Strategic Environmental Assessment Statement

Boyne

2018
Strategic Environmental Assessment Statement

For

River Basin (07) Boyne Flood Risk Management Plan

Areas for Further Assessment included in the Plan:

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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  
UoM07 - Boyne  
Strategic Environmental Assessment  
Statement  

**DOCUMENT CONTROL SHEET**

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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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<th>Description</th>
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<td>Appropriate Assessment</td>
</tr>
<tr>
<td>AFA</td>
<td>Area for Further Assessment</td>
</tr>
<tr>
<td>CAFE</td>
<td>Clean Air for Europe [Directive]</td>
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<tr>
<td>CBA</td>
<td>Cost Benefit Analysis</td>
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<td>CFGRAM</td>
<td>Catchment Flood Risk Assessment and Management</td>
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<td>CJEU</td>
<td>Court of Justice of the European Union</td>
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<td>Department of Agriculture, Food and the Marine</td>
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<td>DAHG</td>
<td>Department of Arts, Heritage and the Gaeltacht</td>
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<td>DAHRRGA</td>
<td>Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs</td>
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<td>Department of Communications, Energy and Natural Resources</td>
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<td>DD</td>
<td>Drainage District</td>
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<td>DECLG</td>
<td>Department of Environment, Community and Local Government</td>
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<td>DEHLG</td>
<td>Department of Environment, Heritage and Local Government</td>
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<td>DII</td>
<td>Department for Infrastructure</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>ERBD</td>
<td>Eastern River Basin District</td>
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<td>FEMFRAM</td>
<td>Fingal East Meath Flood Risk Assessment and Management Study</td>
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<td>FPM</td>
<td>Freshwater Pearl Mussel</td>
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<td>FRA</td>
<td>Flood Risk Assessment</td>
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<td>FRM</td>
<td>Flood Risk Management</td>
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<td>FRMP</td>
<td>Flood Risk Management Plan</td>
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<td>GIS</td>
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<td>GSI</td>
<td>Geological Survey Ireland</td>
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<td>HA</td>
<td>Hydrometric Area</td>
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<td>HPW</td>
<td>High Priority Watercourse</td>
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<td>IFI</td>
<td>Inland Fisheries Ireland</td>
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<td>IPP</td>
<td>Individual Property Protection</td>
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<td>IRBD</td>
<td>International River Basin District</td>
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<td>IROPI</td>
<td>Imperative Reasons of Overriding Public Interest</td>
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<tr>
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<td>Local Authority</td>
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<td>Local Area Plan</td>
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<td>Marine Irish Digital Atlas</td>
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<td>Medium Priority Watercourse</td>
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<td>NBIRBD</td>
<td>Neagh Bann International River Basin District</td>
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<td>NHA</td>
<td>Natural Heritage Area</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<td>NIEA</td>
<td>Northern Ireland Environment Agency</td>
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<td>NIS</td>
<td>Natura Impact Statement</td>
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<td>NPWS</td>
<td>National Parks and Wildlife Service</td>
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<td>NWIRBD</td>
<td>North Western International River Basin District</td>
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<td>NWNB</td>
<td>North Western – Neagh Bann</td>
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<td>OPW</td>
<td>Office of Public Works</td>
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<td>OSi</td>
<td>Ordnance Survey Ireland</td>
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<td>OSPAR</td>
<td>(Oslo Paris) Convention for the Protection of the Marine Environment of the North-East Atlantic</td>
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<tr>
<td>PFRA</td>
<td>Preliminary Flood Risk Assessment</td>
</tr>
<tr>
<td>P/P</td>
<td>Plan or Programme</td>
</tr>
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<td>RBD</td>
<td>River Basin District</td>
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<tr>
<td>RBMP</td>
<td>River Basin Management Plan</td>
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<tr>
<td>SAC</td>
<td>Special Area of Conservation</td>
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<td>SEA</td>
<td>Strategic Environmental Assessment</td>
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<td>SERBD</td>
<td>South Eastern River Basin District</td>
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<td>SI</td>
<td>Statutory Instrument</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
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<td>SoP</td>
<td>Standard of Protection</td>
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<td>SPA</td>
<td>Special Protection Area</td>
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<td>SSA</td>
<td>Spatial Scale of Assessment</td>
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<td>SuDS</td>
<td>Sustainable Drainage Systems</td>
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<td>SWRBD</td>
<td>South Western River Basin District</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>UoM</td>
<td>Unit of Management</td>
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<tr>
<td>WFD</td>
<td>Water Framework Directive</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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<td>WRBD</td>
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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 07 (UoM07 – Boyne River Basin) under the Eastern Catchment-based Flood Risk Assessment and Management (CFRAM) Study, hereafter referred to as the Plan. 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 1000km²) and their associated coastal areas, or conglomerations of smaller river basins and their associated coastal areas. The UoM boundaries match the HA boundaries within the 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.

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


¹ Directive on the assessment and management of flood risks, 2007/60/EC
2 SUMMARY OF SEA PROCESS

The SEA Directive requires that certain Plans and Programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, are 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

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<td>Determines whether SEA is required for a Plan / Programme, in consultation with the designated statutory consultees.</td>
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<tr>
<td>Scoping</td>
<td>Determines the scope and level of detail of the assessment for the SEA, in consultation with the designated statutory consultees.</td>
<td>Completed in 2015</td>
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<tr>
<td>Environmental Assessment</td>
<td>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.</td>
<td>Completed in 2016</td>
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<tr>
<td>SEA Statement</td>
<td>Summarises the process undertaken and identifies how environmental considerations and consultations have been integrated into the final Plan / Programme.</td>
<td>Current Stage</td>
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### 2.1 SEA SCREENING

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

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

The OPW SEA Screening from 2011 for all the CFRAM Studies in Ireland can be found at: [http://east.cfram.com/](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/](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 Boyne River Basin. The preparation of an Environmental Report on the likely significant effects on the environment of the Plan for the Boyne 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

Preliminary Flood Risk Assessment
National Public Consultation: Aug - Nov 2011

Flood Maps
National Public Consultation: November – December 2015

Flood Risk Management & SEA Objectives
FRM Objectives - National Public Consultation: October - November 2014
Consultation (Independent Poll) on Objective Weightings: April - May 2015
SEA Objectives - Stakeholder Workshops, Jan 2012, July 2013, September 2015, April 2016 & Sept 2016

Flood Risk Management Options

Flood Risk Management Plans
12 No. Public Consultation Days: September 2016 - November 2016
National Public Consultation: July – December 2016
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 Boyne 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 Boyne River Basin. A Plan level Stage 2 AA was undertaken in parallel with the SEA process and a Natura Impact Statement (NIS) was prepared. The findings of the AA were used to guide the development of the alternatives to be considered in the Plan. The findings of the NIS were integrated into the SEA Environmental Report and subsequently summarized in Section 7 the Plan. The AA for the Plan investigated the potential direct and indirect impacts of the proposed works on the integrity and interest features of European sites, alone and in combination with other plans and projects, taking into account the sites' structure, function and conservation objectives. Where potentially significant adverse impacts were identified a range of mitigation and avoidance measures were suggested to help eliminate them by design or reduce them to acceptable levels. As a result of this AA it has been concluded that, provided the avoidance and mitigation measures suggested are adopted at the project stage, the proposed draft FRM measures in the Boyne River Basin Plan will not have significant adverse impacts on any European sites.
2.6 SEA STATEMENT

The main purpose of the SEA Statement is to provide information on the decision-making process for the Plan in order to illustrate how decisions were taken, making the process more transparent. In doing so, the SEA Statement documents 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 Boyne 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 Boyne 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 Boyne 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 Boyne 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, an 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 Boyne 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.

![Diagram](image.png)

Figure 3.1 Interactions of the Plan and Environmental Assessments
The main steps of environmental input to the Plan can therefore be summarised as follows:

1 - Preliminary Screening of FRM Methods

2 - Multi-Criteria Analysis of FRM Options (Alternatives)

3 - Environmental Assessment of Preferred Options.

### 3.1 PRELIMINARY SCREENING OF FRM METHODS

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

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

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

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>Implement no new flood risk management measures and abandon any existing practices.</td>
</tr>
<tr>
<td>Maintain Existing Regime</td>
<td>Continue with any existing flood risk management practices, such as reactive maintenance.</td>
</tr>
<tr>
<td>Do Minimum</td>
<td>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.</td>
</tr>
<tr>
<td>Planning and Development Control</td>
<td>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.</td>
</tr>
<tr>
<td>Building Regulations</td>
<td>Regulations relating to floor levels, flood-proofing, flood resilience, sustainable drainage systems, prevention of reconstruction or redevelopment in flood-risk areas, etc.</td>
</tr>
<tr>
<td>Catchment Wide Sustainable Drainage Systems (SuDS)</td>
<td>Implement SuDS on a catchment wide basis.</td>
</tr>
<tr>
<td>Land Use Management (NFM)</td>
<td>Creation of wetlands, riparian buffer zones, etc.</td>
</tr>
<tr>
<td>Strategic Development Management</td>
<td>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.)</td>
</tr>
<tr>
<td>Flood Warning / Forecasting</td>
<td>Installation of a flood forecasting and warning system and development of emergency flood response procedures.</td>
</tr>
<tr>
<td>Public Awareness Campaign</td>
<td>Targeted public awareness and preparedness campaign.</td>
</tr>
<tr>
<td>Upstream Storage</td>
<td>Single or multiple site flood water storage, flood retardation, etc.</td>
</tr>
<tr>
<td>Improvement of Channel Conveyance</td>
<td>In-channel works, floodplain earthworks, removal of constraints / constrictions, channel / floodplain clearance, etc.</td>
</tr>
<tr>
<td>Hard Defences</td>
<td>Construct walls, embankments, demountable defences, Rehabilitate and / or improve existing defences, etc.</td>
</tr>
<tr>
<td>Relocation of Properties</td>
<td>Relocation of properties away from flood risk.</td>
</tr>
<tr>
<td>Diversion of Flow</td>
<td>Full diversion / bypass channel, flood relief channel, etc.</td>
</tr>
<tr>
<td>Other works</td>
<td>Minor raising of existing defences / levels, infilling gaps in defences, site specific localised protection works, etc.</td>
</tr>
<tr>
<td>Individual Property Flood Resistance</td>
<td>Protection / flood-proofing and resilience.</td>
</tr>
</tbody>
</table>
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 Boyne 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 Boyne 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

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>OBJECTIVE</th>
<th>SUB-OBJECTIVE</th>
<th>Related SEA Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td>a</td>
<td>Minimise risk to human health and life</td>
<td>i) Minimise risk to human health and life of residents</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii) Minimise risk to high vulnerability properties</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Minimise risk to community</td>
<td>i) Minimise risk to social infrastructure and amenity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii) Minimise risk to local employment</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>a</td>
<td>Minimise economic risk</td>
<td>i) Minimise economic risk</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Minimise risk to transport infrastructure</td>
<td>i) Minimise risk to transport infrastructure</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>Minimise risk to utility infrastructure</td>
<td>i) Minimise risk to utility infrastructure</td>
</tr>
<tr>
<td></td>
<td>d</td>
<td>Minimise risk to agriculture</td>
<td>i) Minimise risk to agriculture</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>a</td>
<td>Support the objectives of the WFD</td>
<td>i) Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives.</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Support the objectives of the Habitats Directive</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>Avoid damage to, and where possible enhance, the flora and fauna of the catchment</td>
<td>i) Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other known species of conservation concern.</td>
</tr>
<tr>
<td></td>
<td>Protect, and where possible enhance, fisheries resource within the catchment</td>
<td>Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.</td>
<td>F</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>e</td>
<td>Protect, and where possible enhance, landscape character and visual amenity within the river corridor</td>
<td>i) Protect, and where possible enhance, visual amenity, landscape protection zones and views into / from designated scenic areas within the river corridor.</td>
<td>L</td>
</tr>
<tr>
<td>f</td>
<td>Avoid damage to or loss of features, institutions and collections of cultural heritage importance and their setting</td>
<td>i) Avoid damage to or loss of features, institutions and collections of architectural value and their setting.</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii) Avoid damage to or loss of features, institutions and collections of archaeological value and their setting.</td>
<td>H</td>
</tr>
<tr>
<td>4 Technical</td>
<td>a</td>
<td>Ensure flood risk management options are operationally robust</td>
<td>i) Ensure flood risk management options are operationally robust</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Minimise health and safety risks associated with the construction, operation and maintenance of flood risk management options</td>
<td>i) Minimise health and safety risks associated with the construction, operation and maintenance of flood risk management options</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>Ensure flood risk management options are adaptable to future flood risk, and the potential impacts of climate change</td>
<td>i) Ensure flood risk management options are adaptable to future flood risk, and the potential impacts of climate change</td>
</tr>
</tbody>
</table>

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 Boyne 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**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Proposed Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary disturbance and destruction of existing habitats and flora, and the displacement of fauna, along the river corridors.</td>
<td>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</td>
</tr>
<tr>
<td>Topic</td>
<td>Details</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>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 recolonization 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</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Temporary displacement of otters, birds, fish and other fauna during the construction period</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Impact on European sites, habitats and species from construction or operation of FRM scheme.</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Spread of invasive species during construction.</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Culverting impacts on faunal passage, where applicable.</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Impacts on Freshwater Pearl Mussel</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Dredging impacts on biodiversity, flora and fauna.</strong></td>
<td>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...</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Construction disturbance to the local population.</td>
<td>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.</td>
</tr>
<tr>
<td>Health and Safety risk to the local population during construction works.</td>
<td>Good construction management practices and planning of works. Adoption of Construction Best Practice and measures outlined in the CEMP.</td>
</tr>
<tr>
<td>Increased flood risk to or loss of access to agricultural soil resource.</td>
<td>Consultation and agreement with local landowners on detailed designs and residual impacts of flooding. Potential for requirement of compensation for increased inundation.</td>
</tr>
<tr>
<td>Removal of soil and rock material via dredging and excavation works during construction.</td>
<td>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.</td>
</tr>
<tr>
<td>De-watering during construction may cause temporary draw down of water table close to works.</td>
<td>Ensure that only small areas of excavation works are open at any one time to reduce the potential volumes of groundwater to be removed.</td>
</tr>
<tr>
<td>Temporary disturbances of water quality during the construction phase</td>
<td>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.</td>
</tr>
<tr>
<td>Potential for pollution incidents during the construction phase.</td>
<td>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: channeling 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.</td>
</tr>
<tr>
<td>Potential requirement for maintenance dredging as siltation of the channel and</td>
<td>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</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Excess vegetative growth will naturally occur.</td>
<td>Will only be permitted under the WFD if the strict conditions set out in WFD Article 4 are met. Where appropriate, watercourses affected by a scheme should be subjected to a River Hydromorphology Assessment Technique survey (RHAT) for pre and post scheme scenarios. Adhering to good work practices including; diversion of discharges to settlement ponds, construction of silt traps, construction of cut-off ditches to prevent run-off from entering excavations, granular materials placed over bare soils. If a channel is maintained on an as required basis, using good planning, timing and BAT, there should be only minimal temporary disturbance to the local water quality. Adhere to OPW EMP and SOP.</td>
</tr>
<tr>
<td>Alterations to coastal processes</td>
<td>Detailed surveys and hydrodynamic modelling to inform detailed design of coastal works to ensure no negative impacts on coastal processes.</td>
</tr>
<tr>
<td>Disturbances to local infrastructure during the construction phase, e.g. traffic, water and electricity.</td>
<td>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.</td>
</tr>
<tr>
<td>In the short term construction period there is the potential for damage to heritage features.</td>
<td>Where necessary Heritage Impact Assessment in accordance with the Framework and Principles for the Protection of the Archaeological Heritage (DAHGl, 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.</td>
</tr>
<tr>
<td>Medium and long term impacts on the setting of heritage features</td>
<td>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.</td>
</tr>
<tr>
<td>Potential for undiscovered heritage to be impacted upon by construction and dredging operations.</td>
<td>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.</td>
</tr>
<tr>
<td>Extent and severity of short term negative impacts on landscape from construction.</td>
<td>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.</td>
</tr>
<tr>
<td>Extent and severity of medium to long term negative impacts on landscape from preferred FRM options.</td>
<td>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.</td>
</tr>
<tr>
<td>Culverting, dredging and impoundment impacts on fisheries and potential to impede fish passage.</td>
<td>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</td>
</tr>
</tbody>
</table>
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.

- ‘Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites’, Eastern Regional Fisheries Board.
- 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).

Section 6.6 of the Final Plan for the Boyne 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 Boyne 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 Boyne 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.

Following the public consultation of the draft Plan for the Boyne 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 Boyne 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 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 is one Arterial Drainage Scheme and one existing flood relief scheme within the Boyne River Basin, namely the Boyne Arterial Drainage Scheme and the Mornington Flood Relief Scheme respectively. 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 six Drainage Districts within the Boyne River Basin, namely the Owenroe & Moynalty DD, Lough Crew DD, Ballycowan DD, Carbury Hill Stream DD, Foranwell DD and Garr DD. 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 Boyne Sub-catchment screening. Storage and improvement of channel conveyance were screened and found to be technically feasible; however these were not found to be economically viable. 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 Baltray AFA Preferred Measure
Potentially viable flood relief works for Baltray 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), largely constructed along a new line set back from the existing line of defences. The proposed hard defences would protect to the 1% AEP fluvial flood event and to the 0.5% AEP coastal flood event, with an average height of 1.33m and a total length of 1.05km. The preferred measure scores better environmentally (as the hard defences are not located within the qualifying habitats of the SPA/SAC designation) and has a significantly higher benefit cost ratio than the other potential measure that was assessed.

4.2.4 Drogheda AFA Preferred Measure
Potentially viable flood relief works for Drogheda 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 the River Boyne and improvement of conveyance, hard defences and a flow diversion channel on various tributaries. Some sealing of manholes and localised raising of roads would also be required, as would automated defences to allow continued operation of port activities. The hard defences would protect to the 1% AEP fluvial flood event and to the 0.5% AEP coastal flood event, with an average height of 1.95m and a total length of 4.3km. The improvement of channel conveyance consists of 215m of additional 1.5m diameter twin culvert within the vicinity of the old Usher’s Mill at Greenhills and 91m of dredged and widened channel. The preferred measure has the best combination of the MCA appraisal scores and has the highest MCA Score/Cost compared to the other potential measures that were assessed.

4.2.5 Mornington AFA Preferred Measure
Potentially viable flood relief works for Mornington 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). The hard defences would protect to the 1% AEP fluvial flood event and to the 0.5% AEP coastal flood event, with an average height of 1.04m and a total length of approximately 530m. Only one measure was identified for Mornington as being viable, and consequently this is the preferred measure.

4.2.6 Navan AFA Preferred Measure
Potentially viable flood relief works for Navan 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 Navan 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 Trim AFA Preferred Measures

As there is relatively low risk to properties during the 1% AEP fluvial flood event in Trim, there is hence a small benefit value, and no economically viable solution could be found at AFA level.

### 4.2.8 Measures with a Benefit - Cost Ratio below Unity

For the Navan AFA, 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 though established systems, with photographs, peak water levels, duration, etc., for recording and publication on the National Flood Event Data Archive (www.floodmaps.ie)
- Monitoring of compliance with the Guidelines on the Planning System and Flood Risk Management through ongoing review of development plans, local area plans and other forward planning documents
- Changes that may affect the areas prone to flooding as shown on the flood maps, with the flood maps updated on an ongoing basis as necessary

5.2 SOURCES OF INFORMATION FOR MONITORING

The SEA Directive requires that the significant environmental effects of the implementation of a Plan are monitored in order to identify at an early stage unforeseen adverse effects and in order to undertake appropriate remedial action. The proposed monitoring programme from the SEA
Environmental Report is given in Table 5.1 and is based on the Targets and Indicators established in the SEA Objectives. This has been adopted into the final Plan and the monitoring will then 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

<table>
<thead>
<tr>
<th>SEA Topic</th>
<th>Objective</th>
<th>Sub-Objective</th>
<th>Indicator</th>
<th>Possible Data and Responsible Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity, Flora and Fauna</td>
<td>Support the objectives of the Habitats Directive</td>
<td>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</td>
<td>Area, condition and trend of European sites and species in the Boyne River Basin (European sites to review are those identified by AA Screening.)</td>
<td>NPWS – Conservation Action Plans NPWS reporting on Ireland's Habitats and Species – Article 17 Reports. NPWS reporting on the status of Ireland's Birds – Article 12 Reports.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii) Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern</td>
<td>Area, condition and trend of national, regional or local conservation sites in the Boyne River Basin (National sites to review are those identified in SEA Environmental Report.)</td>
<td>Local Authority – Local Area Plans and County Development Plans. NPWS - Status of Protected Sites and Species in Ireland Reporting</td>
</tr>
<tr>
<td>Population and Human Health</td>
<td>Minimise risk to human health and life</td>
<td>i) Minimise risk to human health and life of residents</td>
<td>Residential property flooding in the Boyne River Basin</td>
<td>OPW, Local Authority and Emergency Services Reporting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii) Minimise risk to high vulnerability properties</td>
<td>High vulnerability sites impacted by flooding in the Boyne River Basin</td>
<td>OPW, Local Authority and Emergency Services Reporting.</td>
</tr>
<tr>
<td>Geology, Soils and Landuse</td>
<td>Minimise risk to agriculture</td>
<td>i) Minimise risk to agriculture</td>
<td>Area of soil resource lost due to flooding and flood risk management in the Boyne River Basin</td>
<td>EPA - CORINE landcover mapping. Local Area Plans and County Development Plans – myplan.ie</td>
</tr>
<tr>
<td>Water</td>
<td>Support the objectives of the WFD</td>
<td>i) Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives</td>
<td>Status and status trend of waterbodies, where FRM activities are within and upstream of a waterbody.</td>
<td>EPA / ERBD – WFD status reporting and RBMPs.</td>
</tr>
<tr>
<td>Climate</td>
<td>Ensure flood risk management options are adaptable to future flood risk</td>
<td>i) Ensure flood risk management options are adaptable to future flood risk</td>
<td>Requirement for adaptation of FRM management activities for climate change in the Boyne River Basin.</td>
<td>OPW and Local Authority reporting.</td>
</tr>
<tr>
<td>Material Assets</td>
<td>Minimise risk to transport &amp; infrastructure</td>
<td>i) Minimise risk to transport infrastructure</td>
<td>Number and type of transport routes that have flooded in the Boyne River Basin.</td>
<td>OPW, Local Authority and NRA reporting.</td>
</tr>
<tr>
<td><strong>Cultural Heritage</strong></td>
<td><strong>Utility Infrastructure</strong></td>
<td><strong>Avoid damage to or loss of features, institutions and collections of cultural heritage importance and their setting</strong></td>
<td><strong>Minimise risk to utility infrastructure</strong></td>
<td><strong>Number and type of utilities that have flooded in the Boyne River Basin.</strong></td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Landscape and Visual</strong></td>
<td><strong>Protect, and where possible enhance, landscape character and visual amenity within the river corridor</strong></td>
<td><strong>Protect, and where possible enhance, visual amenity, landscape protection zones and views into/from designated scenic areas within the river corridor.</strong></td>
<td><strong>Protect, and where possible enhance, visual amenity, landscape protection zones and views into/from designated scenic areas within the river corridor.</strong></td>
<td><strong>Length of waterway corridor qualifying as a landscape protection zone within urban areas of Boyne River Basin.</strong></td>
</tr>
<tr>
<td><strong>Fisheries, Aquaculture &amp; Angling</strong></td>
<td><strong>Protect, and where possible enhance, fisheries resource within the catchment</strong></td>
<td><strong>Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.</strong></td>
<td><strong>Improvement or decline in fish stocks and habitat quality in the Boyne River Basin. Barriers to fish movement within the Boyne River Basin.</strong></td>
<td><strong>IFI and WFD fish surveys and reports. Local fisheries reporting.</strong></td>
</tr>
<tr>
<td><strong>Amenity, Community &amp; Socio-Economics</strong></td>
<td><strong>Minimise risk to community</strong></td>
<td><strong>Minimise risk to social infrastructure and amenity</strong></td>
<td><strong>Social infrastructure and amenity assets impacted by flooding in the Boyne River Basin.</strong></td>
<td><strong>OPW and Local Authority reporting.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Minimise risk to local employment</strong></td>
<td><strong>Non-residential properties impacted by flooding in the Boyne River Basin.</strong></td>
<td><strong>OPW and Local Authority reporting.</strong></td>
</tr>
</tbody>
</table>
6 SCREENING AND CHANGES TO FINAL PLAN

No significant amendments were made between the draft Plan and final Plan for the Boyne 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 Boyne 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 Boyne 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 Boyne River Basin.

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

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

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

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

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

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

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

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

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


**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.


**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
- 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

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## 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**

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APPENDIX A.5

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

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

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<tr>
<td>Trim</td>
<td>23.03.2015</td>
<td>OPW Head Office</td>
<td>19</td>
</tr>
</tbody>
</table>

APPENDIX A.6

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

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

<table>
<thead>
<tr>
<th>AFA</th>
<th>Date</th>
<th>Venue</th>
<th>No. Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athboy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballivor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltray</td>
<td>09.03.2016</td>
<td>The Gatehouse Grill</td>
<td>17</td>
</tr>
<tr>
<td>Drogheda</td>
<td>10.03.2016</td>
<td>Drogheda Library</td>
<td>7</td>
</tr>
<tr>
<td>Edenderry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnstown Bridge</td>
<td>17.02.2016</td>
<td>Hamlet Court Hotel</td>
<td>3</td>
</tr>
<tr>
<td>Longwood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Date</td>
<td>Venue</td>
<td>Number</td>
</tr>
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<td>-----------</td>
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<td>---------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Mornington</td>
<td>09.03.2016</td>
<td>Colaiste na Hinse</td>
<td>15</td>
</tr>
<tr>
<td>Navan</td>
<td>16.02.2016</td>
<td>Navan Library</td>
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</tr>
<tr>
<td>Trim</td>
<td>15.02.2016</td>
<td>OPW Head Office</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX B

Draft Plan Consultation – UoM07 Environmental Submissions
<table>
<thead>
<tr>
<th>Subject</th>
<th>Comment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>All notification, consent and licensing requirements under the National Monuments Act need to be fully adhered to.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>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 DAHRRGA on each scheme and particular work arising.</td>
<td>Revised mitigation included in Section 10 of the SEA to incorporate this. High level mitigation included within Section 6 of the Final FRMP.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>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).</td>
<td>Recommendation passed to OPW for inclusion within Consultation Synthesis Report and Project handover notes.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Archaeology</strong></td>
<td>National policy on the protection of the archaeological heritage in the course of development is set out in Framework and Principals 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).</td>
<td>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.</td>
</tr>
<tr>
<td>SEA/AA Public Consultation: Archaeology</td>
<td>For more details on the circumstances in which archaeological assessment in advance of development is considered appropriate, reference should be made to the <em>Framework and Principles for the Protection of the Archaeological Heritage</em></td>
<td></td>
</tr>
<tr>
<td>SEA/AA Public Consultation: Archaeology</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>SEA/AA Public Consultation: Archaeology</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>SEA/AA Public Consultation: Nature Conservation</td>
<td>It is not clear from the documents supplied whether the proposed hard defences will be adjacent/close to the SAC/SPA boundary or set back from it for the AFAs.</td>
<td></td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>SEA/AA Public Consultation: Nature Conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>It is unclear from the NIS whether the assessment adequately considered the attributes and targets of site specific conservation objectives.</strong></td>
</tr>
<tr>
<td>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 &amp; Options to reflect this.</td>
</tr>
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<thead>
<tr>
<th>SEA/AA Public Consultation: Nature Conservation</th>
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<tbody>
<tr>
<td><strong>It is concluded in the NIS that provided the avoidance and mitigation measures suggested are adopted at the project stage, the proposed draft FRM measures in the UoM 07 will not have a significant adverse impact on the 5 screened in European sites. However, due to the points mentioned above, and on the basis of the information, assessment and analysis presented, including in the NIS, it cannot be excluded that the plan/certain plan elements, will have an adverse effect on the integrity of a site or have negative implications for the conservation objectives of one or more than one European site.</strong></td>
</tr>
<tr>
<td>Paragraph added to Chapter 7 of NIS to clarify that the potential physical flood relief works or ‘Schemes’ set out in the FRMP that have been developed through the CFRAM Programme are to an outline design, and are not at this point ready for construction. The potential routes for the progression of physical works are set out in Section 8.1 of the FRMP. Project-level assessment will take account of the potentially viable measures identified in the Plan, but will involve the consideration of alternatives at the project-level and, as appropriate, EIA and AA, including the definition of necessary mitigation measures at the project-level. Only schemes/measures that are confirmed to be viable following project level assessment will be brought forward for Exhibition/Planning and detailed design.</td>
</tr>
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<thead>
<tr>
<th>SEA/AA Public Consultation: Nature Conservation</th>
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<tbody>
<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td>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.</td>
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<thead>
<tr>
<th>SEA/AA Public Consultation: Nature Conservation</th>
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<tbody>
<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Nature Conservation</strong></td>
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<td>--------------------------------------------------</td>
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<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
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<th><strong>SEA/AA Public Consultation: Nature Conservation</strong></th>
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<tr>
<td>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.</td>
</tr>
<tr>
<td>Recommendation passed to OPW.</td>
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<th><strong>SEA/AA Public Consultation: Nature Conservation</strong></th>
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<tr>
<td>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.</td>
</tr>
<tr>
<td>OPW to note consultation timescale comment.</td>
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<tr>
<th><strong>SEA/AA Public Consultation: Nature Conservation</strong></th>
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<td>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.</td>
</tr>
<tr>
<td>OPW to note consultation timescale comment.</td>
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<table>
<thead>
<tr>
<th><strong>SEA/AA Public Consultation: Nature Conservation / NIS: Nature Conservation</strong></th>
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<tbody>
<tr>
<td>This Department notes that RPS have rewritten the FEM FRAMS for the sake of consistency but that it has not been reassessed. Therefore the 2011 assessments are provided. The original Plan is available on the website as a draft final report. The 2011 assessment has a cover page entitled “Strategic Environmental Assessment Habitats Directive Assessment (Natura Impact Statement)”. It is also noted that the SEA Environmental Report, dated 2011, contains, in Appendix G, an &quot;Appropriate Assessment Stage 2 Statement for Appropriate Assessment&quot; dated 2011 and also a draft Strategic Environmental Assessment Statement dated July 2014.</td>
</tr>
<tr>
<td>Comment passed to OPW for review. FEMFRAM / UoM08 FRMP to be revised.</td>
</tr>
<tr>
<td><strong>SEA/AA Public Consultation: Nature Conservation / NIS: Nature Conservation</strong></td>
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<td><strong>SEA/AA Public Consultation: Nature Conservation</strong></td>
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<td>SEA/AA Public Consultation: Nature Conservation / NIS: Nature Conservation</td>
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<tr>
<td>Text amended in NIS to clarify this. In section 5 - Removed ...[plan] has undergone AA and instead added &quot;No in-combination effects are predicted at plan level. The preferred option will be re-screened at the project level.&quot; Included the following text below first paragraph in each &quot;In-combination Effects&quot; 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.</td>
</tr>
<tr>
<td>NIS: Nature Conservation</td>
</tr>
<tr>
<td>UoM07 Section 5.2.3 – text amended on IFI EREP for the Boyne to remove mention of environmental enhancement plan and added &quot;Negative in-combination effects are unlikely, provided timing of physical works are correctly planned and managed.&quot;</td>
</tr>
<tr>
<td>NIS: Nature Conservation</td>
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<td>NIS: Nature Conservation</td>
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</table>
### 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 SMPs 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. |

| 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. |

| It is stated on page 35 of the NIS that there are 10 drainage districts within UoM 07 and these are listed. However on page 28 of the FRMP only 6 drainage districts are listed as being within UoM 07. This needs to be clarified. The OPW and its consultants need to ensure there is accuracy and consistency in the FRMP, NIS and SEA. |
| Amended in NIS. |

| The conclusions for tables 5.1.3 and 5.3.3 list 5 designated sites for which impacts were assessed. However in each of the tables (5.1.3 and 5.3.3) only 3 sites were assessed. In each case the River Boyne and River Blackwater SA and SPA were omitted. This needs to be amended. |
| Amended in NIS. |

| 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 |
| Recommendation passed to OPW. |
### SEA: Environment Report

**Table 4.3 of the SEA**

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.

**Table 10.2 (monitoring)**

Text added to SEA Environmental Report - Section 9 and Table 10.2 (monitoring) to provide clarity that species assessed.

**Section 4.6 highlights 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.

**Section 6 of SEA Environmental Report**

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.

**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.

**The OPW and its consultants should note that Freshwater pearl mussels are not an issue this catchment**

**Text in SEA states that Freshwater pearl mussels are not an issue in this catchment.**

**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.**
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'.

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.

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.

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.
<table>
<thead>
<tr>
<th><strong>SEA: Environment Report</strong></th>
<th></th>
<th>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.</th>
</tr>
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<tbody>
<tr>
<td>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.</td>
<td><strong>SEA: Environment Report</strong></td>
<td>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.</td>
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</tr>
<tr>
<td>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.</td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>The OPW and its consultants should ensure that the proposed mitigation measures are the same in both the SEA and the NIS where appropriate.</td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>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</td>
<td></td>
<td>Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.</td>
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<td>The OPW and its consultants should ensure that the proposed mitigation measures are the same in both the SEA and the NIS where appropriate.</td>
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<td>Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.</td>
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<td>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.</td>
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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.
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<td>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?</td>
<td>Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.</td>
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<td>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.</td>
<td>Proposed environmental monitoring from SEA Environmental Report has been incorporated into section 8.3 of the FRMP.</td>
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<td>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</td>
<td>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.</td>
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<td>There are inconsistencies regarding how the above legislation is quoted in the SEA. Sub-objective (i) of 3c to ‘avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern’ has the n left out of known in several places in the SEA.</td>
<td>The following text throughout SEA for Sub-objective (i) of 3c to ‘avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern’ has been amended, with the missing ‘n’ added to ‘known’ where it had been omitted.</td>
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<td>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.</td>
<td>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.</td>
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<tr>
<td>NIS: Nature Conservation</td>
<td>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.</td>
<td>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&amp;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.</td>
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<td>NIS: Nature Conservation</td>
<td>From reading the assessment in the SEA however it appears that the proposed measures in Baltray and Mornington will be set back from designated sites and in the case of Baltray there is potential for an increase in estuarine and wetland habitat. But from reading tables 5.1.3 and 5.3.3 of the NIS it seems that construction will take place adjacent to the SAC and/or close to the boundary of the SAC although there is also a statement in table 5.1.3 that the hard defences will be set further back from the estuary. This needs to be clarified to ensure consistency between the NIS and SEA. Evidence needs to be presented for conclusions of no adverse effects on site integrity.</td>
<td>UoM07 Baltray and Mornington AFAs – Text amended in Tables 5.1.3 and 5.3.3 to reflect the information provided in the SEA that defences will be set back from designated site boundaries.</td>
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With regard to the proposed measures in Drogheda it is unclear if the proposals are to modify existing flood measures or put in new ones. In table 5.2.3 for Drogheda it is stated that significant changes to the hydrological regime are unlikely, as the proposed hard defences are in a built up urban environment where hard defences are already in place. This implies that existing defences will be modified. This needs to be clarified. It is also unclear where the flow diversion channel will be as figure 4.3.2 does not appear to show a flow diversion channel at Waterunder Bridge.

Loss of Annex I habitats within SACs as a result of the construction of hard solutions/defences is contrary to the conservation objectives of European sites, marine or otherwise. The information on whether such habitat loss would certainly not occur within coastal habitats, or indeed other habitats, does not appear to be adequately presented in the NIS. There are notes in table 5.3.3 for example for Mornington AFA with regard to the Boyne Coast and Estuary SAC, that some construction will take place adjacent to the SAC and that direct loss of natural and semi-natural habitat may occur as a result of construction but that the impacts are expected to be short term and local in scale and therefore unlikely to impact significantly on attributes used to define conservation status. In order to reach a conclusion of no likely significant effect the next step, indicating that the habitat would not be a qualifying feature of the site, is not immediately apparent. If the preferred option is building over or very close to Annex I habitat, then this cannot be reconciled with the conclusion of no likely significant effect or the statement at the end of the NIS, because there is insufficient mitigation in the draft Plan. 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 such habitats and therefore to better assess the possible impacts of the draft 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. Section 6.6 also amended to reflect this. Wording on measures amended and status/level of the plan re-emphasised to clarify this issue. Section 7 of the FRMP acknowledges the potential risks and benefits of implementing the preferred measures.

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

Environmental Protection Agency (EPA)

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<th>Subject</th>
<th>Comment</th>
<th>Final Response Text</th>
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<tr>
<td>Methodology and Approach</td>
<td>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</td>
<td>Section 7.3.4 Appraisal by MCA reworded in FRMP. Recommendation to be added to OPW Synthesis Report.</td>
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<td>Plans. This will also contribute to a consistent approach to prioritisation at implementation phase.</td>
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<td>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.</td>
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<td>Methodology and Approach</td>
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<td>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</td>
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<td>Flood Risk Management Methods</td>
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<td>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 &amp; 7.4.1.4 &amp; 7.4.1.5. Additional text referencing blue/green infrastructure added to 7.4.1.1 of FRMP.</td>
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<td>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.</td>
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<td>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.</td>
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## 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.

- **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.

- **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.

## 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.**

- **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**

- **Strategic planning report being completed for each FRMP using local area plan and development zone information as part of the**
<table>
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<tr>
<th><strong>Integration of SEA and AA in the Plans</strong></th>
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<td>(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.</td>
<td>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</td>
<td>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.</td>
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<tr>
<td><strong>CFRAM study.</strong></td>
<td><strong>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.</strong></td>
<td><strong>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.</strong></td>
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<td><strong>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.</strong></td>
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<td>Integration of SEA and AA in the Plans</td>
<td>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.</td>
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<td>Integration of SEA and AA in the Plans</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>(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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>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.</td>
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<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets</td>
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<tr>
<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets</td>
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<tr>
<td>Monitoring, Reporting and Review</td>
<td>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.</td>
<td>Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets</td>
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*IBE0600Rp0068 74 Rev D01*
| Overall Governance and Implementation | With 29 Plans and 300 AFAs and associated measures, implementation of the Plans will pose a significant challenge for the OPW and local authorities. To ensure their effective delivery, strong governance structures will need to be put in place that provide for collaboration, coordination and clear designation of responsibilities and accountability. The EPA recommends a new chapter of Governance and Implementation be included in each Plan. This should include a description of the governance arrangements and mechanisms to oversee implementation of the Plans and associated measures. | Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. Included within section 8.1 of FRMP. |
| Overall Governance and Implementation | There would be merit in considering preparing an overall national level CFRAM Implementation Programme, reflecting priority measures for implementation at national CFRAM, FRMP, UoM, AFA and IRR level. Key responsibilities (including lead department/authority), priority measures/combination of measures, estimated cost and timescales could be set out alongside each of the measures in the Plans. This would assist the Inter Departmental Flood Policy Coordination Group and any CFRAM/UoM level Coordination Implementation Groups established in delivering the Measures. It would also inform reporting obligations to the wider public and to the European Commission in accordance with obligations under the Floods Directive. | Recommendation for OPW for inclusion in synthesis report. Note that FRMPs to be accompanied by National FRS Capital Investment Programme |
| Overall Governance and Implementation | Strong commitments to governance and robust implementation structures will provide an element of certainty at a national, regional and local level on the sequence of implementation. Relevant aspects of the approach taken by the Department of Agriculture, Food and the Marine in implementing Food Wise 2025 Environmental Sustainability Actions could be considered. The model set up by the Department of Communications, Climate Action and Environment for the implementation of the Offshore Renewable Energy Development Plan may also be of interest in this regard. | Recommendation for OPW for inclusion in synthesis report and Project Handover Sheets. Included within section 8.1 of FRMP. |
| Overall Governance and Implementation | We acknowledge the proactive approach adopted by the OPW and the CFRA M 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 | 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 | Scoping Comment already addressed or passed onto OPW. |
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.

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 that soil type. For example, gley soils are typically low permeability and will contribute to great surface runoff.

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.

(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).

(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.

(Q3 and Q4) Flood related social or socio-economic issues: Local Authority Planning and Development, Land Use Zoning; proposed Regional Spatial economic Strategies (Due

Scoping Comment already addressed or passed onto OPW.
<p>| 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 - | Scoping Comment already addressed or passed onto OPW. |</p>
<table>
<thead>
<tr>
<th>Q6</th>
<th>Water: Waterways Ireland; Local Authorities; Inland Fisheries Ireland; a national risk screening data set is available on the WFD Application which is available through the Eden portal. Further risk data will become available through the sub-catchment and catchment reports that are currently being prepared, to inform the second cycle of River Basin Management Plans. There should be ongoing liaison with EPA on the status of the WFD Application and related outputs.</th>
<th>Scoping Comment already addressed or passed onto OPW.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q7</td>
<td>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?</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q7</td>
<td>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?</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q7</td>
<td>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?</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q7</td>
<td>Figure 5.2 - Example Output of Environmental Assessment. Do 'Geology, Soils and Land Use' aspects include potential effects on agricultural land?</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>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'</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>In relation to Environmental Objective C - &quot;Support the objectives of the WFD&quot;, the associated sub-objective states: &quot;provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of waterbody objectives&quot;. The wording of the sub-objective does not appear to be as robust as that set out in the WFD. The sub-objective should reflect the terminology of the WFD; therefore the following sub-objective should be considered to replace that currently proposed: &quot;prevent deterioration, protect and where appropriate, enhance and restore bodies of water&quot;.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q8</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q9</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Q9</td>
<td>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.</td>
<td>Scoping Comment already addressed or passed onto OPW.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>Each Plan should include in the title the timescale over which the Plans will be operational.</td>
<td>Amended on final FRMP cover.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>Acknowledgment of environmental risks and benefits added to section 7 of FRMP. Section 6 of FRMP details environmental assessment influence on plan.</td>
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<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>The FRMPs were fully assessed and all anticipated significant environmental impacts were reported by topic.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>The Non-Technical Summary should reflect the information under Annex II of the SEA Directive. Suitable maps and Figures and summary tables should be included as appropriate.</td>
<td>Information included.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>Where SEA-related environmental topics are scoped out of the assessment, this should be explained along with the relevant justification.</td>
<td>Information included.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>(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.</td>
<td>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.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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 ongoing implementation of the Plans.</td>
<td>Recommendation for OPW for inclusion in synthesis report.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>The Plans and SEA ERs should include and consider, where appropriate, the most recently available information on flooding within the individual Plan areas.</td>
<td>Recommendation for OPW for inclusion in synthesis report.</td>
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<tr>
<td>Additional Observations</td>
<td>EPA's website, catchment.ie 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.</td>
<td>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</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>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</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>Information included.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>Information included.</td>
</tr>
<tr>
<td>Additional Observations</td>
<td>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.</td>
<td>Acknowledgment of environmental risks and benefits added to section 7 of FRMP, along with reasons for option selection.</td>
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## Additional Observations

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<th>Description</th>
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<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>Mitigation and monitoring proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.</strong></td>
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<td><strong>Where relevant, the potential impacts of the Plans on wider biodiversity including fisheries should be considered.</strong></td>
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<tr>
<td><strong>Wider biodiversity impacts were attempted to be included within SEA Objective 2(i). Fisheries included under SEA Objective 10(i).</strong></td>
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<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>Strategic planning report being completed for each FRM using local area plan and development zone information as part of the CFRAM study.</strong></td>
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<tr>
<td><strong>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).</strong></td>
</tr>
<tr>
<td><strong>Information included.</strong></td>
</tr>
<tr>
<td><strong>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.</strong></td>
</tr>
<tr>
<td><strong>Mitigation proposed in SEA Environmental Report and NIS, which should reflect this. OPW have added some mitigation to section 6 of FRMP.</strong></td>
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<td>Additional Observations</td>
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<tr>
<td>The relevant key findings and recommendations in the AA should be incorporated into the</td>
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<td>plans. There should be consistency between the findings of the biodiversity, flora and</td>
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<tr>
<td>fauna elements and related environmental aspects, such as water, of the SEA and the AA</td>
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<td>findings.</td>
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### Additional Observations

#### Hydrological Regime

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.

#### Mitigation Measures

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.

#### Plans and CEMPs

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.

#### Invasive Species Management

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.

#### SEAs and Plans

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. 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.
**Eastern CFRAM Study**

**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)**

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<tr>
<th>Subject</th>
<th>Comment</th>
<th>Response</th>
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<tr>
<td>UoM 07/08/09/10</td>
<td>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.</td>
<td>Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets</td>
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<tr>
<td>Date</td>
<td>Comment</td>
<td>Reference</td>
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<tr>
<td>07/08/09/10</td>
<td>(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'.</td>
<td>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.</td>
</tr>
<tr>
<td>07/08/09/10</td>
<td>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 maximise the value derived from such consultation.</td>
<td>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.</td>
</tr>
<tr>
<td>07/08/09/10</td>
<td>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.</td>
<td>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'.</td>
</tr>
<tr>
<td>07/08/09/10</td>
<td>IFI considers that a comprehensive CFRAM strategy will incorporate the following: (See page 4/5/8/16)</td>
<td>Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets</td>
</tr>
<tr>
<td>07/08/09/10</td>
<td>Specifically with regard to the Navan (UoM07); has the alternative of diverting some flow down the Boyne Canal been considered which may reduce the need for the clearance of a 500m reach of the Abbey lands Tributary of the River Boyne?</td>
<td>Comment passed to OPW for inclusion in synthesis report and Project Handover Sheets</td>
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</tbody>
</table>
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 accessed at (see page 4). 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.

**Sustainable Water Network (SWAN)**

<table>
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<tr>
<th>Subject</th>
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<th>Final Response Text</th>
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<tbody>
<tr>
<td>Impacts of Flood Works on WFD Objectives</td>
<td>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).</td>
<td>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.</td>
</tr>
<tr>
<td>Impacts of Flood Works on WFD Objectives</td>
<td>It is important to note that the reasons for any exemptions must be set out in the RBMPs (See page 14)</td>
<td>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.</td>
</tr>
<tr>
<td>Impacts of Flood Works on WFD Objectives</td>
<td>It is unclear as to whether there has been any legal analysis on the potential application of WFD exemptions to flood protection developments.</td>
<td>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.</td>
</tr>
<tr>
<td>Coordination of Flood Directive with the WFD</td>
<td>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.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Text added throughout the plan re-emphasising the level of the Plan and the further assessment and approval required. Comment also noted for OPW synthesis report.</td>
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<tr>
<td>Coordination of Administration Arrangements of the WFD</td>
<td>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.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Coordination of Administration Arrangements of the WFD</td>
<td>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.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Coordination of FRMP and RBMP</td>
<td>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.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Coordination of FRMP and RBMP</td>
<td>(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.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD, while Section 6.6 details progression of the measures at the detailed stage. Comment also noted for OPW synthesis report.</td>
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</table>

(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.
<table>
<thead>
<tr>
<th>Coordination of FRMP and RBMP</th>
<th>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.</th>
<th>Section 6.5 of the final FRMP details co-ordination with the WFD. Text included in Measure 7.4.1.5 - &quot;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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination of FRMP and RBMP</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Coordination of FRMP and RBMP</td>
<td>Article 7 (3) of the WFD requires that the FRMPs take the characteristics of the river basin into account and also to promote sustainable land use practices and the improvement of water retention. Thus, the FRMPs, along with the WFD RBMPs, should be based around integrated RBM and so benefit greatly from being developed in coordination with the RBMPs. Indeed, the development of the FRMPs are required to be coordinated with the reviews of the WFD RBMPs under Article 9 (2) of the FD which states: (See page 20)... Swan understands that for various political and other reasons, the development of both these plans is happening over different timescales. It is our position that this, along with having separate Competent Authorities, has resulted in a serious lack of coordination in the implementation of the two Directives, as is evidenced in the Plans by the reliance on structural measures for FRM which will have a negative impact on WFD objectives.</td>
<td>Section 6.5 of the final FRMP details co-ordination with the WFD. Measure 7.4.1.5 includes Land Use &amp; NFM Measures.</td>
</tr>
<tr>
<td>Coordination of FRMP and RBMP</td>
<td>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...</td>
<td>Comment noted.</td>
</tr>
<tr>
<td>AFA Scale Options</td>
<td>Environment and WFD status…. (See page 21).</td>
<td>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.</td>
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<tr>
<td>AFA Scale Options</td>
<td>SWAN welcomes the mention of WFD assessments at the next stage of option development, however 'may involve' is not adequate and it is vital that WFD assessments must be included if compliance with WFD objectives is to be achieved.</td>
<td>Section 6.5.4 of the final FRMP coordination 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.</td>
</tr>
<tr>
<td>AFA Scale Options</td>
<td>The projects will be subject to the applicable planning and/or consent process; however there are no regulatory controls on physical modifications to water bodies. This is in spite of the WFD Article 11 (See page 23)…It is extremely worrying that the required regulatory system for their control has not been introduced.</td>
<td>Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>AFA Scale Options</td>
<td>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).</td>
<td>Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>AFA Scale Options</td>
<td>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.</td>
<td>Information on progression of measures and assessment of future works provided in section 6.6 of FRMP. Comment also noted for OPW synthesis report.</td>
</tr>
</tbody>
</table>
### 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.** |

| **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.** |

| **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.** |

| **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.** |

| **(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

Apart from the above measure on the Application on the Guidelines on the Planning System specific reference should also be made in the FRMPs on ensuring the Application of the EIA (Agricultural) Regulations 2011 and the Planning and Development (Amendment) (No 2.) Regulations. This has relevance for FRM as the EIA (Agriculture) Regulations are intended to control agricultural land drainage, which reduced the capacity of the land to store water and further increases the volume of water flow in streams and rivers, which then requires the continuance of arterial drainage schemes and other FRM measures. The EIA (Agriculture) Regulations have the potential to provide additional flood protection at a catchment scale if they are implemented correctly.

Comment noted for OPW synthesis report. Recommendation for future policy that may currently not be in OPW remit. EIA regulations currently to be considered as per Fig 8.1.

### SUDS

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.

Included under Measure 7.4.1.2 of final FRMP. Comment also noted for OPW synthesis report.

### Ongoing Maintenance of Arterial Drainage Schemes

Arterial Drainage Schemes typically involve increasing the conveyance capacity (e.g. dredging), which can impact on aquatic ecology of the watercourse. The impact of these schemes on water bodies as a whole (including those outside of Natura sites) also needs to be taken into account. Although the schemes are not a part of the CFRAM Study, they are provided as a measure in the FRMP and therefore need to be assessed for their impact on the WFD status of affected waterbodies along with other proposed measures. It is not clear if these were taken into account in the MCA analysis or SEA for the FRMP WFD objective.

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 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 |

<p>| Ongoing Maintenance of Arterial Drainage Schemes | Furthermore, the scoping report for the SEA for the Arterial Drainage Maintenance List of Activities 2016-202132 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 |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing Maintenance of Arterial Drainage Schemes</td>
<td>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.</td>
</tr>
<tr>
<td>Ongoing Maintenance of Arterial Drainage Schemes</td>
<td>The draft Flood Plans, which have 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.</td>
</tr>
<tr>
<td>Ongoing Maintenance of Arterial Drainage Schemes</td>
<td>(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.</td>
</tr>
<tr>
<td>Land-Use Management and Natural Water-Retention Measures</td>
<td>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.</td>
</tr>
</tbody>
</table>

Text on maintenance of ADS in final FRMP has been amended and added to 7.4.1.7

Comment noted for OPW synthesis report.

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.”
Following the avoidance and mitigation measures suggested, the AA concluded that FRM measures in UoM07 will not have a significant adverse impact on the above Natura 2000 sites. Mitigation measures will have to be strictly adhered to and monitored for effectiveness to ensure that sites are not impacted on. The timing of works will also need to be carefully planned to avoid in combination effects from other works and to avoid the breeding seasons of designated species.

Mitigation proposed in SEA Environmental Report and NIS. OPW have added some mitigation to section 6 of FRMP.

Table 7.1.1 gives an assessment of likely impacts of proposed FRMP on NATURA 2000 sites within UoM07 from AA and SWAN review.

This assessment of likely impacts provided by SWAN has been reviewed and responded to under individual impacts.

Baltray: In addition to AA impacts - Due to location of AFA there are likely to be impacts on Boyne Coast and Estuary SAC and Boyne Estuary SPA. A suitably trained ecologist should be present onsite during works.

General mitigation and monitoring measures have been developed, to be included in the SEA and NIS. These include the appointment of an Ecological Clerk of Works for the environmental management of each scheme.

Baltray: Habitat loss likely to be local but permanent unless restoration/replacement action is taken.

The loss of designated habitat is not expected as the proposed hard defences will be predominantly along a new line, set back from the current defences and the SAC site boundary. The text in NIS Table 5.1.3 has been amended to reflect the information provided in the SEA that defences will be set back from designated site boundaries.

Baltray, Drogheda, Mornington, Navan (UoM07), Laytown, Bettystown and Coastal areas AFA, Rush, Ratoath, Skerries (UoM08), Blessington, Dublin City AFA Carysfort Maretimo AFA, Celbridge & Hazelhatch AFA, Clane AFA, Leixlip, Lucan to Chapelizod AFA, Maynooth AFA (UoM09), Aughrim AFA, Avoca AFA, Greystones & Environ, 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

Drogheda: Due to location of AFA there are the potential for significant impacts on River Boyne and River Blackwater SAC, RiverBoyne and River Blackwater SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA due to the release of sediments/pollution.

The potential impacts on these sites from sedimentation/pollution has been identified in the NIS and mitigation has been outlined.
<p>| Natura Sites | Drogheda: The majority of hard defences are in heavily modified areas and loss of habitat will be minor. | Agree with this statement. |
| Natura Sites | Mornington: Due to upstream location of AFA there is potential to be significant impacts on Boyne Estuary SPA and Boyne Coast and Estuary SAC from the release of sediments/pollution - there is unlikely to be habitat of conservation concern at location of works. | The potential impacts on these sites from sedimentation/pollution has been identified in the NIS and mitigation has been outlined. The loss of designated habitat is not expected as the proposed hard defences will be set back from the SAC and SPA site boundaries. The text in Table 5.3.3 has been amended to reflect the information provided in the SEA that defences will be set back from designated site boundaries. |
| Natura Sites | Navan: Due to location of AFA there is potential for significant impacts on River Boyne and River Blackwater SPA and River Boyne and River Blackwater SAC from the release of sediments/pollution that could affect spawning grounds and food resources. The potential impacts on these sites from sedimentation/pollution has been identified in the NIS and mitigation has been outlined. | These potential impacts have been identified in the NIS and mitigation has been outlined. |
| Natura Sites | Navan: Loss of bankside vegetation could impact on lamprey, salmon and otter, but there is unlikely to be loss of protected habitats at location of works. | This is already in the NIS 6.1, though habitats appearance is less important than location and footprint. 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. |
| Mitigation | The principle mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. visual appearance, alignment of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors. Where this can give rise to a reduction in the significant of the identified negative environmental effects. | |
| Mitigation | Before any works are carried out, detailed method statements and management plans (construction and environmental) should be prepared, including timing of works and information on the specific mitigation measures to be employed for each works area. Works should only be carried out once the method statements have been agreed with relevant authorities such as the NPWS and IFI. At the project level, it will not be sufficient to defer the production of construction method statements. These should be completed in the detailed design stage and should be subject to further AA where potential impacts have been identified. | This has been added to the NIS 6.1, paragraph 4. |
| Mitigation | Consideration should be given to the planning and timing of construction works. FRM works on adjoining reaches of rivers in different 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 consideration will be given. [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/SPCs. | This has been recommended in NIS chapter 6 section 6.1.2.2 |
| Mitigation | Otter are found widely throughout Ireland's waterways and can use quite heavily modified and polluted waterways; In particular, we have found that otters will move from rural through urban areas to forage in coastal areas. Therefore, otter surveys should be done at all AFAs and otter SOPs put in place. | This has been recommended in NIS chapters 5 &amp; 6 and in FRMP generic mitigation table |
| 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 § 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. |
| Mitigation | Reinstatement of appropriate, local riparian vegetation once works completed | NIS added to 6.1.2.1 § Avoid unnecessary vegetation clearance, particularly trees. Where possible, retain vegetated buffer strips. Ensure that reinstatement of appropriate, local riparian vegetation is carried out once |
| 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 | Baltray, Drogheda, Mornington, Navan: In addition to AA mitigation; ecologist on-site to ensure no damage to habitats and species during construction. | 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 | Baltray, Drogheda, Mornington, Navan: Survey for invasive species. Utilise best practice to remove/manage invasive species and monitor after completion of works. | NIS: Invasive species potential impacts added to impact tables in chapter 5 and general mitigation in chapter 6 (6.1.2.1) |
| Mitigation | Baltray, Drogheda, Mornington: Survey for breeding Tern. If present avoid carrying out construction work in the Tern roosting season (July- September). | NIS: recommendation for Tern survey added to impact tables for Drogheda, Baltray &amp; Mornington |
| Mitigation | Drogheda, Navan: Ensure FRM footprint and associated work space does not degrade or destroy riparian habitat (including but not restricted to alkaline fen, alluvial woodlands) or estuarine habitat (mudflats etc.). Where habitat may be impacted, alter site design or set aside equal areas for habitat improvement/creation | Potential impacts from physical loss of habitat already included in NIS table 5.1.3 (Drogheda) and 5.4.4 (Navan) |</p>
<table>
<thead>
<tr>
<th>Mitigation</th>
<th>Navan: Salmon, lamprey and otters surveys required to assess impact on these species.</th>
<th>NIS: already included in impact tables for sites where these species are qualifying interests and reiterated in Chapter 6 under general mitigation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation</td>
<td>In addition to in-combination effects in AA, Other FRMPs that may impact on NATURA 2000 sites mentioned in this plan include: Termonfeckin (UoM06); Laytown, Bettystown and Coastal (UoM08) - Boyne Coast and Estuary SAC; Boyne Estuary SPA. Following the precautionary principle it is suggested that works are not carried out simultaneously in these sites so as to ensure there are no significant in-combination effects.</td>
<td>NIS: recognition of potential for in-combination effects with the named AFAs in UoM06 and 08 has now been added to the Drogheda, Baltray and Mornington impact assessments.</td>
</tr>
<tr>
<td>Recommendation</td>
<td>When an AFA is in close proximity to Natura sites, ecological surveys must ensure that no designated habitats are lost or species impacted on.</td>
<td>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.</td>
</tr>
<tr>
<td>Recommendations</td>
<td>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.</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Recommendations</td>
<td>Ireland needs a strategy to implement NFM which aims to work with natural hydrological and morphological processes, features and characteristics to manage the sources and pathways of floodwaters. These are given lip service in the FRMPs but need to be fully realised. Such strategies include: (see page 59).</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Recommendations</td>
<td>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.</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td>Recommendations</td>
<td>Public Consultation days influence the choice of preferred FRMO. Environmental groups need to have a stronger presence at these.</td>
<td>Section 8 of the final FRMP, Implementation of Measures &amp; details further public consultation. Comment also noted for OPW</td>
</tr>
</tbody>
</table>

Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.
**Recommendations**

<p>| 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. |
| 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. |
| 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. |
| The HDA provides detailed mitigation measures to prevent impacts on NATURA 2000 sites. These must be strictly implemented and continuously monitored by a qualified ecologist to ensure the effectiveness of the measures. If implemented fully, these would greatly ameliorate the impact of the proposed FRMs on the NATURA sites; if not, significant residual impact may result. There is the potential for cumulative effects from arterial drainage maintenance and from flood defence works in UoM06 (North Western) and UoM8 (Eastern) CFRAMS if works coincide. Careful planning of works will be needed to take into account these in combination effects as well as ensuring works avoid disturbing overwintering birds (November-March); the salmonid spawning season (October-May) and Kingfisher nesting months (March-September). | 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. NIS has added the requirement for an Environmental Manager on all schemes in 6.1 [to manage ecological and environmental surveys and impact assessments by individual specialists]. 6.1 also added the recommendation for monitoring of project level mitigation measures should be undertaken during and after works, to ensure effectiveness. Potential in-combination effects on coastal sites with works in UoM06 and UoM08 has been added to the NIS impact assessment sections as per row 125 above. |
| 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 | Information updated in FRMP to reflect these recommendations where possible. Comments also noted for OPW synthesis report. |</p>
<table>
<thead>
<tr>
<th><strong>Integrated Flood-Risk Management</strong></th>
<th>Taking a catchment based approach represents a more sustainable way of dealing with floods.</th>
<th>Comments noted for OPW synthesis report. Catchment based approach taken by CFRAM studies.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catchment-Based Approach</strong></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Catchment-Based Approach</strong></td>
<td>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.</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td><strong>Catchment-Based Approach</strong></td>
<td>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.</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td><strong>Natural Water-Retention Measures</strong></td>
<td>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).</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td><strong>Natural Water-Retention Measures</strong></td>
<td>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).</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td><strong>Natural Water-Retention Measures</strong></td>
<td>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.</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
</tr>
<tr>
<td><strong>Natural Water-Retention Measures</strong></td>
<td>The restoration of floodplains and wetlands are an example of NFWM and should be included as a measure in the FRMP. This is the type of measure that could contribute to achieving both FD and WFD objectives (see page 39 for examples of successful implementation).</td>
<td>Measure 7.4.1.5 amended in final FRMP to reflect this. Comment also noted for OPW synthesis report.</td>
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<tr>
<td><strong>Natural Water-Retention Measures</strong></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Integrated Governance</strong></td>
<td>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)</td>
<td>Comment noted for OPW synthesis report. Recommendation for future policy.</td>
</tr>
<tr>
<td><strong>Integrated Governance</strong></td>
<td>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.</td>
<td>Comment noted for OPW synthesis report. Recommendation for future policy. Final FRMP section 6.5 provides WFD co-ordination.</td>
</tr>
<tr>
<td><strong>Integrated Governance</strong></td>
<td>(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 approach to water management criticised in the 2010 RBMPs.</td>
<td>Comment noted for OPW synthesis report. Recommendation for future policy. Final FRMP section 6.5 provides WFD co-ordination.</td>
</tr>
<tr>
<td>Public Participation</td>
<td>It is SWAN’s 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.</td>
<td>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.</td>
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<tr>
<td>Public Participation</td>
<td>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).</td>
<td>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.</td>
</tr>
<tr>
<td>Public Participation</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Public Participation</td>
<td>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).</td>
<td>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.</td>
</tr>
<tr>
<td>Public Participation</td>
<td>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).</td>
<td>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.</td>
</tr>
<tr>
<td>Public Participation</td>
<td>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. These 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.</td>
<td></td>
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| 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 for a longer consultation period was denied due to political pressure to have the plans completed by the end of 2016. |

| Multi staged public and stakeholder engagement and communication undertaken for CFRAM Studies. Final FRMP section 8.1.4 provides information on future project level project level public and stakeholder engagement and communications. Comment noted for OPW synthesis report. |

| Conclusion | We make our submission with the explicitly reproach that flawed processes such as these not only disenfranchise the very communities they’re meant to serve, but are emblematic of problem-solving strategies fatally distanced from exactly those environmental management approaches that will be most needed as manmade climate change threatens to push weather patterns in unpredictable directions beyond the palliative |

| 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

<table>
<thead>
<tr>
<th>Subject</th>
<th>Comment</th>
<th>Final Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on the water environment</td>
<td>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.</td>
<td>Comment passed to OPW for inclusion within Consultation Synthesis Report and Project Handover Notes.</td>
</tr>
<tr>
<td>Lack of coordination with WFD</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Reliance on existing planning/consent process</strong></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>Comment passed to OPW for inclusion within Consultation Synthesis Report. Being addressed under Sustainable Planning and Development Management in section 7 of final FRMP.</strong></td>
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</table>

| **Lack of Integrated Governance/Fragmented 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 management under the WFD. It is also unclear what happens if a Local Authority votes not to adopt the Floods Plans. |
| **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.** |

<p>| <strong>Ineffective Public Participation</strong> | 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. |
| <strong>Text added to FRMP to help address this, section 8.1.4, information added on Public &amp; Stakeholder Consultation &amp; Engagement</strong> |</p>
<table>
<thead>
<tr>
<th>Data Gaps</th>
<th>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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding Curlew sites</td>
<td>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.</td>
</tr>
<tr>
<td>BirdWatch Ireland report for OPW on Potential Impacts of Flood Risk Management Methods on Birds in Ireland</td>
<td>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 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.</td>
</tr>
</tbody>
</table>

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.

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.

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.
<table>
<thead>
<tr>
<th>Birds in the wider countryside</th>
<th>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 Ireland1. 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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Impacts</td>
<td>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.</td>
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</table>

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.

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.
Regulatory Environment for Implementation of CFRAMS

BirdWatch Ireland performs a Casework function where we review planning applications for different types of development proposals. We have come across several instances were 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.

NFM

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.

Arterial drainage

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. 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

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.

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.

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.
<table>
<thead>
<tr>
<th>Landuse management and NFRM measures</th>
<th>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.</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landuse management and NFRM measures</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Landuse management and NFRM measures</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Landuse management and NFRM measures</td>
<td>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.</td>
<td>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.</td>
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<tr>
<td>Landuse management and NFRM measures</td>
<td>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</td>
<td>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.</td>
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<tr>
<td>Landuse management and NFRM measures</td>
<td>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:</td>
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<tr>
<th>Landuse management and NFRM measures</th>
<th>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).</th>
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<th>Landuse management and NFRM measures</th>
<th>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).</th>
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<tr>
<th>Landuse management and NFRM measures</th>
<th>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</th>
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<tr>
<td>Landuse management and NFRM measures</td>
<td>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 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.</td>
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<td>Landuse management and NFRM measures</td>
<td>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.</td>
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<tr>
<td>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.</td>
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<td>Landuse management and NFRM measures</td>
<td>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</td>
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<tr>
<td>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.</td>
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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.

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’.

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.

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.

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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<th>Landuse management and NFRM measures</th>
<th>Natural flood management Handbook published by the Scottish EPA (SEPA) in 2015 should be utilised to improve the incorporation of NFM in all the FRMPs by way of adopting specific actions on NFM in all the UoMs (see reference p.10).</th>
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