Plan of the Avoca-Vartry 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 Avoca-Vartry 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
- Population & Human Health
- Geology, Soils and Landuse
- Water
- Climatic Factors
- Material Assets & Infrastructure
- Cultural, Architectural & Archaeological Heritage
- Landscape & Visual Amenity
- Fisheries & Angling
- Amenity, Community & Socio-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
<b>1</b>	<b>Social</b>	<b>a</b>	Minimise risk to human health and life	i)	Minimise risk to human health and life of residents	<b>P/HH</b>
				ii)	Minimise risk to high vulnerability properties	<b>P/HH</b>
		<b>b</b>	Minimise risk to community	i)	Minimise risk to social infrastructure and amenity	<b>ACS</b>
				ii)	Minimise risk to local employment	<b>ACS</b>
<b>2</b>	<b>Economic</b>	<b>a</b>	Minimise economic risk	i)	Minimise economic risk	
		<b>b</b>	Minimise risk to transport infrastructure	i)	Minimise risk to transport infrastructure	<b>MA</b>
		<b>c</b>	Minimise risk to utility infrastructure	i)	Minimise risk to utility infrastructure	<b>MA</b>
		<b>d</b>	Minimise risk to agriculture	i)	Minimise risk to agriculture	<b>S</b>
<b>3</b>	<b>Environmental</b>	<b>a</b>	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.	<b>W</b>
		<b>b</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.	<b>BFF</b>
		<b>c</b>	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.	<b>BFF</b>

		<b>d</b>	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.	<b>F</b>
		<b>e</b>	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.	<b>L</b>
		<b>f</b>	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.	<b>H</b>
				ii)	Avoid damage to or loss of features, institutions and collections of archaeological value and their setting.	<b>H</b>
<b>4</b>	<b>Technical</b>	<b>a</b>	Ensure flood risk management options are operationally robust	i)	Ensure flood risk management options are operationally robust	
		<b>b</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	
		<b>c</b>	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	<b>C</b>

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 Avoca-Vartry 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 or 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 will only be permitted under the WFD if the strict conditions set

excess vegetative growth will naturally occur.	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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry 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 such schemes in the Avoca-Vartry (UoM10) 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, and this Plan does not amend these responsibilities to provide additional flood relief. The Plan therefore does not set out additional measures in this regard. Note - Separate environmental assessment of OPW Arterial Drainage activities has been carried out by OPW.
- **Protection:** Maintenance of Drainage Districts – There are no Drainage Districts within the Avoca-Vartry (UoM10) River Basin. 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**

No methods were found to be feasible from the Avoca River Sub-catchment screening. Storage and improvement of channel conveyance were screened and found to be technically unfeasible. As no methods have been deemed potentially viable, the next steps in the process, such as development of options or MCA appraisal have not been completed.

#### **4.2.3 Aughrim AFA Preferred Measure**

Potentially viable flood relief works for Aughrim that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a BCR 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 Aughrim progress 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

#### **4.2.4 Avoca AFA Preferred Measure**

Potentially viable flood relief works for Avoca AFA that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works, such as a series of hard defences (flood embankments and walls) along with improvement of channel conveyance on a tributary. The hard defences would protect to the 1% AEP fluvial flood event, with an average height of 1.4m and a total length of 0.5km. Improving the channel conveyance of a tributary at the AFA's northern boundary would consist of removing three weirs, dredging a length of 18m of the river and underpinning a bridge. Only one measure was identified for Avoca as being viable, and consequently this is the preferred measure

#### **4.2.5 Greystones AFA Preferred Measure**

Potentially viable flood relief works for Greystones that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works, such as a series of hard defences (flood embankments and walls, 1.5km long) and a storage area. The measure would protect to the 1% AEP fluvial flood event, with an average hard defence height of 0.9m (reaching a maximum height of 1.8m). The potentially viable flood relief works, which at this stage of assessment are deemed to be preferred, will be subject to project-level assessment and possible amendment. The preferred measure has a higher benefit cost ratio compared to the other potential measures that were assessed.

#### **4.2.6 Kilcoole AFA Preferred Measure**

Potentially viable flood relief works for Kilcoole that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a BCR 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 Kilcoole progress 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.

#### **4.2.7 Loughlinstown AFA Preferred Measures**

Potentially viable flood relief works for Loughlinstown that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works, such as a series of hard defences (flood embankments and walls) along with dredging, a bridge and culvert upgrade on the Shanganagh River and two storage areas on the Deansgrange River. The preferred measure would protect to the 1% AEP flood event with a total wall length of 0.9km, a total embankment length of 0.6km, a total volume of in-channel excavation of 350m<sup>3</sup>, a total volume of storage area excavation of 3,874m<sup>3</sup>, one bridge upgrade and five culvert upgrades. The hard defences have an average height of 1.6m (reaching a maximum height of 3.4m). The preferred measure scores better environmentally and has highest benefit cost ratio compared to the other potential measures that were assessed.

#### **4.2.8 Newcastle AFA Preferred Measures**

Potentially viable flood relief works for Newcastle that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works. However the preferred measure has a BCR 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 Newcastle progress 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.

#### **4.2.9 Old Connaught / Wilford AFA Preferred Measures**

Potentially viable flood relief works for Old Connaught and Wilford that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works, such as a series of hard defences (flood embankments and walls) in conjunction with, a culvert upgrade and channel dredging at the Dublin Road adjacent to St Brendan's School, and a flow diversion channel on the Old Connaught River. The hard defences would protect to the 1% AEP fluvial flood event, with an average height of 1.0m (reaching a maximum height of 1.7m) and a total length of 1.1km. All the measures assessed had similar scores for all aspects of the assessment; however, the preferred measure is considered by the Local Authority to be the most socially and technically appropriate solution as it incorporates culvert upgrade thus addressing a potential blockage issue.

#### **4.2.10 Wicklow AFA and Ashford & Rathnew AFA Preferred Measures**

Potentially viable flood relief works for Wicklow, Ashford and Rathnew that may be implemented after project-level assessment and planning or Exhibition and confirmation might include physical works, such as a series of hard defences, storage and improvement of channel conveyance. The hard defences would protect to the 1% AEP fluvial flood event, with an average height of 1.1m (reaching a maximum height of 1.5m) and a total length of 4km. The two storage areas on the Broomhall and Burkeen catchments have a total capacity of approximately 14,800m<sup>3</sup>. The improvement of channel conveyance consists of the removal of a weir on the Ballynerin watercourse. The preferred measure will deliver several key flood protection benefits; reducing risk to numerous local properties and commercial properties, NIAH buildings, utilities, transport links and social infrastructure/amenity sites in the medium

and long term. There is potential for the creation of higher biodiversity wetland areas with the proposed storage measure.

#### **4.2.11 Arklow AFA Preferred Measures**

The development of a flood relief scheme is currently underway for Arklow. No additional measures specific to Arklow AFA are proposed.

#### **4.2.12 Bray AFA Preferred Measures**

A flood relief scheme is currently under construction for Bray. No additional measures specific to Bray AFA are proposed.

### **4.3 MEASURES WITH A BENEFIT - COST RATIO BELOW UNITY**

For the Aughrim, Kilcoole and Newcastle 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 towards 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](http://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 be 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
<b>Biodiversity, Flora and Fauna</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	Area, condition and trend of European sites and species in the Avoca-Vartry River Basin (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 Avoca-Vartry River Basin (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
<b>Population and Human Health</b>	Minimise risk to human health and life	i)	Minimise risk to human health and life of residents	Residential property flooding in the Avoca-Vartry River Basin	OPW, Local Authority and Emergency Services Reporting.
		ii)	Minimise risk to high vulnerability properties	High vulnerability sites impacted by flooding in the Avoca-Vartry River Basin	OPW, Local Authority and Emergency Services Reporting.
<b>Geology, Soils and Landuse</b>	Minimise risk to agriculture	i)	Minimise risk to agriculture	Area of soil resource lost due to flooding and flood risk management in the Avoca-Vartry River Basin.	EPA - CORINE landcover mapping.  Local Area Plans and County Development Plans – myplan.ie
<b>Water</b>	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 / ERBD – WFD status reporting and RBMPs.
<b>Climate</b>	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 Avoca-Vartry River Basin.	OPW and Local Authority reporting.

<b>Material Assets</b>	Minimise risk to transport & utility infrastructure	i)	Minimise risk to transport infrastructure	Number and type of transport routes that have flooded in the Avoca-Vartry River Basin.	OPW, Local Authority and NRA reporting.
		ii)	Minimise risk to utility infrastructure	Number and type of utilities that have flooded in the Avoca-Vartry River Basin.	OPW, Local Authority, ESB, Eirgrid, Eircom, BGE, Irish Water and EPA reporting.
<b>Cultural Heritage</b>	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 Avoca-Vartry River Basin.	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 Avoca-Vartry River Basin.	OPW, Local Authority and DAHRRGA reporting. Archaeological Survey of Ireland Sites and Monuments Records
<b>Landscape and Visual</b>	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 Avoca-Vartry River Basin. Change of quality in existing scenic areas and routes in the Avoca-Vartry River Basin. Loss of public landscape amenities in the Avoca-Vartry River Basin.	Local Authority – Landscape Character Assessments, County Development Plans and Local Area Plans. EPA - CORINE Landcover.
<b>Fisheries, Aquaculture &amp; Angling</b>	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 Avoca-Vartry River Basin. Barriers to fish movement within the Avoca-Vartry River Basin.	IFI and WFD fish surveys and reports. Local fisheries reporting.
<b>Amenity, Community &amp; Socio-Economics</b>	Minimise risk to community	i)	Minimise risk to social infrastructure and amenity	Social infrastructure and amenity assets impacted by flooding in the Avoca-Vartry River Basin.	OPW and Local Authority reporting.
		ii)	Minimise risk to local employment	Non-residential properties impacted by flooding in the Avoca-Vartry River Basin.	OPW and Local Authority reporting.

## **6 SCREENING AND CHANGES TO FINAL PLAN**

No significant amendments were made between the draft Plan for the Avoca-Vartry River Basin and Final Plan for the Avoca-Vartry River Basin, so no 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 Avoca-Vartry 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 Avoca-Vartry 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 Avoca-Vartry 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](http://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 2<sup>nd</sup> 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 Eastern CFRAM Steering Group

- Office of Public Works
- RPS
- Environmental Protection Agency
- WFD Local Authorities Water and Communities Office LAWCO
- Cavan County Council
- Dún Laoghaire – Rathdown County Council
- Dublin City Council
- Fingal County Council
- Kildare County Council
- Kilkenny County Council
- Louth County Council
- Meath County Council
- Offaly County Council
- South Dublin County Council
- Westmeath County Council
- Wexford County Council
- Wicklow County Council

- ERBD WFD
- Mid-East Regional Authority
- Dublin and Mid-Eastern Regional Authority

## 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 Eastern CFRAM Stakeholder Group

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

Scoping Phase	26.01.2012	Bord na Mona
Scoping Phase	26.01.2012	Electricity Supply Board
Scoping Phase	26.01.2012	Sustainable Water Network
Scoping Phase	26.01.2012	Irish Farmers Association
Scoping Phase	26.01.2012	Dublin and Mid-East Regional Authority
Scoping Phase	26.01.2012	Dublin Airport Authority
Scoping Phase	26.01.2012	Wicklow County Council
Scoping Phase	26.01.2012	Electricity Supply Board
Scoping Phase	26.01.2012	Railway Procurement Authority
Scoping Phase	26.01.2012	Inland Fisheries Ireland
Scoping Phase	26.01.2012	Waterways Ireland
Scoping Phase	26.01.2012	Bat Conservation Ireland
Scoping Phase	26.01.2012	Louth County Council
Scoping Phase	26.01.2012	Dublin Bus
Scoping Phase	26.01.2012	EirGrid
Scoping Phase	26.01.2012	Dept. of Arts, Heritage and the Gaeltacht
Scoping Phase	26.01.2012	South Dublin County Council
Scoping Phase	26.01.2012	National Transport Authority
Scoping Phase	26.01.2012	The Office of Public Works
Scoping Phase	26.01.2012	Louth Local Authorities
Scoping Phase	26.01.2012	Birdwatch Ireland
Scoping Phase	26.01.2012	IBEC
Scoping Phase	26.01.2012	Canoeing Ireland
Scoping Phase	26.01.2012	Louth County Council
Scoping Phase	26.01.2012	Meath County Council
Scoping Phase	26.01.2012	Dún Laoghaire - Rathdown County Council
Scoping Phase	26.01.2012	Dublin Docklands Development Authority

Scoping Phase	26.01.2012	Irish Creamery Milk Suppliers Association
Scoping Phase	26.01.2012	Eastern River Basin District
Scoping Phase	26.01.2012	Coastwatch
Scoping Phase	26.01.2012	WCA Architects
Scoping Phase	26.01.2012	Environmental Protection Agency
Scoping Phase	26.01.2012	Dublin City Council
Scoping Phase	26.01.2012	Fearon O'Neill Rooney
Scoping Phase	26.01.2012	Fingal County Council
Camac Poddle	05.06.2013	Fingal County Council
Camac Poddle	05.06.2013	Electricity Supply Board Networks
Camac Poddle	05.06.2013	Inland Fisheries Ireland
Camac Poddle	05.06.2013	Waterways Ireland
Camac Poddle	05.06.2013	The Office of Public Works
Camac Poddle	05.06.2013	South Dublin County Council
Camac Poddle	05.06.2013	Fearon O'Neill Rooney
Camac Poddle	05.06.2013	WCA Architects
Camac Poddle	05.06.2013	Dept. of Arts, Heritage and the Gaeltacht
Camac Poddle	05.06.2013	Dublin City Council
Camac Poddle	05.06.2013	National Parks and Wildlife Service
Camac Poddle	05.06.2013	Railway Procurement Authority
Camac Poddle	05.06.2013	Eastern River Basin District
Mapping Phase	24.09.2015	The Office of Public Works
Mapping Phase	24.09.2015	Electricity Supply Board Networks
Mapping Phase	24.09.2015	PUNCH Consulting Engineers
Mapping Phase	24.09.2015	Louth County Council
Mapping Phase	24.09.2015	Environmental Protection Agency
Mapping Phase	24.09.2015	Wicklow County Council
Mapping Phase	24.09.2015	Dublin City Council
Mapping Phase	24.09.2015	IBEC
Mapping Phase	24.09.2015	Kildare County Council
Mapping Phase	24.09.2015	South Dublin County Council
Mapping Phase	24.09.2015	Dublin Trout Anglers Association

Mapping Phase	24.09.2015	Kildare County Council
Mapping Phase	24.09.2015	Dept. of Arts, Heritage and the Gaeltacht
Mapping Phase	24.09.2015	Coastwatch Europe
Mapping Phase	24.09.2015	Fingal County Council
Mapping Phase	24.09.2015	Meath County Council
Mapping Phase	24.09.2015	Dept. of Agriculture
Mapping Phase	24.09.2015	Transport Infrastructure Ireland
Mapping Phase	24.09.2015	Inland Fisheries Ireland
Mapping Phase	24.09.2015	South Dublin Chambers
Options Phase	20.04.2016	Sustainable Water Network
Options Phase	20.04.2016	Inland Fisheries Ireland
Options Phase	20.04.2016	Dún Laoghaire - Rathdown County Council
Options Phase	20.04.2016	Dublin City Council
Options Phase	20.04.2016	Electricity Supply Board
Options Phase	20.04.2016	Louth County Council
Options Phase	20.04.2016	Kildare County Council
Options Phase	20.04.2016	Fingal County Council
Options Phase	20.04.2016	Wicklow County Council
Options Phase	20.04.2016	South Dublin County Council
Options Phase	20.04.2016	The Office of Public Works
Options Phase	20.04.2016	Dept. of Arts, Heritage and the Gaeltacht
Draft FRMP Phase	18.10.2016	Inland Fisheries Ireland
Draft FRMP Phase	18.10.2016	ESB Networks
Draft FRMP Phase	18.10.2016	Sustainable Water Network
Draft FRMP Phase	18.10.2016	Kildare County Council
Draft FRMP Phase	18.10.2016	Dún Laoghaire - Rathdown County Council
Draft FRMP Phase	18.10.2016	Punch Consulting Engineers
Draft FRMP Phase	18.10.2016	Oversight Property Consultants
Draft FRMP Phase	18.10.2016	LAWCO
Draft FRMP Phase	18.10.2016	Fingal County Council
Draft FRMP Phase	18.10.2016	Dublin Bus

## APPENDIX A.5

### Public Consultation Days Held at the Flood Mapping Stage in the Avoca-Vartry River Basin

**Table A.5** *Flood Mapping PCDs Held in the Avoca-Vartry River Basin*

AFA	Date	Venue	No. Attendees
Aughrim	09.03.2015	Lawless' Hotel	9
Avoca	31.03.2015	Avoca Community Centre	20
DLRCC	25.03.2015	Concourse County Hall	46
Greystones and Kilcoole	09.03.2015	Greystones Municipal District Offices	14
Newcastle	10.03.2015	Newcastle Community Centre	8
Wicklow/Ashford/Rathnew	03.03.2015	County Buildings	11

## APPENDIX A.6

### Public Consultation Days Held at the Flood Risk Management Optioneering Stage in the Avoca-Vartry River Basin

**Table A.6** *Flood Risk Management Optioneering PCDs Held in the Avoca-Vartry River Basin*

AFA	Date	Venue	No. Attendees
Aughrim	14.03.2016	Lawless' Hotel	5
Avoca	16.03.2016	Avoca Courthouse	9
DLRCC	23/24.02.2016	Concourse County Hall	38
Greystones and Kilcoole	14.03.2016	Greystones Municipal District Office	11
Newcastle	15.03.2016	Newcastle Community Centre	7
Wicklow/Ashford/Rathnew	01.03.2016	County Buildings	5

## **APPENDIX B**

### **Draft Plan Consultation – UoM10 Environmental Submissions**

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

<b>Subject</b>	<b>Comment</b>	<b>Response</b>
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 <a href="http://www.archaeology.ie">www.archaeology.ie</a> , 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.	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 and the wider biodiversity 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	The Department notes that, pursuant to the European Communities (Birds and Natural Habitats) Regulations 2011 (hereafter the 2011 Regulations), the OPW, as a public authority that wishes to undertake the Flood Risk Management Plans, must complete an appropriate assessment for the Plans. The OPW is advised that the appropriate assessment cannot be completed until at least six weeks after the Minister has been consulted on the Natura Impact Statement.	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.
SEA/AA Public Consultation: Nature Conservation	It appears that the issue of sedimentation and Freshwater Pearl Mussels has not been adequately dealt with in the SEA.	General mitigation and monitoring measures have been developed, and are included in the SEA and NIS. These include the following measures to mitigate against potential impacts of freshwater pearl mussels: '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'. Text in the 'Biodiversity, flora and fauna' part of Section 9 for Aughrim and Avoca includes 'good construction practice, monitoring and good timing of works.....to ensure that additional sediment does not enter the watercourse'.
SEA/AA Public Consultation: Nature Conservation / 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	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.

	15km should also be considered where birds are concerned.	
NIS: Nature Conservation	With regard to the zone of influence it is noted on page 23 of the NIS for UoM09 that a zone of influence of 15 km was chosen for each site. This may not take into account bird flights and this issue needs to be considered. For example could birds from the Boyne also use Dundalk? The issue of bird flight distances needs to be considered in more detail for the screening in or out of sites. For UoM10, Brent Geese from Dublin have been found to fly to Kilcoole each day so Dublin sites need to be screened in. The screening results in Table 3.5.1 need to be re-evaluated because sites such as North Bull Island SPA and South Dublin bay and River Tolka Estuary SPA may not screen out when birds are considered.	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. This is a plan-level strategic assessment. At the project stage, European sites >15km away should be assessed where the detailed design indicates that impacts may occur on designated bird species. Note that the 15km distance was only laterally from the AFA, whereas the upstream and downstream study extents went from top of the catchment to the bottom.
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	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 freshwater pearl mussels are an issue.	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.

NIS: Nature Conservation	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. Therefore it is unclear from the NIS whether the assessment adequately considered the attributes and targets of conservation objectives. This needs to be clarified.	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.
NIS: Nature Conservation	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.	Sandbags were not considered as a strategic FRM measure within this CFRAM study.
NIS: Nature Conservation	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.	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	It is stated in the NIS for both Aughrim and Avoca AFAs (pages 52 and 54) that there are non-designated populations of Annex I designated species Freshwater Pearl Mussel extant in the catchment area surrounding and downstream of these two AFAs. Therefore it is stated that appropriate mitigation measures should be employed and this is dealt with in the SEA Environmental Report. It should be noted that Freshwater Pearl Mussels are on Annex II of the Habitats Directive, not on Annex I.	UoM10 p.52 & 54 – Text amended to state that freshwater pearl mussels are on Annex II, not Annex I of the Habitats Directive.
NIS: Nature Conservation	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.	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	It is noted that table 10.1 of the SEA does deal with this issue. The OPW and its consultants should ensure consistency between the SEA and NIS.	Generic mitigation and monitoring measures have been developed and are included in both the NIS and SEA.

NIS: Nature Conservation	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 Habitats Directive ... (See pages 9/28/45).	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. For the Blessington AFA the Kildare CDP has been discussed and it has been concluded that as the CDP has undergone appropriate assessment that there is no scope for in-combination effects. This assumption should not be made, and in addition there may be in-combination effects with other CDPs such as Dublin City DP. Proposed greenways and other amenity proposals in these two CDPs may have potential for in combination effects.	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	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).	Plans and programmes added as required to SEA and NIS.

NIS: Nature Conservation	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.	Text added to sections 8.1.3, 8.1.4, and 7.4.1.13 of the FRMP to provide more clarity on this.
NIS: Nature Conservation	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.	Text added to sections 8.1.3, 8.1.4, and 7.4.1.13 of the FRMP to provide more clarity on this.
NIS: Nature Conservation	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.	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	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.	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	<p>Freshwater Pearl Mussels are stated to be downstream of Avoca and Aughrim AFAs. They are listed on Annex II of the Habitats Directive and protected under the Wildlife Acts of 1976-2012 and they need to be protected from sediment entering the river during the construction or maintenance of any proposed measures. It is stated in the NIS that mitigation for Freshwater Pearl Mussels will be dealt with in the SEA. However, this has not been covered adequately in the SEA.</p>	<p>General mitigation and monitoring measures have been developed, and are included in the SEA and NIS. These include the following measures to mitigate against potential impacts of freshwater pearl mussels: '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'. Text in the 'Biodiversity, flora and fauna' part of Section 9 for Aughrim and Avoca includes 'good construction practice, monitoring and good timing of works.....to ensure that additional sediment does not enter the watercourse'.</p>
NIS: Nature Conservation	<p>Mitigation is given in the tables in section 5 such as table 5.1.3. Mitigation for physical disturbance of otters and lamprey and suspended sediments 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.</p>	<p>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.</p>
NIS: Nature Conservation	<p>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.</p>	<p>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.</p>
NIS: Nature Conservation	<p>It will be necessary to ensure that significant disturbance of water birds does not occur. At project stage each project will need measures to ensure this, including, if need be, limiting such works to outside the main water bird wintering period. Avoidance/mitigation given in the NIS, for example in table 5.2.3, suggests avoiding an over-wintering period of November to March. Normally such birds start to assemble during September and remain until March. This avoidance measure therefore needs to be reviewed.</p>	<p>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.</p>

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 Camps 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	Table 3.1.1 (page 13) of the NIS details the type of flooding in each AFA. However these do not correspond to the types of flooding detailed in the draft FRMP. In particular, Loughlinstown and Greystones have coastal flooding in the NIS whereas in the draft FRMP (pages 82 and 85) they are only listed as having fluvial flooding. The OPW and its consultants should ensure there is consistency between the FRMP, NIS and SEA.	Amended in NIS.
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 18). P.18 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	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'. This section does not appear to deal with mitigation for loss of habitats.	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	On page 30 it is stated that there are no freshwater pearl mussel catchments in UoM 10 but that there are five freshwater pearl mussel sensitive areas. This needs to be explained because either they are present in the catchment or they are not.	Text on p.30 has been amended to note that there are no SAC sites designated for the presence of FPM in this UoM but there are sensitive areas where this species are found.
SEA: Environment Report	It is stated in the NIS that further detail on protecting freshwater pearl mussels is presented in the SEA Environmental Report. Freshwater Pearl Mussels are stated to be downstream of both Aughrim and Avoca AFAs. However, while for Aughrim it is stated that in stream works may have to be completely avoided, for Avoca there is mention of recurring dredging events. It appears therefore that the issue of sedimentation and Freshwater Pearl Mussels has not been adequately dealt with in the SEA. While acknowledging that this is at Plan stage, this Department would have expected a more in depth analysis to show how mitigation and avoidance measures would prevent any sediments getting into the river which may impact adversely on Freshwater Pearl Mussels.	General mitigation and monitoring measures have been developed, and are included in the SEA and NIS. These include the following measures to mitigate against potential impacts of freshwater pearl mussels: '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'. Text in the 'Biodiversity, flora and fauna' part of Section 9 for Aughrim and Avoca includes 'good construction practice, monitoring and good timing of works.....to ensure that additional sediment does not enter the watercourse'.

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	Section 9 contains the assessment. As stated previously, 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 Act 1976-2012 and listed in 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 in the 'Biodiversity, flora and fauna' part of Section 9 for each AFA has been reviewed and amended to provide clarity that species assessed.
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 in UoM10), 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 sub objective 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.
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.
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### Environmental Protection Agency (EPA)

Subject	Comment	Response
Methodology and Approach	The application of a standardised MCA 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 AA 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 5).	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 measure 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 AA 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 Management System (EMS)/Environmental Management Plan (EMP based approach for the roll out of individual or suites of Plan measures.	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 AA in the Plans	The requirement for contractors to prepare CEMPs is welcome. These could include a requirement, where relevant, for plans to be prepared and actions to be undertaken, as appropriate, at project development and implementation, to minimise potential for adverse environmental effects and promote public awareness and engagement. Specific aspects to be addressed in CEMPs could include water quality management, erosion and sediment control, invasive species management, protected habitats and species (e.g. otters, fisheries, freshwater pearl mussel) protection, waste 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 AA in the Plans	Monitoring measures, including, where relevant, preconstruction monitoring, 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	There would be merit in adopting a standard programme for plan implementation and SEA related environmental monitoring across the range of Plans. This would facilitate a more coordinated approach to monitoring for the initial series of plans and subsequent reviews of the plans.	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 SEA ER should include details of the proposed environmental monitoring programme. This should be based on the relevant SEA environmental objectives.	Section 10 of the SEA ER outlines details of the proposed environmental monitoring.
Monitoring, Reporting and Review	(Following on from above) The section on 'monitoring and review of the FRMP' should also include SEA related environmental monitoring and any proposed AA 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. Detailed monitoring should be specified based on detailed project level information, not available at this strategic stage of study.
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 becomes 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 AA 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	Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. Included within section 8.1 of FRMP.

	arrangements and mechanisms to oversee implementation of the Plans and associated measures.	
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 Appropriate Assessment. The SEA and AAs 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.	Noted - 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.
Q1	Considering the relevant aspects of the above Plans (see page 3) would be useful to determine potential impacts of flood alleviation options on aquaculture, agricultural activities/commitments in these plans. Critical service infrastructure investment and associated water management activities may need to take account of additional flood risk.	Scoping Comment already addressed or passed onto OPW.
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 water 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 regional waste management plans.	Scoping Comment already addressed or passed onto OPW.
Q1	The relevance of significant key plans/projects to take into account in the plan area should also include Irish Water's Dublin Supply Project. The Plan should include a commitment to take this Project into account in terms of potential impact on flows/infrastructure in proposing flood alleviation options.	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 implication of flood risk and associated mitigation (if required). These include: (See page 13).	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: The UNESCO Biosphere designation for Dublin Bay; 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 also be considered.	Scoping Comment already addressed or passed onto OPW.
	(Following on from above) in relation to specific environmental issues to consider in the Eastern CFRAMs, one issue which isn't fully considered relates to potential for groundwater flooding relating to the 'Curragh gravels' in Co. Kildare.	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; Failte 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	Scoping Comment already addressed or passed onto OPW.

	ongoing liaison with EPA on the status of the WFD Application and related outputs.	
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	Scoping Comment already addressed or passed onto OPW.

	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".	
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 alleviation option assessments.	Scoping Comment already addressed or passed onto OPW.
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	Information included.

	summary tables should be included as appropriate.	
Additional Observations	Where SEA-related environmental topics are scoped out of the assessment, this should be explained along with the relevant justification.	Information included.
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 was recently published. 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	(Following on from above comment) Relevant aspects of the most recent reports on Water Quality, Air quality and GHG emissions should also be reflected in the baseline descriptions and associated Figures/Tables.	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 and SEA ERs should include and consider, where appropriate, the most recently available information on flooding within the individual Plan areas.	Recommendation for OPW for inclusion in synthesis report.
Additional Observations	EPA's website, <a href="http://catchment.ie">catchment.ie</a> provides a comprehensive GIS based data and information resource on Risk, Water Quality, Environmental Pressures, Protected Areas and Susceptibility. This information could be used to update relevant water related aspects of the SEA ER. This information should also be taken into account, in the detailed design of project level water quality and 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. <a href="http://www.catchments.ie">www.catchments.ie</a> 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. <a href="http://www.catchments.ie">www.catchments.ie</a> 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.	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.

Additional Observations	The mitigation measures proposed should also seek to address, where possible, potential catchment/sub-catchment 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	Where relevant, the potential impacts of the Plans on wider biodiversity including fisheries should be considered.	Wider biodiversity impacts were attempted to be included within SEA Objective 2(i). Fisheries included under SEA Objective 10(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 21 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 environmental monitoring programme should be included in the SEA ER and in the Plans.	Environmental monitoring proposed in SEA ER incorporated into FRMP section 8. Recommendation for inclusion in OPW synthesis report and Project Handover Notes.
Additional Observations	(Following on from above comment) Where relevant, trigger levels should be incorporated 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. The CEMPs required to be prepared for specific projects, and the suggested EMS and the suggested associated EMPs based approach, should also 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 should be captured in the overall monitoring programme.	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 recommendations in the AA 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 AA findings.	Information included.
Additional Observations	Where AA related monitoring is proposed, this should also be reflected in the overall environmental monitoring programme 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	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	Hydromorphology is a particularly important consideration, given that is likely to be one of the elements most impacted by individual proposals. Significant changes in hydromorphology can in turn affect the ecological status of a waterbody. It should be clarified whether the preferred options/measures will introduce additional channel modifications, and what these modifications (and associated environmental implications) would be	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. The inclusion of a requirement for more detailed hydrological/hydromorphological assessments at project level is welcome. This will 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	The mitigation measures should, where relevant, address the potential long term effects of increase 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	The Plans and project related CEMPs should address the potential for increased sediment in receiving waterbodies 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 discussed in further detail 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.
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### Inland Fisheries Ireland (IFI)

Subject	Comment	Response
UoM 07/08/09/10	In addition to traditional hard engineering methods to protect cities and towns CFRAM needs to encourage and support sustainable land management in rural areas in order to address long term vulnerability. Areas that need to be addressed include: runoff reduction and attenuation, floodplain management/storage, diversion channels and sediment management.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
07/08/09/10	(See page 3/8/16) ... IFI is concerned that misrepresenting the fisheries status of a watercourse may impact on the accuracy of the SEA and AA process. Additionally, the SEA process appears to be primarily pre-occupied with considering the effects of flood risk management measures on SACs, SPAs, NHAs (including proposed NHAs) and other designated nature conservation sites. IFI takes this opportunity to restate that 'All waters are designated as requiring protection under the terms of the WFD'.	Fisheries and angling, and water (including WFD) were included within the MCA and SEA assessments at the appropriate strategic level to try to highlight and mitigate for potential impacts. Assessment methodology was consulted with IFI as part of the national and regional stakeholder groups for the CFRAM Studies. Further detailed analysis will be undertaken on more detailed project level information, as shown in section 8.1 of the FRMP, which demonstrates the consent processes required before development of schemes.
07/08/09/10	IFI has concerns regarding the adequate/partial nature of the SEA. IFI's website provides information on fish surveys, angling sites and fish populations present at these sites. A desktop study would have yielded some valuable information to be included in the screening/assessment process. Accordingly, IFI would suggest that specific direct consultations need to take place with IFI so as to ensure that as much information as possible can be captured and to	A desktop study was undertaken and fish species found were included in local weightings and a discussion of environmental issues for the relevant waterbody. IFI were included as part of the stakeholder group for CFRAM and were invited to contribute feedback on the information provided.

	maximise the value derived from such consultation.	
07/08/09/10	There are also references to instream works being permissible outside of the period October to May. This is incorrect. For the avoidance of doubt, instream works are only permitted during the period July to September inclusive, following consultation and agreement with IFI.	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes the following: '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'.
07/08/09/10	IFI considers that a comprehensive CFRAM strategy will incorporate the following: (See page 4/5/8/16)	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
08/09/10	In considering the maps provided for the various Draft FRMPs for the Eastern UoM areas, AFA has various concerns and comments. It is noted from the various options maps provided that 'channel improvements' are proposed for the various locations where flood defence measures are proposed. IFI understands from the draft plans that so called 'channel improvements' or measures to increase channel conveyance may involve works such as weir/dam removal, reducing channel roughness and lowering of the river bed. While the removal of obsolete or derelict weirs or dams would be a positive development from a fisheries viewpoint, works such as reducing channel roughness and lowering of the river bed may result in significant 'channel deterioration' due to destruction and elimination of fisheries habitat. (See page 3/4/8/15).	Comment passed to OPW for inclusion in synthesis report.

08/09/10	The WFD legally obliges member states to protect the ecological status of river catchments and channels. Therefore, consideration has to be given to factors such as quality of instream habitat, flow, drainage, dams, bank erosion and riparian habitat etc. For this reason, IFI would have a strong preference for the draft options which do not include instream works (other than removal of derelict or obsolete dams and weirs) or so called OPW 'channel improvements'. IFIs preference generally is for flood walls, embankments, diversion channels, two stage channels, upstream attenuation/storage and land use management/natural flood risk management measures as appropriate.	Comment passed to OPW for inclusion in synthesis report.
10	IFI specific concerns relating to Aughrim AFA: the Aughrim and its tributaries represent an important salmonid system, supporting excellent stocks of Atlantic salmon, Brown trout and Sea trout, River Lamprey and Brook Lamprey. Salmonid water constraints will apply to any development in this area.	The following text has been added to UoM09 Aughrim Section 'Key Environmental Issues': The Aughrim River and its tributaries represent an important salmonid system, supporting excellent stocks of Atlantic salmon, Brown trout and Sea trout, River Lamprey and Brook Lamprey. Salmonid water constraints will apply to any development in this area. No change to local weighting.
10	IFI specific concerns relating to Aughrim AFA: All works on hard defences should be completed in line with a Construction Management Plan (CMP) which ensures that good construction practices are adopted throughout the construction period and contains mitigation measures to deal with potential adverse impacts identified in advance of the scheme. The CMP should provide a mechanism for ensuring compliance with environmental legislation and statutory consents.	Generic mitigation and monitoring measures have been developed for the NIS and SEA, which include this recommendation. OPW have added some mitigation to section 6 of FRMP.
10	IFI specific concerns relating to Aughrim AFA: we note that potential for direct construction phase impacts have been addressed and would add that these should comply with IFI's guidance document 'Guidelines on protection of fisheries during construction works in and adjacent to waters' which can be assessed at:(see page 17).	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes a stipulation that several guidelines, including IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters, should be consulted in further development of the preferred FRM options in the next detailed planning phase.

10	IFI specific concerns relating to Aughrim AFA: Option 1 involves hard defence work on a tributary of the Aughrim River called the Macreddin/Ballybreen Brook. There is a dam on this system that is impassable to fish. IFI hope to provide a diversion around the dam in the future to allow fish to move upstream to access excellent existing salmon habitat. Any hard defences at this location would hinder such a diversion. We request cognisance of this IFI strategy at this current stage of the CFRAM proposal and consultation with IFI would be welcomed. Removal of the dam would provide significant environmental gain as the spawning and nursery habitat will become accessible.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Avoca AFA: The Avoca system supports species listed in Annex II of the Habitats Directive including Atlantic Salmon, River Lamprey, Brook lamprey, Sea lamprey, and Freshwater Pearl Mussel. Please note that salmonid waters constraints will apply to any works in this area.	The following text has been added to UoM09 Avoca Section 'Key Environmental Issues': The Avoca system supports species listed in Annex II of the Habitats Directive including Atlantic Salmon, River Lamprey, Brook lamprey, Sea lamprey, and Freshwater Pearl Mussel. Salmonid waters constraints will apply to any works in this area. No change to local weighting.
10	IFI specific concerns relating to Avoca AFA: While the CFRAM study states that tributary 2 is non-sensitive, it does hold a resident population of Brown Trout. Because of this, salmonid constraints apply and any dredging planned is subject to an agreed method statement with IFI.	Text amended that tributary 2 holds a resident population of Brown Trout. Salmonid constraints apply. Non-sensitive comment is based on MCA scoring guidance.
10	IFI specific concerns relating to Avoca AFA: We note that potential for direct construction phase impacts have been addressed and would add that these should comply with IFI's guidance document.	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes a stipulation that several guidelines, including IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters, should be consulted in further development of the preferred FRM options in the next detailed planning phase.
10	IFI specific concerns relating to Avoca AFA: IFI welcomes the removal of three weirs on tributary 2 and hope that these works provide improved passage for fish.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Greystones and Environs AFA: While the Redford and Blacklion are not fisheries sensitive	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets

	systems, work planned for the Delgany area involves the Three Trout's River.	
10	<p>IFI specific concerns relating to Greystones and Environs AFA: The Three Trout's River represents an important local salmonid system and was last comprehensively surveyed by the ERFB in the late 1990's/ This system constituted a local natural heritage feature warranting careful protection and conservation (as identified in the recent Local Area Plan). A series of sites were electrofished from the confluence of several small streams near the Glenview Hotel downstream of the wastewater treatment plant at Greystones. Brown trout (<i>Salmo trutta</i>) were recorded at all six survey sites. Results from a more recent qualitative electrofishing exercise (2011) on the Three Trout Stream again recorded the presence of healthy populations of Brown trout. All life stages, fry through to adults were recorded from a section of channel in the Delgany area. Importantly, Sea trout are also native to this system and annually migrate upstream from tidal waters to the point where the stream meets the N11.</p>	<p>The following text has been added to UoM09 Greystones &amp; Environs Section 'Key Environmental Issues': The Three Trout's River represents an important local salmonid system, and constituted a local natural heritage feature warranting careful protection and conservation (as identified in the recent Local Area Plan). Brown trout (<i>Salmo trutta</i>) populations covering all life stages have recently been recorded on the Three Trout Stream. Sea trout are also native to this system and annually migrate upstream from tidal waters to the point where the stream meets the N11. No change to local weighting.</p>
10	<p>IFI specific concerns relating to Greystones and Environs AFA: Salmonid constraints apply to this area and any planned in stream works are subject to an agreed method statement with IFI and must be carried out in the open season (July - Sept)</p>	<p>Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes a stipulation that several guidelines, including IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters, should be consulted in further development of the preferred FRM options in the next detailed planning phase.</p>
10	<p>IFI specific concerns relating to Greystones and environs AFA: Box culverts that allow the free passage of fish should be used for the replacement of old culverts. IFI requirements for culvert design are available in the IFI's guidance document 'Guidelines on protection of fisheries during construction works in and adjacent to waters'. Any upgrades are subject to an agreed design and methodology with IFI.</p>	<p>Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets</p>

10	IFI specific concerns relating to Kilcoole AFA: The Kilpedder/Kilcoole River and associated surface waters in this area are important salmonid systems. This system supports both Sea trout and Brown Trout populations and has been identified in the Kilcoole Local Area Plan as the key local biodiversity resource. Thus, it is vital to note that salmonid waters constraints will apply to any works on this system.	The following text has been added to UoM09 Kilcoole Section 'Key Environmental Issues': The Kilpedder/Kilcoole River and associated surface waters in this area are important salmonid systems. This system supports both Sea trout and Brown Trout populations and has been identified in the Kilcoole Local Area Plan as the key local biodiversity resource. Salmonid waters constraints will apply to any works on this system. No change to local weighting.
10	IFI specific concerns relating to Kilcoole AFA: While option one is the preferred option for Kilcoole IFI would have a preference for option two as this involved the removal of 3 weirs on the Ballyloughlin River and would reinstate a more natural morphology. We hope that this could be reconsidered at this stage of the proposal or some combination of the two options that would involve weir removal could also be considered.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Loughlinstown AFA: The proposed works are within the catchment of the Carrickmines/Shanganagh system, a regionally important salmonid system. The Carrickmines system supports a resident population of Brown trout and a migratory population of Sea trout (both <i>Salmo Trutta</i> ). Thus, it is vital to note that salmonid waters constraints apply to any development in this area.	The following text has been added to UoM09 Loughlinstown Section 'Key Environmental Issues': The proposed works are within the catchment of the Carrickmines/Shanganagh system, a regionally important salmonid system. The Carrickmines system supports a resident population of Brown trout and a migratory population of Sea trout (both <i>Salmo Trutta</i> ). Salmonid waters constraints apply to any development in this area. No change to local weighting.
10	IFI specific concerns relating to Loughlinstown AFA: Salmonid constraints apply to this area and any planned in stream works are subject to an agreed method statement with IFI and must be carried out in the open season (July-Sept).	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Loughlinstown AFA: Any culvert upgrades (as suggested in the preferred option 4) are also subject to an agreed detail design and method statement for installation with IFI.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets

10	IFI specific concerns relating to Loughlinstown AFA: IFI would normally have concerns with the creation of storage areas and the potential effects on the downstream habitat and passage of fish. However, the Deansgrange stream is non-salmonid in the vicinity of Kilbogget Park as a result of impassable barrier to fish movement in its lower reaches. Therefore, our key issues with any works on this system are best practice and good housekeeping during construction works.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Newcastle AFA: The proposed development is located in the Newcastle River catchment. This river supports population of Brown and Sea trout (both <i>Salmo trutta</i> ). Thus salmonid waters constraints apply to any development in this area.	The following text has been added to UoM09 Newcastle Section 'Key Environmental Issues': The proposed development is located in the Newcastle River catchment. This river supports population of Brown and Sea trout (both <i>Salmo trutta</i> ). Thus salmonid waters constraints apply to any development in this area. No change to local weighting.
10	IFI specific concerns relating to Newcastle AFA: IFI welcomes the use of land management as an option for flood management. IFI would require a copy of the detailed design when completed.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets
10	IFI specific concerns relating to Newcastle AFA: We note that potential for direct construction phase impacts have been addressed and would add that these should comply with IFI's guidance document.	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes a stipulation that several guidelines, including IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters, should be consulted in further development of the preferred FRM options in the next detailed planning phase.
10	IFI specific concerns relating to Old Connaught/Wilford AFA: The preferred option 5 involves significant flow diversion on the Old Connaught River. While this has limited fisheries value, IFI consultation should be sought on new channel design. A new channel design that may enhance fisheries potential for the river would be welcomed.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets

10	IFI specific concerns relating to Wicklow AFA and Ashford Rathnew AFA: The proposed works are located in the catchments of the Rathnew River, the Vartry, Killiskey, Ballynerin and the Broomhall and Burkeen catchments. These are Salmonid catchments and salmonid waters constraints will apply to any development in this area.	These fish species have been recorded in the local weightings. The following text has been added to UoM09 Wicklow and Ashford & Rathnew Section 'Key Environmental Issues': The proposed works are located in the catchments of the Rathnew River, the Vartry, Killiskey, Ballynerin and the Broomhall and Burkeen catchments. These are Salmonid catchments and salmonid waters constraints will apply to any development in this area.
10	IFI specific concerns relating to Wicklow AFA and Ashford Rathnew AFA: The Rathnew River supports a significant population of Brown trout and provides spawning habitat for population of Atlantic salmon and sea trout. The River Vartry is an EU-designated salmonid system (S.I. No 293/1988: European Communities (Quality of Salmonid Waters) Regulations, 1988). The Vartry and several of its tributaries are exceptional in the area in supporting Atlantic salmon ( <i>Salmo salar</i> , listed under Annex II and V of the EU Habitats Directive) and Sea trout ( <i>Salmo trutta</i> ) in addition to resident Brown trout ( <i>Salmo trutta</i> ) populations. Recent data also indicates the presences of a spawning population of Sea lamprey ( <i>lampetra marinus</i> - Annex II of the EU's Habitats Directive) in the River Vartry (Ashford area). The killiskey serves as a very important spawning tributary for the Vartry main channel and as such is a key element in the productivity of the system as a whole.	These fish species have been recorded in the local weightings. The following text has been added to UoM09 Wicklow and Ashford & Rathnew Section 'Key Environmental Issues': Salmonid waters constraints will apply to any development in this area. A spawning population of Sea lamprey ( <i>lampetra marinus</i> ), on Annex II of the EU's Habitats Directive, is also present in the River Vartry.
10	IFI specific concerns relating to Wicklow AFA and Ashford Rathnew AFA: We note that potential for direct construction phase impacts have been addressed and would add that these should comply with IFI's guidance document.	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes a stipulation that several guidelines, including IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters, should be consulted in further development of the preferred FRM options in the next detailed planning phase.
10	IFI specific concerns relating to Wicklow AFA and Ashford Rathnew AFA: Any planned in stream works are subject to an agreed design and method statement with IFI and must be carried out in the open season (July-Sept).	Generic mitigation and monitoring measures have been developed to be included in the NIS and SEA. This includes the following: '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'.
10	IFI specific concerns relating to Wicklow AFA and Ashford Rathnew AFA: IFI have concerns with the creation of storage areas on the Broomhall and Burkeen catchments. Creating storage on a system has the potential for clocking the passage of fish upstream. There must also be guarantee that in low flow situations there will be sufficient water levels downstream to maintain fisheries habitat.	Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets

### 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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 FMRP 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	Section 6.5 of the final FMRP details co-ordination with the WFD. Measure 7.4.1.5 includes Land Use & NFM Measures.

	measures for FRM which will have a negative impact on WFD objectives.	
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 51 AFAs in the 4 Units of Management in the Eastern RBD, of which 33 have proposed structural measures in the FRMPs all of which could have negative impacts on water quality, the water environment and WFD status.... (See page 21)...	Comment noted.
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.	Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP. Acknowledgment of environmental risks and benefits of preferred measures added to section 7 of final FRMP.
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 <b>must</b> 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) . Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP.
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	Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.

	required regulatory system for their control has not been introduced.	
AFA Scale Options	The RBMPs further state that...(see page 25) ...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 from any of the Environmental Assessments.	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	While the OPW may argue that these issues are particular to the project level, they are crucial in terms of assessing the environmental implications and potential impacts of the measures being proposed in the FRMPs on the achievement of WFD objectives. This is crucial information on which to form the basis of a response to the consultation.	Section 6.5 of the final FRMP details co-ordination with the WFD. Section 6.6 details progression of the measures. Fig 8.1 added. 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.
AFA Scale Options	This measure on the application of the Guidelines on the Planning System and FRM (See page 27)... 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 27)...In this context, it is of utmost concern to SWAN that the draft FRMP (Page 57) states that: (See page 27)... 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	<p>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.</p>	<p>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.</p>
SUDS	<p>The draft FRMP (pg. 65 states:...(See page 29)... SWAN welcomes the inclusion of the SuDS measures, however in relation to new housing developments in the Guidelines stated that...(See page 29)...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 29)...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>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</p>	<p>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 arterial drainage work or FRM work at</p>

	is not clear if these were taken into account in the MCA analysis or SEA for the FRMP WFD objective.	nearby AFAs simultaneously. Provided the FRM work is timed correctly, cumulative impacts are not expected.
Ongoing Maintenance of Arterial Drainage Schemes	It is of utmost concern to SWAN that the Arterial Drainage Schemes are not included in the CFRAMs programme and no review of the schemes is proposed in the Plans as part of an integrated, catchment-based approach to flood management. There is an acceptance that their continuation is an incontrovertible certainty, without any assessment of a) their efficacy in terms of sustainable flood management or b) their impacts on the WFD status of the affected waterbodies. SWAN notes that it is stated in of the SEAs that 'In future planning cycles it is likely that the arterial drainage plans will be brought together with flood risk management planning under the CFRAM studies'. While we welcome this, it is unsatisfactory that this is imbedded in a table in Appendix F (Plans, Policies and Programmes) of the SEA with no discussion of this obvious strategy towards integrated flood management in the FRMPs themselves.	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.
Ongoing Maintenance of Arterial Drainage Schemes	This unquestioning persistence with the Arterial Drainage Schemes is evidenced in the SEAs for UoMs 07 and 08.....despite the fact that the negative impacts of such schemes are identified in, for example the SEA for UoM 07 and SEAs of the Flood Plans for the Western RBD UoMs also identify arterial drainage schemes as one of the contributors to the 'significant decline' in populations of the protected Freshwater Pearl Mussel there.	Text on maintenance of ADS in final FRMP has been amended and added to 7.4.1.7
Ongoing Maintenance of Arterial Drainage Schemes	Furthermore, the scoping report for the SEA for the Arterial Drainage Maintenance List of Activities 2016-2021 <sup>32</sup> states that "Arterial Drainage Maintenance Activities may have a direct or indirect impact on water quality.....(see p.31). However, it is difficult to determine the extent to which Arterial Drainage Maintenance Activities may affect water quality. Crucially, here it is identifying the knowledge gap and lack of data regarding the impacts of arterial drainage on water status. It is crucial that the FRMPs acknowledge this and include an action to address it, including a full assessment of the drainage schemes.	Text on maintenance of ADS in final FRMP has been amended and added to 7.4.1.7

Ongoing Maintenance of Arterial Drainage Schemes	In relation to integrating arterial drainage activities with flood and RBM planning, the more recent scoping report also states that “The 2016-2021 timescale has been adopted to facilitate the coordination with the River Basin Management Plans (RBMP) and Catchment Flood Risk Assessment and Management Studies (CFRAMS)”. However there is no evidence of such coordination. There is no mention of this SEA process in the draft Flood Plans nor any indication as to whether or how there is any operational integration of these three processes.....SEA public consultation for Arterial Drainage Maintenance Activities (2016-2021) will be issued in the final weeks of 2016, it is most unfortunate that this process is not even mentioned in the draft Plans or in any way integrated with them.	Text on maintenance of ADS in final FRMP has been amended and added to 7.4.1.7
Ongoing Maintenance of Arterial Drainage Schemes	The draft Flood Plans, which have has a key objective a ‘sustainable, long-term strategy’ for flood management, must include as a measure, a full review of the Arterial Drainage Schemes to assess their role in sustainable flood management and to ascertain compliance with the WFD – i.e. that these schemes are not leading to deterioration in the status of waterbodies on which they are carried out.	Text on maintenance of ADS in final FRMP has been amended and added to 7.4.1.7
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	Baltray, Drogheda, Mornington, Navan (UoM07), Laytown, Bettystown and Coastal areas AFA, Rush, Ratoath, Skerries (UoM08), Blessington, Dublin City AFA Carysfort Maretime AFA, Celbridge & Hazelhatch AFA, Clane AFA, Leixlip, Lucan to Chapelizod AFA, Maynooth AFA (UoM09), Aughrim AFA, Avoca AFA, Greystones & Environs, Kilcoole, Loughlinstown, Newcastle, Old Connaught / Wilford, Wicklow AFA and Ashford & Rathnew, Bray (UoM10): There is significant potential for the spread of invasive species due to works.	General mitigation and monitoring measures have been developed, and included in the SEA and NIS. These include measures to mitigate against the spread of invasive species due to the works. NIS: Invasive species impacts added to impact tables in Chapter 5
Natura Sites	Even after applying the avoidance and mitigation measures suggested, the FRM measures at Wicklow AFA have the potential to generate adverse residual impacts on The Murrough Wetlands SAC and The Murrough SPA., including direct loss of designated habitat and changes to hydrology and sedimentation affecting habitats at Tinakelly near Broad Lough. These FRM measures should not go ahead unless suitable compensation for habitat loss is put in place.	Acknowledgement of environmental risks and benefits of preferred measures included in section 7 of final FRMP. 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. Comment also noted for OPW synthesis report and Project Handover Sheets.
Natura Sites	Several AFAs (Greystones & Environs, Kilcoole, Newcastle, Wicklow AFA and Ashford & Rathnew) have the potential to impact on The Murrough SPA and The Murrough Wetlands SAC. Therefore there is the danger of cumulative effects if timing of works is not carefully planned.	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.
Natura Sites	Table 7.4.1 gives an assessment of likely impacts of proposed FRMO on NATURA 2000 sites within UoM10 from AA and SWAN review.	This assessment of likely impacts provided by SWAN has been reviewed and responded to under individual impacts.
Natura Sites	Aughrim, Avoca: Impacts on NATURA 2000 conservation objectives are unlikely. However there are potential impacts on downstream FPM from release of sediments/pollution.	The proposed FRM works are not located within any European site, and downstream freshwater pearl mussel populations are not within a European site; therefore impacts are not included in this AA. See additional revised mitigation provided in Section 6 of the NIS, including specific freshwater pearl mussel mitigation.
Natura Sites	Aughrim, Avoca, Loughlinstown, Newcastle, Old Connaught / Wilford: Likely loss of riparian vegetation at location of works.	The proposed FRM works are not located within any European site therefore the potential loss of riparian vegetation is not included in this AA. See additional revised

		mitigation provided in Section 6 of the NIS.
Natura Sites	Avoca: Weir removal may result in reduction in the extent of the wetted perimeter, increased flow velocities, changes to sediment deposition and erosion and displacement of riverbed species.	The proposed FRM works are not located within any European site, and therefore the potential impacts described are not included in this AA. See additional revised mitigation provided in Section 6 of the NIS.
Natura Sites	Greystones & Environs, Kilcoole, Newcastle: Due to location of AFA there is the potential for some impacts to Murrough Wetlands SAC and Murrough SPA predominantly from release of sediments/pollution and disturbance to birds during construction.	These potential impacts have been identified in the NIS and mitigation has been outlined. Additional revised mitigation is provided in Section 6 of the NIS.
Natura Sites	Loughlinstown AFA: Impacts on NATURA 2000 conservation objectives are unlikely. Bridges can be used as roosting sites for bats, any upgrade needs to be preceded by bat survey.	The proposed FRM works are not located within any European site and therefore direct impacts on protected species are not included in this AA. See additional revised mitigation provided in Section 6 of the NIS.
Natura Sites	Wicklow AFA and Ashford & Rathnew: There is likely to be loss of designated habitat at location of works at Murrough Wetlands SAC and Murrough SPA due to direct removal and changes in hydrological regime.	These potential impacts have been identified in the NIS and mitigation has been outlined. Additional revised mitigation is provided in Section 6 of the NIS.
Natura Sites	Wicklow AFA and Ashford & Rathnew: Weir removal may result in reduction in the extent of the wetted perimeter, increased flow velocities, changes to sediment deposition and erosion and displacement of riverbed species	Text in Table 5.9.3 of the NIS has been amend to include that weir removal may result in increased flow velocities, changes to sediment deposition and erosion of downstream sites. See additional revised mitigation provided in Section 6 of the NIS.
Natura Sites	Wicklow AFA and Ashford & Rathnew: In Tinakelly, hard defences will be constructed within the boundaries of the SAC at Broad Lough. In this area, there is potential for more significant impacts on the conservation objectives of designated saltmeadow and wetland habitats, which are a feature of the Broad Lough area.	These potential impacts have been identified in the NIS and mitigation has been outlined. Additional revised mitigation is provided in Section 6 of the NIS.

Natura Sites	Wicklow AFA and Ashford & Rathnew: Construction of hard defences within the SAC at Tinakelly near Broad Lough could adversely impact upon the hydrology and associated sediment dynamics in this area. This could lead to impacts upon wetland habitats, affecting their conservation objectives (maintenance of range or structure and functions). Construction of hard defences within the SPA at Tinakelly near Broad Lough could adversely impact upon the hydrology and associated sediment dynamics in this area. This could lead to impacts upon wetland habitats and to designated bird species that rely on these habitats.	These potential impacts have been identified in the NIS and mitigation has been outlined. Additional revised mitigation is provided in Section 6 of the NIS.
Natura Sites	Bray: SWAN were unable to obtain the EIS for this Drainage Scheme and are unable to independently assess impacts.	Comment noted.
Natura Sites	Bray: No NATURA 2000 sites would be directly impacted by the Scheme, but downstream effects via increased sedimentation and pollution are possible. Otters use urban rivers and there is potential for disturbance and loss of holts and associated riparian vegetation.	The proposed FRM works are not located within any European site and therefore direct impacts on protected species are not included in this AA. See additional revised mitigation provided in Section 6 of the NIS.
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 significance 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	This has been added to the NIS 6.1, paragraph 4

	subject to further AA where potential impacts have been identified in the NIS for the FRMP.	
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 <b>will be given</b></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	For all FRM measures we would strongly advocate for surveys for all mobile instream species of conservation concern (lamprey, salmon, white-clawed crayfish, otter) regardless of whether works are in SPA/SACs.	This has been recommended in NIS chapter 6 section 6.1.2.2
Mitigation	Avoid unnecessary vegetation clearance, particularly trees. A number of the AFAs in UoM10 have FRM measures that will occur along vegetated stretches of river bank. It is imperative to maintain as much of this vegetation as possible to prevent silt run-off, destruction of habitat and to prevent recolonization of invasive plant species.	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. Monitoring of mitigation measures to assess their effectiveness (FPM, Salmon populations, water quality) and, where necessary, prescribe additional measures.	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	Rush, Ratoath, Skerries (UoM08), Clane, Naas AFA, Newbridge AFA, Santry AFA (UoM09), Loughlinstown (UoM10): Culverts must be fitted with ledge to enable otters to use culverts when river in flood. The ledge must be provided with split ramps at each end such so that the ledge is accessible both from the water and the bank.	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	Ratoath (UoM08), Loughlinstown (UoM10): Survey by a qualified ecologist prior to commencement of the FRM to identify if bridge is used by roosting bats.	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	Aughrim, Avoca: Survey for FWPM and implement appropriate SOPs.	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	Aughrim, Wicklow AFA and Ashford & Rathnew: Weir removal works should not take place during the salmon, trout and lamprey spawning season.	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	Aughrim, Avoca, Loughlinstown, Old Connaught / Wilford: Apply mitigation measures in Chp. 6 of HDA.	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	Greystones & Environs, Kilcoole, Newcastle, Wicklow AFA and Ashford & Rathnew: A suitably trained ecologist should be present onsite during 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	Wicklow AFA and Ashford & Rathnew: Consider other FRM at Tinakelly to prevent permanent damage to SAC through habitat loss. Where no other options are possible, an equivalent area of high quality compensatory salt meadow and wetland habitat should be created within/adjacent to the Murrough Wetlands SAC within 2km of site of habitat loss.	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.
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	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.

	realised. Such strategies include: (see page 59).	
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 at these.	Section 8 of the final FRMP, Implementation of Measures & details further public consultation. Comment also noted for OPW 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	If all mitigation measures specified in the CFRAMS for UoM10 are implemented in full, the chances of significant effects from FRM works in the AFAs at Aughrim, Avoca, Greystones & Environs, Kilcoole, Loughlinstown, Newcastle and Old Connaught / Wilford are reduced. Any failure to consider further species survey works, specific site design to reduce potential impacts or lack of habitat enhancement works would result in some impacts on the local ecology within and outside NATURA 2000 sites. Mitigation measures will have to be strictly adhered to and monitored for effectiveness.	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.

Recommendations	<p>Even after applying the avoidance and mitigation measures suggested, the FRM measures at Wicklow AFA have the potential to generate adverse residual impacts on The Murrough Wetlands SAC and The Murrough SPA due to potential damage and disturbance to designated saltmeadow and wetland habitats in the Tinakelly area. The significance of the potential impacts would need to be investigated further at the detailed design phase, with site-specific hydrological, ecological and bird surveys required to undertake a detailed Stage 2 Appropriate Assessment. If impacts are still found to occur at this level after mitigation, alternative FRM measures that reduce the impact should be considered. Where no other FRM measures are possible, an equivalent area of high quality compensatory salt meadow and wetland habitat should be created within/adjacent to the Murrough Wetlands SAC within 2km of site of habitat loss.</p>	<p>More detailed assessment of potential impacts will be undertaken at the detailed feasibility stage, as given in section 8 for the 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.</p>
Recommendations	<p>Additionally, several AFAs (Greystones &amp; Environs; Kilcoole; Newcastle; Wicklow, Ashford &amp; Rathnew) have the potential to impact on The Murrough SPA and The Murrough Wetlands SAC. Therefore there is the danger of cumulative effects if timing of works is not carefully planned.</p>	<p>More detailed assessment of potential impacts will be undertaken at the detailed feasibility stage, as given in section 8 for the 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.</p>
Recommendations	<p>See p.130 for a summary of the key recommendations from SWAN under the following headlines: Integration of Implementation with WFD, in Particular Ensuring Compliance with WFD Obligations; Planning &amp; Regulatory Control and EIA; Mitigation Measures; Catchment-Based Approach: Integration with Land-Use Planning; Catchment-Based Approach: Arterial Drainage Schemes; Natural Water Retention/Flood Management Measures; Impacts on N2000 Sites; Public Participation</p>	<p>Information updated in FRMP to reflect these recommendations where possible. Comments also noted for OPW synthesis report.</p>
Integrated Flood-Risk Management	<p>Taking a catchment based approach represents a more sustainable way of dealing with floods.</p>	<p>Comments noted for OPW synthesis report. Catchment based approach taken by CFRAM studies.</p>

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 the development of the RBMP.	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 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 5.1 (see page 63).	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	Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.

	and WFD objectives (see page 39 for examples of successful implementation).	
Natural Water-Retention Measures	SWAN proposes that this recommendation for a number of catchment-scale natural flood management pilot studies should be included in the final FRMPs as a concrete measure, in order to demonstrate a commitment to the sustainable flood management approach, in line with the objectives of the CFRAM Programme.	Final FRMP 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.
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 42)... 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	Comment noted for OPW synthesis report. Recommendation for future policy. Final FRMP section 6.5 provides WFD co-ordination.

	approach to water management criticised in the 2010 RBMPs.	
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 Aarhus 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 structures are not yet fully in place, so that no mechanism exists by which to attempt to secure more stakeholder scrutiny and 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 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 of 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	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.

	for a longer consultation period was denied due to political pressure to have the plans completed by the end of 2016.	
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.

### Other Submissions

Subject	Comment	Final Response Text
Impacts on the water environment	BirdWatch Ireland is particularly concerned about the potential for measures proposed in the Plans to have negative impacts on water-dependent SACs and SPAs for birds (BirdWatch Ireland) / freshwater pearl mussel in the Aughrim River in UoM 10 (other respondents). Despite suggested avoidance and mitigation measures, the Appropriate Assessment indicated residual impacts on the Murrough Wetlands SAC and the Murrough SPA. This relates to the potential for significant damage and disturbance to wetland habitats in the Broad Lough area through construction of hard defences. There is a presumption in the Plans that mitigation measures will be correctly and effectively implemented in order to offset environmental impacts, but there are documented examples, such as the Bandon River in Cork, where mitigation measures have clearly not worked to prevent serious environmental impacts from flood works. BirdWatch Ireland is very concerned that similar damage could be done in these UoM areas by some of the flood defence work proposed.	Comment passed to OPW for inclusion within Consultation Synthesis Report and Project Handover Notes.

Lack of coordination with WFD	There is no indication in the FRMPs, or in the public domain, of ongoing operational cooperation between engineers working on implementation of the Floods Directive and environmental scientists working on the WFD. Officials sitting on committees/working groups and meeting infrequently is not sufficient in our/my view. There are no specific actions proposed in the Plans for Natural Flood Management Measures and catchment-based management, such as floodplain reclamation. These would have multiple benefits for flood management, the water environment and nature. The OPW should fund a catchment-scale project to assess and quantify this approach. There is a total lack of an integrated catchment-management approach.	Additional text added to final FRMP - Measure 7.4.1.5 (NFM) to better address this. Comment passed to OPW for inclusion within Consultation Synthesis Report.
Reliance on existing planning/consent process	We are/I am concerned to discover from the Plans that development in flood-prone areas is still permitted under certain circumstances. This should cease immediately. The Plans say that projects will be subject to the applicable planning and/or consent processes, however it is really confusing as to what these are, as many flood management works are exempt from planning, which is unacceptable. Also there are currently no dedicated regulatory controls on physical modifications to water bodies, as required by the WFD, meaning these Plans are being developed while there is a significant gap in the law. There are no up-to-date national guidelines on the use of Sustainable Drainage Systems (SuDs) in respect to surface water drainage for housing development, because review of the guidance on 'Site Development Works for Housing Areas', which was to set out best practice, has not taken place. The Plans should propose that these guidelines are completed as a matter of urgency.	Comment passed to OPW for inclusion within Consultation Synthesis Report. Being addressed under Sustainable Planning and Development Management in section 7 of final FRMP.
Lack of Integrated Governance/Frag mented Approach to Floods Management	There is no integrated governance system for managing water in a holistic way at a catchment level, and these Flood Plans represent a continuation of the traditional approach whereby flooding is managed separately from other water and land-use planning issues, despite these being intrinsically linked. It is unclear how the OPW will ensure the integrated implementation of the Plans 'in the whole', and whether and how the role of Local Authorities (and various other organisations) in implementing the FRMPs will be incorporated into water	Text added to FRMP to help address this, section 6.6.1 referring to the body responsible for the implementation of the measures with cross reference to Section 8 where the implementation, monitoring and review of the plan is detailed.

	management under the WFD. It is also unclear what happens if a Local Authority votes not to adopt the Floods Plans.	
Ineffective Public Participation	Engagement on the Plans was limited to consultation and information exercises, with little done to encourage active involvement. Given the lengthy and complex nature of the Plans and environmental reports, the consultation period was too short, limiting the ability of ordinary members of the public to respond in a meaningful or significant way.	Text added to FRMP to help address this, section 8.1.4, information added on Public & Stakeholder Consultation & Engagement
Data Gaps	BirdWatch Ireland wishes to draw your attention to the fact that a number of key relevant datasets on birds appear to have been excluded from the assessment of impacts of proposed measures on birds at plan and at project level. The results of the surveys outlined below should be included in any assessments undertaken for these plans and subsequent project level assessments. They include the following but others might also be relevant: Data from the Irish Wetland Bird Survey (I-WeBS, a National Parks and Wildlife Service (NPWS) project operational since 1994/95 and run by BirdWatch Ireland).	Birdwatch Ireland data was used to inform the screening of options. Further assessment will be required at the next detailed feasibility stage where site specific, rather than nationally consistent data can be used effectively. Section 8 of the final FRMP demonstrates the further detailed study, assessment, design and consultations to be undertaken as the next stages of any scheme in the FRMP. Note that this current stage is a strategic level assessment.
Breeding Curlew sites	Survey work conducted by BirdWatch Ireland in 2015 and 2016 has found approximately 130 breeding pairs down from about 5000 in 30 years ago. This bird is on the brink of extinction and all efforts should be made to protect it. Curlew has been found in sites in Co Kildare within this RBP and therefore the proposed FRMP actions and assessment should include impacts on breeding Curlew sites. It is imperative that data (held by NPWS) from these surveys and nest site locations are taken into account into any future assessments of plans and projects.	Comment passed to OPW for inclusion within Consultation Synthesis Report and Project Handover Notes. This information can be used at the next detailed feasibility stage where site specific, rather than nationally consistent data can be used effectively.
BirdWatch Ireland report for OPW on Potential Impacts of Flood Risk Management Methods on Birds in Ireland	BirdWatch Ireland was commissioned by the OPW to conduct research into the impacts on birds of flood mitigation options and on coastal realignment but there is NO indication in any of the documents for this FRMP that the conclusions of these reports have been taken into account in. They are not included in any list of references. The reports are: Nuttall, L., and Crow, O., (2012) Potential Impacts of Flood Risk Management Methods on Birds in Ireland and Lauder, C., and Crowe, (2014) Screening of Appropriate Natura 2000	This information was incorporated into the SEA ER - Appendix A - "High Level Impacts of FRM Methods" which was used to define the likely positive and negative environmental impacts of implementing the various FRM methods. These references have been added to the SEA ER.

	<p>sites for Managed Realignment. These publications should be reviewed and their outcomes incorporated into assessments. We include them as attachments with this submission. They are relevant for application to all the other FRMPs as well. See p.5 for a summary of the work.</p>	
Birds in the wider countryside	<p>The SEA, in its review of impacts on biodiversity, must consider impacts to Birds of Conservation Concern in Ireland which includes red and amber listed species in Ireland<sup>1</sup>. The impacts on Annex 1 species outside of SPAs must also be taken into account in assessments. The SPA network does not cater for all bird species nor do the Qualifying Interests (QIs) of SPAs restrict themselves to the SPA network. BirdWatch Ireland does not believe that there has been adequate assessment of birds of the impacts to birds outside of the SPA network. In particular we are concerned for impacts wintering waterbirds (ducks, swans, geese and waders) by loss of wetland habitat. Several of the QIs which could be impacted by proposed measures have international agreements protecting them under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (1999).</p>	<p>Text has been updated in SEA and NIS to reflect mobile species that may be present outside of designated areas. This has been dealt with conservatively in this strategic level assessment. Further assessment will be required at the next detailed feasibility stage where site specific, rather than nationally consistent data can be used effectively. Section 8 of the final FRMP demonstrates the further detailed study, assessment, design and consultations to be undertaken as the next stages of any scheme in the FRMP.</p>
Cumulative Impacts	<p>BirdWatch Ireland is concerned with the potential for overarching cumulative impacts on bird populations from the suite of works being presented in this FRMP as well as in combination with other FRMPs in Ireland.</p>	<p>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.</p>

Regulatory Environment for Implementation of CFRAMS	<p>BirdWatch Ireland performs a Casework function where we review planning applications for different types of development proposals. We have come across several instances where projects processed through the local authority planning system were screened out for Appropriate Assessment(AA) where full AA was actually required to ensure that there is no significant impact on qualifying interests of Special Areas of Conservation and Special Protection Areas for birds. We wish to raise the issue of insufficient resourcing of staff with ecological expertise and knowledge of AA at local authority level and that this needs to be remedied to ensure that the CFRAM projects which go ahead are adequately assessed and monitored. BirdWatch Ireland also asks for assurance on the monitoring of mitigation measures and conditions applied to planning consents at project level. There can be a poor level of monitoring of planning conditions and these issues must be rectified in advance of any implementation of the FRMP. We suggest that independent monitoring needs to be undertaken to ensure appropriate implementation and monitoring of mitigation measures and planning consent conditions. Similarly with any projects undertaken through the Arterial Drainage Act, we seek assurances that these projects will meet EIA and AA processes and will meet legal obligations under the Birds Directive and the Habitats Directive.</p>	<p>Comment passed to OPW for inclusion within Consultation Synthesis Report. Mitigation and monitoring proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 and monitoring to section 8 of the final 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>
NFM	<p>The FRMPs do not explore in any significant or meaningful way the contribution that natural flood management (NFM) can make to addressing flood risk in Ireland. The FRMPs do not in any way reflect the required shift in policy emphasis from land drainage and hard flood defences towards the reduction of flood risk through sustainable management of rivers and coastlines in a holistic catchment wide approach.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>

Arterial drainage	<p>Respondent welcomes the acknowledgement in the draft FRMPs that 'the primary focus of arterial drainage schemes is not for flood relief but for the improvement of agricultural land' however seek further recognition in the FRMP for these UoMs that while arterial drainage carried out for agricultural purposes can help to reduce the depth of local flooding, commonly on agricultural land, by increasing the volume that passes through a channel at any given time, it increases flood peak and thus exacerbates downstream flooding.</p> <p>Respondent recommends that the FRMPs reconsider the widespread continuation of arterial drainage as a flood management measure. The approach of 'slowing the flow' as practiced in natural flood management has not been adequately considered or addressed in the plans.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>
Landuse management and NFRM measures	<p>Degree to which NFM approaches to flood attenuation and reduction of flood risk in these FRMPs is a major shortfall. To state simply that the OPW is liaising with the EPA and other agencies (no other agencies are actually stated) as a measure, without any specific objectives or actions suggests that there is no serious consideration of NFM in the Irish CFRAMS approach.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>
Landuse management and NFRM measures	<p>To address this shortfall, the plans will need to include specific actions to Publish guidance for implementing 'Land Use Management and Natural Flood Risk Management Measures' to be used by the Local Authorities, the OPW, DAFM, and all other interested groups and responsible agencies. Ideally this would be produced a joint guidance completed and published by the OPW and the EPA, in recognition of the multiple benefits of NFM.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>
Landuse management and NFRM measures	<p>Allocate funding for 3 sub- catchment pilot schemes implementing NFM with adequate resources for bringing in external expertise, involving local communities, and utilising detailed hydrological modelling and monitoring</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>

Landuse management and NFRM measures	FRMPs do not indicate any sufficient level of ongoing operational cooperation between engineers working on implementation of the Floods Directive and environmental scientists working on the WFD. The proposed incorporation of NFM measures in the FRMPs however, limits NFM to areas 'where phosphorous loading is a pressure on ecological status.' This limitation suggests that NFM is only relevant in such areas and fails to recognise that NFM must be considered as a cost effective approach to reducing flood peak.	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this. Information on coordination and interaction with WFD included in section 6 of final FRMP.
Landuse management and NFRM measures	NFM is an approach that is virtually unknown in Ireland and has not been trialled, piloted or widely discussed in any relevant spheres here, despite the growing problem of widespread flood damage in recent years. Many of the approaches to flood management that are collectively termed /Natural flood management; or 'Catchment scale flood management' have multiple benefits e.g. slowing the slow, water quality, biodiversity. A number of studies have demonstrated that many small interventions throughout the catchment can act to collectively reduce flood peak and thus lower the probability of flood damage in any given year. Measures must be based on detailed catchment wide hydrological modelling and carefully located and designed in order to be effective. Pilot schemes suggest that NFM works best in association with other flood alleviation and flood protection measures.	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.
Landuse management and NFRM measures	For the UoM 7,8,9 and 10 the following natural flood management measures need all to be considered in detail as cost effective approaches to reducing flood risk:	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.
Landuse management and NFRM measures	Blanket bogs: (e.g. upland drainage blocking) and raised bogs (to assess the benefit of peatland restoration at any given site hydrological modelling followed by implementation of small scale peatland drain blocking will be necessary) (see p.5 for further details).	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.

Landuse management and NFRM measures	Woodland creation: (woodlands can mitigate flood risk by reducing the speed at which water moves over the land surface and thus slowing the flow of floodwaters). In England, the Forestry Commission has worked with the Environment Agency to implement a 'Woodlands for Water' scheme. Landowners are incentivised with RDP payments to target planting to reduce flood risk and/or diffuse pollution. In addition, pilot schemes for tree planting for flood alleviation are needed in Ireland, which incorporate detailed hydrological modelling component (see p.6/7 for further details).	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.
Landuse management and NFRM measures	Agricultural land management: Heavily engineered flood alleviation and flood protection works has been the focus of flood management to date. However the root causes of flooding – land management and loss of functional floodplains – are rarely addressed. Breaking field drains to restore wet grassland and even to re-create wetlands in these areas to attenuate flood peak should be considered.....or...integrated drainage to link runoff to features such as wetlands or to engineered flood storage areas could attenuate flooding. Respondent suggests a small scale catchment trial. Making land available for flooding is a practice that is applied in the UK to hold back floodwaters in strategic locations and thus to slow the movement of water in to flood prone villages and towns, thus reducing flood peak (potentially incentivising with payments through agri-environment schemes).	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.
Landuse management and NFRM measures	Floodplain management: To protect towns and cities against economic damage caused by large flood events, the reduction of flood peak by the management of alluvial floodplains upstream of sensitive areas is considered to be a particularly cost-effective flood attenuation measure. Embankments built along a river sever the connection in all but extreme events from the floodplain which would otherwise naturally store floodwaters and attenuate downstream flooding. This does not appear to be reflected in the FRMPs. In consideration of the measures, 8.2.2.2 fails to state that flood defences such as flood walls and flood defence embankments can serve to exacerbate downstream flooding by curtailing the water spillage in other areas that would traditionally flood. Hydrological	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.

	modelling allows those parts of the catchment that are most effective at flood attenuation to be identified, and supports should be targeted at those most effective parts of the catchment, i.e., alluvial floodplains.	
Landuse management and NFRM measures	Development in floodplains: Development in floodplains must cease altogether as it not only reduces the capacity of floodplains to store flood waters, thus exacerbating downstream flooding, but it also puts the responsibility on the public authorities who have licenced the developments to protect these properties out of the public purse. The draft FRMPs revert to existing planning consent procedures which to date have not been sufficiently robust to prevent development in floodplains. The FRMPs must contain stronger measures to prevent all development in flood prone areas. The FRMPs also do not address the exempted developments, which are not sufficiently catered for in the existing planning process and which need to be prohibited in floodplains because of the increased flood risk that they pose to property downstream.	Comment passed to OPW for inclusion within Consultation Synthesis Report. Being addressed under Sustainable Planning and Development Management in section 7 of final FRMP. Assessment of local area plan, planning zones, is being undertaken in separate reporting under the CFRAM studies.
Landuse management and NFRM measures	SUDS: The highly urbanised nature of the Eastern CFRAMS and the UoMs 7, 8, 9 and 10 and the rates of urban development and associated increase in paved areas discussed in the reports means that SUDS should be considered in more detail. Implementation of SUDS as a measure in these UoMs is by way of the 'Guidelines on the Planning System and Flood Risk Management (DECLG/OPW, 2009)' to be implemented as existing duties of the Planning authorities is not an adequate measure for furthering SUDS implementation. We would urge that the FPMS in this (and other relevant UoMs) extend the measure to include facilitation, provision of guidance, and other means to encourage and even require uptake of SUDS. Whilst the knowledge of SUDS and its application in urban areas will need to be facilitated and supported by the OPW, responsibility of for SUDS should rest with the Local Authorities.	Comment passed to OPW for inclusion within Consultation Synthesis Report. Being addressed under Sustainable Planning and Development Management in section 7.4.1.2 of final FRMP, Prevention: Sustainable Urban Drainage Systems. Assessment of SuDS potential is being undertaken in separate reporting under the CFRAM studies.

Landuse management and NFRM measures	<p>Coastal NFM: Many natural coastal features, such as salt marshes, mudflats, coastal wetlands and sand dunes all provide natural coastal flood defence. Restoration of intertidal habitats such as mudflats and saltmarsh to create space to dissipate wave and tidal energy is a cost effective approach to reducing flood risk, especially that associated with sea level rise, in many parts of the coastline. As the coastlines of UoMs 8, 9 and 10 have largely 'soft' coasts, the protection, restoration and management of coastal habitats must be considered as part of these FRMPs. Protection and restoration of these habitat types has major additional benefits to biodiversity and helping the resilience of ecosystems to climate change impacts such as sea level rise and associated 'coastal squeeze'.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>
Landuse management and NFRM measures	<p>Recommend that a specific national working group for Land Use Management and Natural Flood Risk Management Measures be established under the CFRAMS process to advise the further development of all FRMPs. The working group should be charged by the OPW and involve the EPA, Department of Agriculture, Food and the Marine (DAFM), the Department of Communications, Climate action and Environment, NPWS, Local Authorities. Structures for the participation of experts and interested parties should be factored in to the structure of the working group. The working group should bring in expertise from the UK, where many pilot schemes have been running for several years and where understanding of NFM is more advanced than in Ireland and where NFM has been researched a piloted. An NFM working group should be resourced by the OPW and charged with investigating NFM approaches for Ireland, producing guidance for use within this CFRAMS planning cycle and given the funding to initiate at least 3 pilot NFM projects in varying catchment types across Ireland in 2017. A shift from hard engineered flood protection toward catchment based NFM measures to reduce flood risk will require a significant programme of public engagement from the outset.</p>	<p>Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.</p>

Landuse management and NFRM measures	Natural flood management Handbook published by the Scottish EPA (SEPA) in 2015 should be utilised to improve the incorporation of NFM in to all the FRMPs by way of adopting specific actions on NFM in all the UoMs (see reference p.10).	Recommendation passed to OPW for inclusion within Consultation Synthesis Report. Natural flood management techniques may be looked at further at detailed feasibility stage. Text provided in section 7 of final FRMP on further investigation of this.
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