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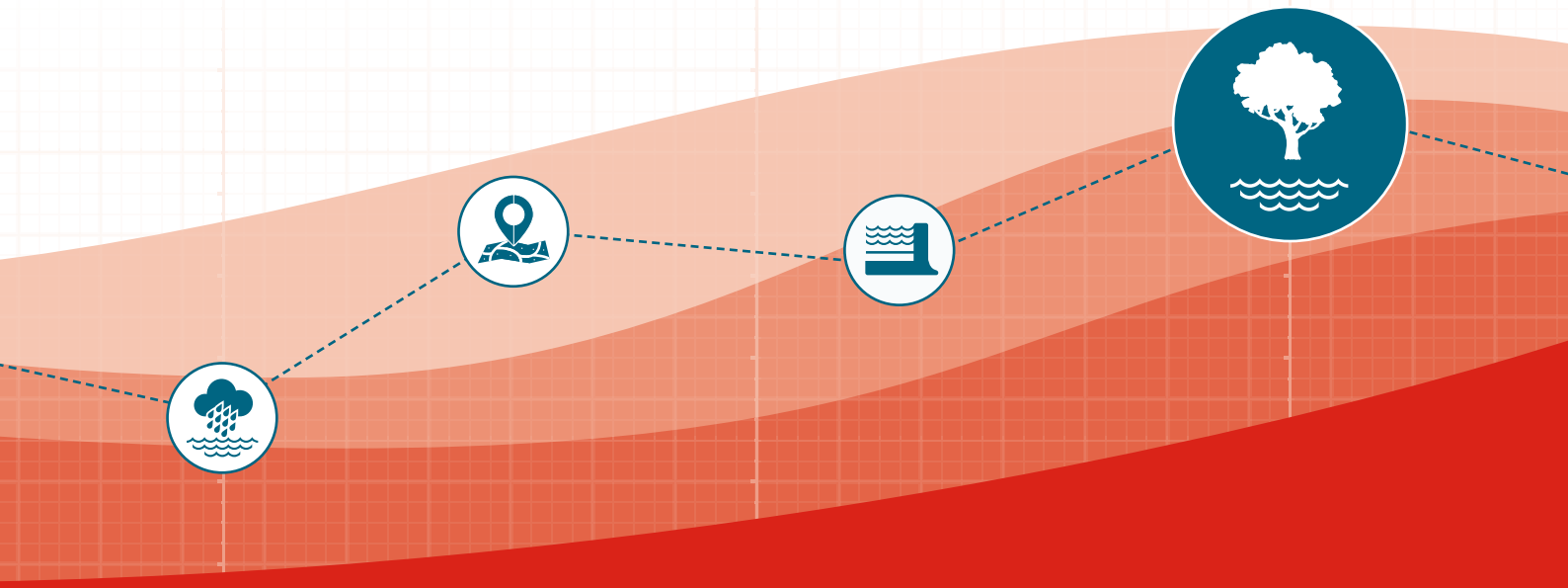
Abhantrach
27/28
River Basin



Strategic Environmental Assessment Statement

Shannon Estuary North & Mal Bay

2018

Strategic Environmental Assessment Statement

For

River Basin (27/28) Shannon Estuary North & Mal Bay Flood Risk Management Plan

Areas for Further Assessment included in the Plan:

Cuinche	*Quin*
Cill Chaoi	*Kilkee*
Bun Raite	*Bunratty*
Inis	*Ennis*
Droichead Abhann Ó gCearnaigh	*Sixmilebridge*
Cill Rois	*Kilrush*
Sionainn	*Shannon*
Aerfort na Sionainne	*Shannon Airport*

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

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

JACOBS

Shannon Catchment-based Flood Risk Assessment and Management (CFRAM) Study

Office of Public Works

Strategic Environmental Assessment Statement

Shannon Estuary North and Mal Bay River Basin

Rev 2: Final Report

6th September 2017

Shannon CFRAM Study

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Jacobs Engineering Ireland Limited
Merrion House
Merrion Road
Dublin D04
Ireland
T +353 1 269 5666
www.jacobs.com

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1. Introduction

1.1 Background

This is the Strategic Environmental Assessment (SEA) Statement prepared in relation to the Flood Risk Management Plan (the Plan) for the Shannon Estuary North and Mal Bay River Basin in accordance with national and European Union (EU) legislation. 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 (ER) (and the assessment carried out under Article 6 of the Habitats Directive) have influenced the final revision of the Shannon Estuary North and Mal Bay River Basin Plan.

1.2 Legislative Context

SEA is required under EU Council Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) and transposing Irish Regulations (the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004)) as amended by SI 200 of 2011 (hereafter referred to as simply the SEA Regulations); and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI 436 of 2004), as amended by SI 201 of 2011. Its purpose is to enable plan-making authorities to incorporate environmental considerations into decision-making at an early stage and in an integrated way throughout the plan-making process.

The overall aim of the SEA Directive is to:

> *'provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.'*

The SEA of the Shannon Estuary North and Mal Bay River Basin plan has been undertaken in accordance with the requirements of the directive and regulations and, where relevant, has sought to meet the requirements of the associated best practice guidance.

This SEA Statement has been prepared in accordance with Schedule 2, Section 16(2) of the SEA Regulations.

The FRMP and SEA Statement for Shannon Estuary North and Mal Bay River Basin are available to download at www.opw.ie/FloodPlans/.

1.3 Content and Structure of SEA Statement

The main purpose of the SEA Statement is to provide information on the decision-making process for the Shannon Estuary North and Mal Bay River Basin Plan in order to illustrate how decisions were taken, thereby making the process more transparent.

In accordance with Section 16(2) of the SEA Regulations, the SEA Statement documents the following;

- How environmental considerations have been integrated into the Plan;
- How the ER has been taken into account during the preparation of the Plan;
- How consultations, submissions and observations have been taken into account during the preparation of the Plan;
- Reasons for choosing the final Plan, in light of other reasonable alternatives (where available) considered; and

- Measures were decided upon to monitor the significant effects of implementing the Plan.

The SEA Statement has been prepared to outline “information on the decisions” as required by the SEA Regulations and is available to the public, along with the ER, the Natura Impact Statement, flood maps and the Final Plan.

The SEA Statement consists of 7 chapters as detailed in Table 1.1.

Table 1-1: SEA Statement Chapters

No.	Chapter
1	Introduction
2	The Catchment Flood Risk Management Plan
3	Overview of the SEA Process
4	Integration of Consultation into the Final Plan
5	Influence of Environmental Considerations in the Final Plan
6	Measures to Monitor Significant Environmental Effects
7	Conclusion

2. The Catchment Flood Risk Management Plan

The Shannon Estuary North and Mal Bay River Basin is shown in its wider context within the Shannon RBD in Figure 2.1 and in more detail in Figure 2.2. It is located almost entirely in County Clare, with only a very small area extending into counties Limerick, and Galway. The total area of the Shannon Estuary North and Mal Bay River Basin is approximately 2,504 km2. There are 7 Areas for Further Assessments (AFAs) and 1 Individual Risk Receptor (IRR)1 within the River Basin; refer to Table 2.1

The sources of flood risk considered in this study are fluvial and coastal. The River Basin is dominated by two main sub-catchments; the Fergus and the Owenagarney sub-catchments which contain 4 of the 7 AFAs. There are three other smaller sub-catchments namely the Kilrush Creek, the Shannon & Shannon Airport and the Moore Bay Sub-catchments.

Shannon Airport, is the only IRR in the Shannon Estuary North and Mal Bay River Basin, and is at risk from coastal flooding only.

Table 2-1: Areas for Further Assessment in the Shannon Estuary North and Mal Bay River Basin (2011 Census)

Sub-Catchment	Areas for Further Assessment (AFAs) and Individual Risks Receptors (IRRs)	Town Population in 2011
Kilrush Creek	Kilrush	2,657
Fergus	Quin	565
	Ennis	20,142
Shannon and Shannon Airport	Shannon	8,481
	Shannon Airport	-
Owenagarney	Bunratty	219
	Sixmilebridge	1,659
Moore Bay	Kilkee	1,325

The topography in the River Basin varies from the upland areas in the north of the River Basin to the low lying area to the south where the River Basin is bound by the coast. Agriculture is the primary land use in the Shannon Estuary North and Mal Bay River Basin. Details of existing flood relief schemes, arterial drainage schemes and drainage districts within the River Basin are documented in Section 2.6 of the Shannon Estuary North and Mal Bay River Basin Plan.

Flooding within the Shannon Estuary North and Mal Bay River Basin dating back to the 1940's is documented in available records. Although gauging station and rainfall data isn't available for this period, anecdotal evidence exists of a major flood event that occurred in Ennis and its surrounding hinterland in 1947, flooding residential and commercial properties, agricultural lands and roads. The same area was similarly affected by significant floods in 1995, 2005 and 2009. In November 2009, 110 residential and non-residential properties were flooded.

In February 1990, western County Clare experienced serious flooding, with approximately 200 houses and multiple roads affected, many of which were located within the region of Kilkee.

Major flood events occurred throughout the areas of Shannon Airport, Shannon, Kilrush, Bunratty and Sixmilebridge in January 2005. Numerous roads were rendered impassable with surrounding low-lying lands also affected.

The Shannon Estuary North and May Bay River Basin District hydrological study was undertaken in December 2013. The review of the flood history in the River Basin was therefore up to this date. Flood events occurring since this date are known about, for example coastal flooding in January /February 2014, but are not reported

within the Plan. There was also significant nationwide flooding noted in December 2016 and January 2017. However, there was no recorded flooding to properties within the AFAs in this River Basin.

There are several factors that can influence future changes in flooding, including climate change, land use change (e.g. afforestation) and urban growth. As these factors are likely to change over time, the Shannon CFRAM Study has considered how these factors could affect future flood risk within the Shannon catchment.

It is likely that climate change will have a considerable impact on flood risk in Ireland.

- Sea level rise is already being observed and is projected to continue to rise in the future, increasing the risk to our coastal communities and assets, and threatening damage to, or elimination of, inter-tidal habitats where hard defences exist (referred to as 'coastal squeeze');
- It is projected that the number of heavy rainfall days per year may increase, which could lead to an increase in both fluvial and pluvial (urban storm water) flood risk, although there is considerable uncertainty associated with projections of short-duration, intense rainfall changes due to climate model scale and temporal and spatial down-scaling issues; and
- The projected wetter winters, particularly in the west of the country, could give rise to increased groundwater flood risk associated with turloughs (a type of seasonally disappearing lake).

These potential impacts could have serious consequences for Ireland, where most of the main cities are on the coast and many of the main towns are on large rivers.

While there is considerable uncertainty associated with most aspects of the potential impacts of climate change on flood risk, it is prudent to take the potential for change into account in the development of Flood Risk Management policies and strategies and the design of flood risk management measures.

Other changes, such as in land use and future development could also have an impact on future flood risk through increased runoff and a greater number of people and number and value of assets within flood prone areas.

The Shannon CFRAM Study has identified likely large-scale changes in the catchment over the next 50 to 100 years which could significantly influence flood risk. Each of the above influences was examined individually and in-combination to judge their relative influences on flood risk, and based on best available data, a range of potential future catchment-scale scenarios were developed.

The CFRAM Study includes the assessment of risk for two potential future scenarios; the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS).

Using this information, the potential impact of flooding within Shannon Estuary North and Mal Bay River Basin has been identified and mapped. These maps are available with the final Plan and indicate that the most significant increase in flooding in the future is associated with the increase in mean sea levels attributed to climate change. Land use changes and urban growth also increase river flows, although the increase in flooding is predicted to be less extensive.

Figure 2-1: Shannon Estuary North and Mal Bay River Basin in wider context of Shannon RBD

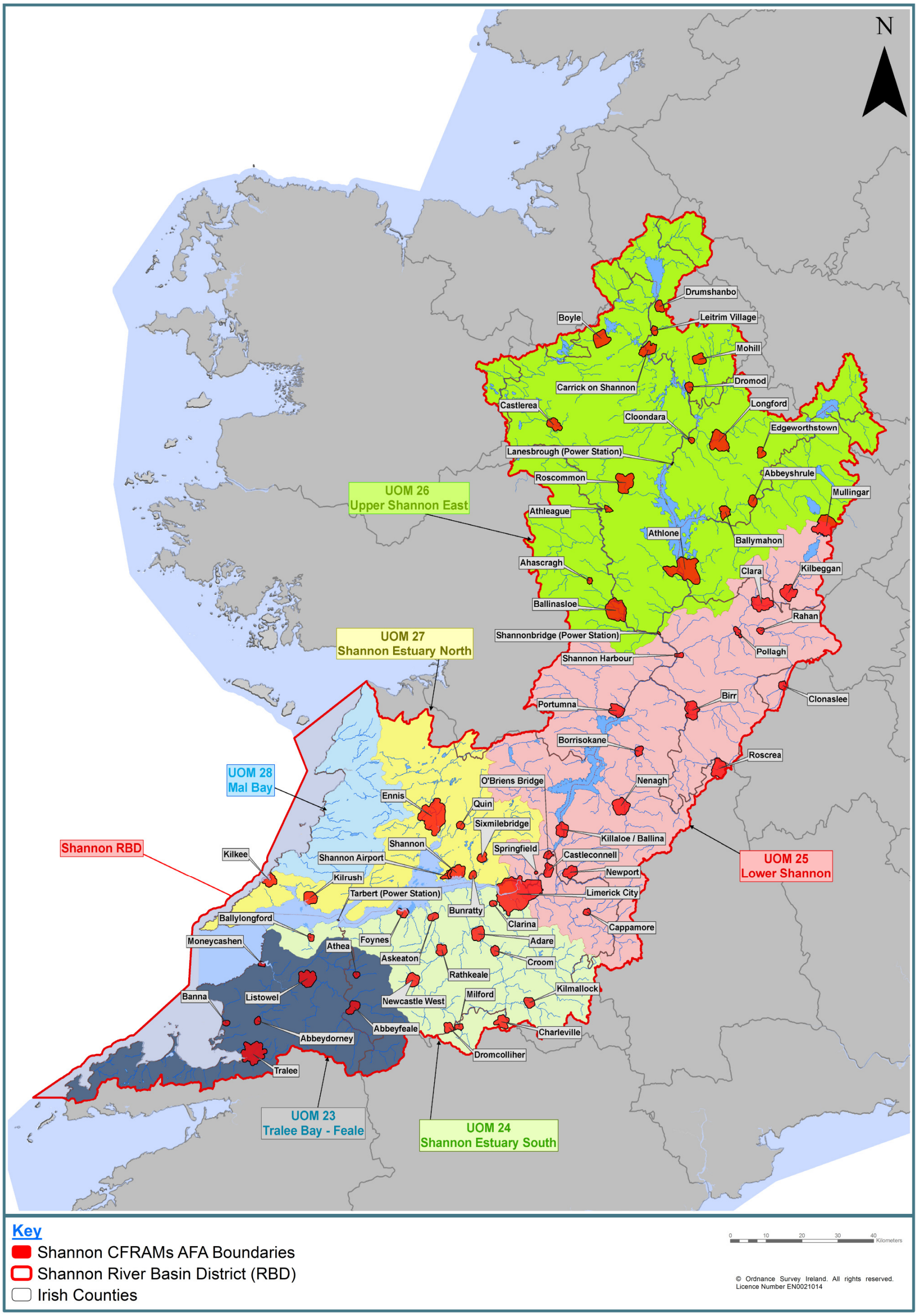
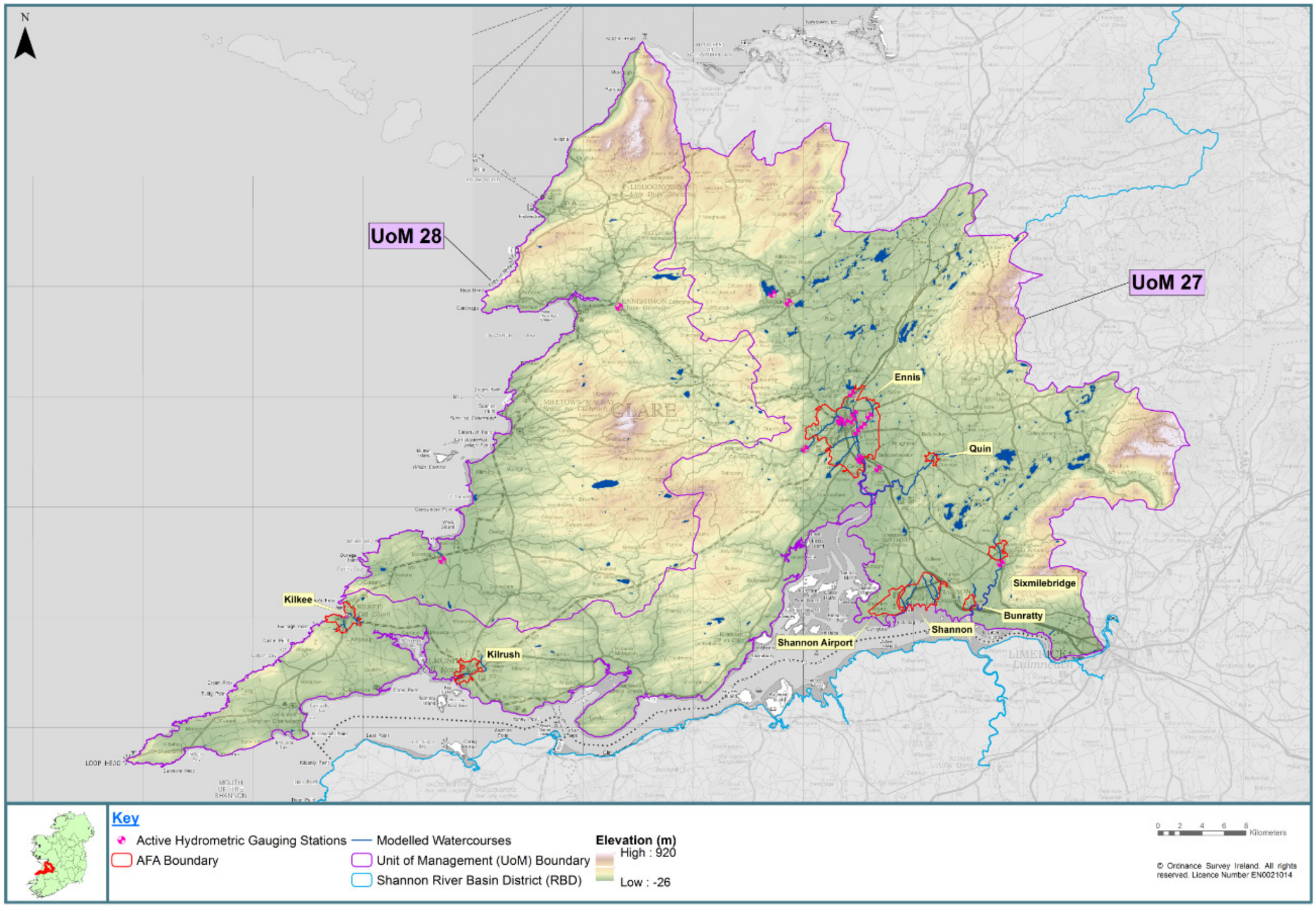


Figure 2-2: Areas for Further Assessment in the Shannon Estuary North and Mal Bay River Basin



3. Overview of the SEA Process

3.1 Introduction

SEA is a process for evaluating, at the earliest appropriate stage, the environmental effects of plans or programmes before they are adopted. It also gives the public and other interested parties an opportunity to comment and to be kept informed of decisions and how they were made. An early consideration of environmental concerns in the planning process creates an opportunity for environmental factors to be considered explicitly alongside other factors such as social, technical or economic aspects.

The key stages of the SEA process, and the associated outputs required are outlined in Table 3.1.

Table 3-1: Overview of SEA Process

SEA Stages	
Screening	To determine the need or otherwise for SEA of a specific plan or programme
	Output required: Screening decision.
Scoping	To identify the aspects of the plan or programme that are relevant to the SEA and the related key environmental issues that need to be considered.
	Output required: Scoping Report and consultation with Statutory Authorities.
Environmental assessment and evaluation	Of the plan or programme: to identify, predict, evaluate and mitigate the potential impacts of the plan or programme and reasonable alternatives.
	Output required: Environmental Report.
Consultation, revision and adoption activities	To seek public opinion on the Draft plan or programme and outcome of the SEA process; influence the content of the final plan or programme and document the outcomes of the SEA process.
	Output required: Consultation with the public and Statutory Authorities on the ER accompanying the Draft plan or programme, and the SEA Post-Adoption Statement (i.e. this document), accompanying the final plan or programme.
Post-adoption activities	Subsequent monitoring of the impacts of the plan or programme during its implementation to inform the future revision and SEA of the plan or programme.
	Output required: Implementation of SEA monitoring regime.

3.1.1 Screening

The need for a SEA on Shannon Estuary North and Mal Bay River Basin was established prior to the commencement of the Shannon CFRAM Study when a screening assessment was undertaken by the OPW for the overall CFRAM Programme.

Flood Risk Management Plans (Plans), including the Plan for the Shannon Estuary North River Basin and Mal Bay River Basin, fall under Annex II of the SEA Directive and need to be 'screened' to determine whether they require SEA depending on the characteristics of the plan/programme, the magnitude of the potential effects and the vulnerability of the area(s) likely to be affected as set out in Schedule 2A of the SEA Regulations (DEHLG, 2004).

Screening was completed by the OPW and concluded that SEA was required for all the FRMPs under the CFRAM programme as:

- The Plans will be carried out for areas typically greater than 1,000 km^2 and collectively they will cover the entire landmass of the Republic of Ireland. The outcomes of the Plans therefore have the potential to have a significant effect on the environment;
- Carrying out SEAs will 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 Plans;
- The Plans will form a framework for future projects and allocation of resources concerning reduction of flooding risk;
- The Plans will influence spatial plans at both regional and local level; and
- The Plans are likely to require an assessment under Article 6 of the EU Habitats Directive.

3.1.2 Scoping

The primary objective of the scoping stage, was to establish a decision-making framework (the SEA objectives) that could be used to evaluate the impact of the Plan on the environment. It comprised:

- Identification of the baseline environmental conditions within the Shannon Estuary North River Basin and Mal Bay River Basin catchment for the following topics:
  - Population and human health;
  - Geology, Soils and Land Use;
  - Tourism and Recreation;
  - Material Assets (Economic), Development and Infrastructure;
  - Water;
  - Fisheries, Aquaculture and Angling;
  - Biodiversity, Flora and Fauna;
  - Landscape and Visual Amenity;
  - Archaeology and Cultural Heritage; and
  - Climate.
- Identification of the key environmental and social issues relevant to flooding and flood risk management, and those issues/topics not relevant to the SEA process.
- Identification of an initial suite of environmental objectives, sub-objectives, indicators and targets proposed to form the decision-making framework for the next stage of the SEA process and to be used to inform the assessment of flood risk management options.

The scoping process was informed by consultation with stakeholders through two SEA scoping workshops held in July and October 2011. All SEA workshop attendees were directly informed of the publication of the SEA Scoping Report. Feedback was specifically sought from the SEA Environmental Authorities through formal issue of the SEA Scoping Report. A response was received from the DEHLG and the EPA who were closely involved in the preparation of the Scoping Report, including the review of draft outputs.

This scoping process also determined the extent and level of detailed environmental information to be included in the SEA and identified the need to collect any additional data during the next stage.

Given the time which elapsed between the SEA scoping process up to 2012 and the completion of the assessment tasks, a second data-gathering exercise was undertaken in 2014/2015 to inform the optioneering phase. In addition, a review of the current plans and programmes applicable to the Shannon CFRAM Study was undertaken.

3.1.3 Incorporation of Environmental Considerations: Environmental Assessment and Evaluation

The SEA process requires that environmental considerations are accounted for in the preparation of the Plan. The sections below summarise the environmental assessment and evaluation process and how this process was taken into account in the preparation of the Plan and also in the detailed options assessment and Multi Criteria Assessment (MCA) processes.

The environmental assessment and evaluation process of the Draft Plan identified the potential significant effects of the Plan and the mitigation measures required to offset identified adverse effects. This stage of the SEA built upon the extensive and comprehensive option assessment process undertaken as part of the overall MCA process.

Identification of the Preferred Option

Within this Shannon Estuary North and Mal Bay River Basin, the full suite of flood risk management measures comprising both structural and non-structural measures, were considered during the initial evaluation stage of the option assessment process. The measures identified for each Spatial Scale of Assessment (River Basin, Sub-catchment or coastal area, AFAs and IRR) within Shannon Estuary North and Mal Bay River Basin were screened using the following criteria:

- Applicability;
- Technical feasibility;
- Economic feasibility;
- Social and Environmental effects.

This process identified a short-list of potential measures for each Spatial Scale of Assessment (SSA) which were subsequently developed into the flood risk management measures considered during the MCA. Relevant environmental constraints, were taken into account, where possible, during the identification and development of these options.

The selection of the preferred measure for each SSA was based on the performance during the MCA process and the overall MCA score. The MCA score considered how each measure performed against the twelve SEA objectives and was influential in the selection of the preferred measure.

Assessment of measures / options under the SEA

All the flood risk management measures considered during the MCA were also subject to SEA where environmental effects were characterised in terms of their quality, duration, permanence, scale and type. All assessments we presented in Appendix B of the SEA Environmental Report. The main SEA Environmental Report presented detailed assessments that considered the potential effects of implementing the preferred measure at the relevant SSA and describes the mitigation measures envisaged to prevent, reduce, and as fully as possible, offset any identified significant negative effects and identifies the residual significance of these effects following mitigation proposed within this report.

Alternative measures / options

The measure / option development process considered a broad range of possible flood risk management measures / options; all these were subject to SEA assessment, see above.

Monitoring

A monitoring framework, to both monitor the predicted significant (moderate to major negative) residual effects of implementation of the flood risk management measures and to update the baseline in order to inform the six yearly review cycle of the CFRAM Study, was developed. The monitoring framework is based on the SEA objectives, targets and indicators. Monitoring will help to identify unforeseen effects of the CFRAM Study, and ensure that where these effects are adverse, action is taken to reduce or offset them. The proposed monitoring framework will commence as soon as the Plan for the Shannon Estuary North and Mal Bay River Basin is implemented and will be revised periodically to take into account new monitoring methods and increased understanding of the environmental baseline.

Cumulative effects of options

The effect of the plan components in isolation were assessed as well as an additional qualitative assessment of potential cumulative effects. In addition, consideration of potential interactions with other plans and strategies external to the Draft Plan for the Shannon Estuary North and Mal Bay River Basin, was also undertaken.

Assessing the strategic recommendations and policies

There are no structural measures which would provide a benefit to multiple AFAs within the UoM or the sub-catchment scale in the Shannon Estuary North and Mal Bay River Basin. The SEA found that these measures and recommendations are unlikely to significantly negatively affect the environment, and it is anticipated that these could have a positive effect in the long term on the Shannon Estuary North and Mal Bay River Basin in terms of the CFRAM Study economic and social objectives.

3.1.4 Consultation, revision and adoption activities

The consultation process adopted for the Draft plan and the SEA is documented in Chapter 4.

3.1.5 Post-adoption activities

The monitoring proposals for the Shannon Estuary North and Mal Bay River Basin Plan are documented in Chapter 6.

3.2 Appropriate Assessment

The Habitats Directive provides legal protection for habitats and species of European importance. The main aim of the Habitats Directive is "*to contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies*" (92/43/EEC).

Actions taken in order to fulfil the Directive must be designed to "*maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*" (92/43/EEC).

The Directive provides for the creation of protected sites, SACs, for a number of habitat types and certain species of flora and fauna. The Directive also seeks to establish Natura 2000, a network of protected areas throughout Europe. SACs, together with SPAs designated under the Birds Directive (79/409/EEC), form the Natura 2000 network. The Directive was incorporated into Irish law by the European Communities (Natural Habitats) Regulations (SI No. 94 of 1997) under Regulation 31 (Annex 1.2).

An assessment is required under the Habitats Directive for any plan or project likely to have a significant effect on a Natura 2000 site. Article 6, paragraphs 3 and 4 of the Habitats Directive state that:

> *6(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*
>
> *6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

This means that, where the implementation of the proposed development is likely to have a significant effect on a Natura 2000 site, the Local Authority must ensure that an appropriate assessment is carried out in view of that site's conservation objectives. The proposed development can only be approved if it has been ascertained that it will not adversely affect the integrity of the Natura 2000 sites concerned or, in the case of a negative assessment and where there are no alternative solutions, the scheme can only be approved for reasons of overriding public interest.

An 'Appropriate Assessment' of the impacts of the Draft Plan on the Natura 2000 sites within and adjacent to Shannon Estuary North and Mal Bay River Basin, was undertaken. This assessment considers whether the recommendations of the Plan for Shannon Estuary North and Mal Bay River Basin are likely to have an effect on the ecological integrity of the Natura 2000 sites within the catchment.

The Appropriate Assessment (AA) process has been integrated with the SEA process. The requirements and value/sensitivity of the Natura 2000 sites within Shannon Estuary North and Mal Bay River Basin were established at the scoping stage and this information was used to inform the option assessment and SEA process. A key objective of the SEA requires the protection, and potential enhancement of these sites, and potential impacts on these sites have been considered within the decision-making process. The AA was undertaken in two stages:

- *Screening* – to identify whether the plan components are likely to give rise to significant adverse effects on Natura 2000 sites, based on an initial assessment and precautionary approach. The results of this assessment are fully documented within an AA Screening Report. The National Parks and Wildlife Service (NPWS) were consulted throughout the undertaking of this assessment.
- *Appropriate Assessment* – following the screening stage, a detailed assessment of the plan components identified as likely to give rise to significant adverse impacts on the Natura 2000 sites within the catchment was undertaken. Following more detailed analysis, this stage concludes whether any of the plan components would have an adverse effect on the ecological integrity of Natura 2000 sites. The results of this assessment are fully documented within a detailed Natura Impact Statement. NPWS were consulted for their comments during the undertaking of this assessment.

4. Integration of Consultation into the Final Plan

In the SEA Regulations, consultation is specifically required at the Scoping stage with the nominated Environmental Authorities, and then with the wider public when the Environmental Report and the Draft Plans are put on public display. Finally, the SEA Statement and the adopted Plan must go on public display at the end of the Plan-making process.

This section (Section 4), together with Section 5 describe the statutory and non-statutory consultation that has taken place over the course of the planning process and how this consultation, along with respective observations and submissions have been taken into account in the preparation of the Plan.

In 2009 the National CFRAM Steering Group was established to provide engagement of key Government Departments and other state stakeholders in guiding the direction and the process of the implementation of the 'Floods' Directive, including the National CFRAM Programme. The membership of this Group included:

- Office of Public Works (OPW);
- County and City Managers Association;
- Dept. Environment, 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 Éireann;
- Office of Emergency Planning;
- Rivers Agency (Northern Ireland); and
- Waterways Ireland.

In addition, the involvement of external parties (both stakeholders and the general public) has been essential to the development of the Plan for Shannon Estuary North and Mal Bay River Basin and accompanying documents. It has been important to both meet statutory requirements for consultation with relevant parties and ensure that the knowledge, experience and views of stakeholders and the general public were taken into account throughout the process.

The objective of the stakeholder and public engagement process undertaken for the Shannon CFRAM Study was to:

- Meet regulatory requirements for consultation under the SEA (2001/42/EC) and Floods (2007/60/EC) Directives;
- Contribute to the success of the Shannon CFRAM Study by:
    - Raising public and stakeholder awareness and develop their knowledge of the Shannon CFRAM Study;
    - Promote and provide active engagement of the public and all stakeholders on the Shannon CFRAM Study; and
    - Provide opportunities for the public and all stakeholders to review and provide comments and submissions on the project outputs and to participate in the decision-making process.

It has been essential to ensure that information relating to the CFRAM study was made available to stakeholders and the general public throughout its development. This has been achieved by ongoing activities as well as phase-specific activities, including:

- A website for the National CFRAM Programme;
- A dedicated website for the Shannon CFRAM study; and

- The provision of a dedicated phone line and postal/email addresses.

4.1 Stakeholder Engagement Activities

An SEA Pre-scoping Workshop was held in July 2011 and formed the first stage of a two-part series of SEA Scoping workshops designed to gather early input from statutory environmental authorities on the SEA.

The second SEA Scoping Workshop was held in October 2011 for a wider range of environmental and Local Authority stakeholders.

The SEA Scoping Report (including the Annex specific to Shannon Estuary North and Mal Bay River Basin) was formally issued to the SEA Environmental Authorities in September 2012, namely:

- The Environmental Protection Agency (EPA);
- The Minister for the Environmental, Community and Local Government;
- The Minister for Agriculture, Food and the Marine;
- The Minister for Communications, Energy and Natural Resources; and
- The Minister for Arts, Heritage and the Gaeltacht.

A digital copy was also provided to all SEA workshop attendees. Submissions on the SEA Scoping Report were received from the EPA and the NPWS which fall under the remit of the Department Arts, Heritage and the Gaeltacht.

A list of the stakeholders involved in the Shannon CFRAM Study is included in Table 4-1.

Table 4-1 CFRAM Steering Group Members

National CFRAM Steering Group	Shannon CFRAM Study Advisory Group and Progress Group
Office of Public Works	Office of Public Works
County and City Managers Association	Jacobs
Dept. Environment, Community and Local Government	Cavan County Council
	Clare County Council
Dept. Agriculture, Food and the Marine	Galway County Council
Dept. of Arts, Heritage and the Gaeltacht	Kerry County Council
Environmental Protection Agency	Laois County Council
Electricity Supply Board	Leitrim County Council
Geological Survey of Ireland (Dept. of Communications, Energy and Natural Resources)	Limerick City and County Council
	Longford County Council
	Mayo County Council
Irish Water	Meath County Council
Met Éireann	Offaly County Council
Office of Emergency Planning	Roscommon County Council
Rivers Agency (Northern Ireland)	Sligo County Council
Waterways Ireland	Tipperary County Council
	Cork County Council
	Westmeath County Council
	Regional Authorities / Assemblies (Midlands, Mid-West, South-West, Northern and Western, Eastern and Midlands)
	WFD Coordinator
	Rivers Agency Northern Ireland

Opportunities provided to interested stakeholders to participate in the development of the Plan included:

- Issue of an introductory information brief to all potentially interested parties seeking data and their views on the key issues within the Shannon catchment; and
- Individual meetings with stakeholders as needed throughout the study to discuss available data; identify key constraints and opportunities and relationships with other relevant plans and strategies; and review key outputs such as the draft flood maps.

All feedback, submissions and comments received from these stakeholders have contributed to the development of the final plan.

4.2 Public Consultation Activities

The OPW decided at the beginning of the National CFRAM Programme that effective consultation and public engagement would require local engagement at a community level, and hence determined that Public Consultation Days (PCDs) would be held in each AFA (where possible and appropriate) to engage with the communities at various stages of the Projects, including during the production of the flood maps.

The PCDs were advertised locally in advance, and were held at a local venue in the community during the afternoon and early evening. OPW, Local Authority and Jacobs staff were present to explain the maps and information that were displayed in the venue and answer any questions on the maps and the CFRAM process.

While the number of attendees at the PCDs were variable, overall the PCDs were very useful in updating and validating the flood maps. The PCDs were also useful as a means to raise awareness of flooding and flood risk in the community, and to begin the discussion on potential measures to manage or reduce the risk.

4.2.1 Draft Flood Map Preparation Consultation

A dedicated Public Consultation Day (PCD) was held for each AFA to present the Draft Flood Maps relevant to that area. In addition to the PCD event, a Councillor viewing session was offered to local elected members to ensure that these attendees were given the opportunity to understand the Draft Flood Maps and ask questions relevant to the communities they represent. These PCDs were organised to explain the Draft Flood Maps and to elicit the views of the public and stakeholders including information they may have in relation to their accuracy. Table 4.2 below summarises the public consultation days held at the Draft Flood Map Preparation Stage in the Shannon Estuary North and Mal Bay River Basin.

Table 4-2 Public Consultation Days Held at the Flood Mapping Stage

AFA	Date	Venue	Attendees
Shannon	23/03/2015	Hughes Suite	18
Bunratty	5/03/2015	Bunratty Castle Hotel	0
Sixmilebridge	5/03/2015	Bridge Complex	4
Ennis	4/03/2015	Clare County Council Offices	33
Quin	4/03/2015	Abbey Room, Quin Community Centre	9
Kilrush	5/11/2014	Kilrush Library	17
Kilkee	5/11/2014	Sweeney Memorial Public Library	18

The Government considered it appropriate to stipulate in SI No. 122 of 2010 that a national consultation exercise on the flood maps should be undertaken. The consultation on the flood maps for all areas was launched in November 2015. Observations and objections submitted through the consultation process have been assessed and the flood maps amended accordingly, where appropriate.

4.2.2 Consultation on Options to Manage Flood Risk

The development of options to manage flood risk (optioneering) stage of the Shannon CFRAM Study identified five locations in Shannon Estuary North and Mal Bay River Basin where flood risk management measures were being proposed. In October 2015 a one-day, dedicated PCD event was organised and held in each of the identified AFAs. The aim of these PCDs was to elicit opinions on the developing options for each AFA and to record initial views on catchment-based solutions. Similar to the draft Flood Map consultation, a Councillor viewing session was arranged prior to opening the event to the public. Table 4.3 below summarises the public consultation days held at the optioneering Stage in Shannon Estuary North and Mal Bay River Basin.

Table 4-3 Public Consultation Days Held at the Flood Risk Management Optioneering Stage

AFA	Date	Venue	Attendees
Shannon	21/10/2015	Oakwood Arms Hotel	5
Quin	21/10/2015	Abbey Room, Quin Community Centre	5
Bunratty	21/10/2015	Bunratty Castle Hotel	0
Kilrush	20/10/2015	Kilrush Library	0
Kilkee	20/10/2015	Sweeney Memorial Public Library	5

4.2.3 Draft Plans Consultation

The Draft Plan for the Shannon Estuary North and Mal Bay River Basin was published for the purposes of public consultation on the 15th July 2016. Observations from the public and from relevant Councils were to be submitted to the OPW by the 23rd September and the 17th October 2016 respectively. Presentations were made to Councils during the public consultation period.

In parallel and complementary to the formal public consultation process, a series of PCDs, similar to those held for the consultation on the flood maps were held to engage locally and directly with the community and provide people with opportunity to discuss and fully understand the Draft Plans. Table 4.4 below summarises the public consultation days held at the Draft Plan Stage in Shannon Estuary North and Mal Bay River Basin.

Table 4-4 Public Consultation Days Held at the Draft Plans Stage

AFA	Date	Venue	Attendees
Shannon	31/08/2016	Oakwood Arms Hotel	3
Ennis	30/08/2016	Clare County Offices	5
Kilkee	31/08/2016	Sweeney Memorial Public Library	0

A further PCD was held to elicit views specifically on the preliminary catchment-wide options to manage flood risk; this event was held on Thursday 26th May 2016 in Athlone Civic Centre, and 78 individuals attended the event.

4.2.4 Other Consultation Initiatives under the Shannon CFRAM Study

A number of on-going consultation initiatives are or have been rolled out for the Shannon CFRAM Study as follows:

- The Shannon CFRAM Study project launch event was held in Athlone in April 2012;
- A Project Advisory Group was established for the Shannon CFRAM Project in 2011 and acts as a forum for communication between the CFRAM Programme and senior management of key stakeholders, primarily Local Authority members. The Project Advisory Group typically met twice a year; and
- A Project Progress Group was established for the Shannon CFRAM Project in 2011. This was a working group that supports the Project Advisory Group and met approximately every six weeks. The Project Progress Group was established to ensure regular communication between key stakeholders and the CFRAM Project and to support the successful implementation of the Project.

4.3 Summary of Submissions

As a result of the stakeholder engagement and public consultation activities, a number of submissions were received in relation to the SEA Environmental Report and Draft Plan. These submissions were categorised into 'Technical' and 'Environmental' submissions and include those relating to the overall Shannon CFRAM Study which can be taken to apply to each River Basin, along with submissions specific to Shannon Estuary North and Mal Bay River Basin. A summary of the submissions received is provided in Table 4.5 below.

Sections 4.4 and 4.5 outline the main themes of the Technical and Environmental submissions received for the Shannon CFRAM Study and for Shannon Estuary North and Mal Bay River Basin. Each submission under these themes was evaluated and in some instances influenced a change or update to the final Plan; these instances are outlined in Section 5 below.

Table 4-5 Summary of Submissions

Submission	Number of General Submissions relating to Shannon CFRAM Study	Number of Submissions relating specifically to Shannon Estuary North and Mal Bay River Basin
Technical	67	23
Environmental	258	13

4.4 Key Themes Raised in the General Submissions Relating to the Shannon CFRAM Study

4.4.1 Technical Consultation Themes

A total of 67 'Technical' submissions, relating to the general Shannon CFRAM Study, were received from the following stakeholders: County Councils; the Public; Politicians; Organisations; and unknown contributors.

Analysing these 67 submissions identified that there were 4 Technical common themes, as follows:

- Information;
- Policy;
- Technical; and
- Non–Flood Risk.

These Technical themes encompass a range of topics raised in the submissions as a result of the consultation process. Table 4.6 below provides greater clarity on these 4 Technical themes by outlining the principal consultation topics covered by each.

Table 4-6 Summary of Overarching Technical Themes

Overarching Technical Theme	Total No. of Submissions	Breakdown of Key Topics Covered by Overarching Theme
Information	1	Submissions providing local knowledge or information in relation proposed measures.
Policy	30	Submissions relating to, but not limited to, the following key issues: • Legislative requirements. • Cognisance of other existing plans / programmes / objectives / strategies / frameworks that may impact on flooding or be impacted by proposed measures in the Plans. • Proposed establishment of a 'Single Agency' to manage the River Shannon. • Programme of work / priority of works under the Shannon CFRAM Study. • Insurance, including the inability to obtain flood insurance. • Climate change and how this was considered in the preparation of the Plans. • Maintenance Programme of the River Shannon and its tributaries – both the requirement for a maintenance programme and the lack of execution of existing programmes. • The delineation of the AFA or flooding outside of AFA boundaries. • Rural Flooding – and that it is not addressed in Plans. • General priorities – i.e. the prioritisation of environmental issues over people.
Technical	27	Submissions relating to, but not limited to, the following key issues: • Methodology and approach. • Proposed measures and suggestions of alternatives / variations. • Suggested maintenance or dredging. • Potential impacts of proposed measures. • Flooding occurring outside the AFA. • Report format, including ease of understanding, use of acronyms, etc.
Non-Flood Risk	9	Submissions relating to non-flooding issues, such as water supply, water quality issues, etc.

4.4.2 Environmental Consultation Themes

A total of 258 'Environmental' submissions, relating to the general Shannon CFRAM Study, were received from the following stakeholders: The Environmental Protection Agency (EPA); An Taisce; Birdwatch Ireland; the Development Applications Unit (DAU) of the National Parks and Wildlife Service; Forest Service; Inland Fisheries Ireland (IFI); Sustainable Water Network (SWAN); Members of the Public; and Other Organisations.

Analysing these 258 submissions identified that there were 9 Environmental themes. These Environmental themes encompass a range of topics raised in the submissions as a result of the consultation process. Table 4.7 below provides greater clarity on these 9 Environmental themes and outlines the principal consultation topics covered by each.

Table 4-7 Summary of Overarching Environmental Themes

Overarching Environmental Theme	Total No. of Submissions	Breakdown of Key Topics Covered by Overarching Theme
i. Methodology and Approach	27	Submissions relating to, but not limited to, the following key issues: • Methodology and approach applied to the assessment process and to the measures considered. • Approach applied to the reports / reporting. • Approach to monitoring of the Plan. • The long term plan, beyond this cycle of the Shannon CFRAM Study.
ii. Other Plans and Programmes	24	Submission relating to cognisance of other existing plans / programmes / objectives / strategies / frameworks that may impact on flooding or be impacted by proposed measures in the Plans.
iii. SEA related comments	46	Submissions relating to, but not limited to, the following key issues: • The thoroughness / level of detail of the SEA report. • Specific queries on the content of the SEA and the approach (both positive and negative submissions). • Findings of SEA. • Incorporation of SEA into mitigation measures • Format and size of SEA report.
iv. Integration of SEA / Plan	30	Submissions relating to, but not limited to, the following key issues: • Integration / Coordination with the Water Framework Directive (WFD), Habitats Directive, or Floods Directive. • General legislative compliance.
v. Impact Assessment	35	Submissions relating to, but not limited to, the following key issues: • Assessment of impacts to sites / stakeholders / environment. • Protection of critical infrastructure • Mitigation measures.
vi. Proposed Measures	64	Submissions relating to, but not limited to, the following key issues: • Suitability of recommendations / measures • Additional information in relation to measures and other considerations. • Management of flood risk.
vii. Consultation	10	Submissions relating to the consultation activities or consultation requirements.
viii. Information	4	Submissions providing local knowledge or information.
ix. Governance	18	Submissions relating to governance or implementation or the regulatory context.

4.5 Key Themes Raised in the Specific Submissions Relating to Shannon Estuary North and Mal Bay River Basin

4.5.1 Technical Consultation Themes

A total of 23 'Technical' submissions, specifically relating to the SEA Environmental Report and draft Plan for Shannon Estuary North and Mal Bay River Basin, were received from the following stakeholders: the relevant County Council and members of the Public.

As a result of analyses of these 23 submissions, 4 Technical themes, specific to Shannon Estuary North and Mal Bay River Basin, were identified, comprising:

- Information
- Policy
- Technical
- Non-Flood Risk

Table 4.8 below provides a breakdown of the themes in relation of the number of submissions and the relevant Stakeholders.

Table 4-8 Shannon Estuary North and Mal Bay Submissions Summary - Technical Themes and Stakeholders

Consultation Theme	Summary of topics covered by Consultation theme	Total No. of Submissions		Breakdown of Submissions by Stakeholder		
				County Council	Other Organisations	Members of the Public
Information	• General information relating to impacts of potential measures. • Reference to previous comments submitted	3		1	-	2
Policy	• Consultation process • Cognisance of other schemes • Areas outside of AFA • Programme of work / priority of works under the Shannon CFRAM Study • Maintenance programme • Flooding in rural areas • Comments addressed to other stakeholders.	8		5	2	1
Technical	• Suggested measures/alternatives • Methodology and approach	9		4	1	4
Non-Flood Risk	Submissions relating to non-flooding issues, such as water supply, water quality issues, etc.	3		-	-	3
TOTAL		**23**		**10**	**3**	**10**

4.5.2 Environmental Consultation Themes

A total of 13 'Environmental' submissions, specifically relating to the SEA Environmental Report and draft Plan for Shannon Estuary North and Mal Bay River Basin, were received from the following stakeholders: The Development Applications Unit (DAU) of the National Parks and Wildlife Service; Sustainable Water Network (SWAN); and other Organisations.

As a result of analyses of these 13 submissions, 5 Environmental themes specific to Shannon Estuary North and Mal Bay River Basin were identified, comprising:

- Proposed Measures
- Natura Sites
- Assessment of Impacts
- Matters & Mitigation relating to the Plan
- General

Table 4.9 below provides a breakdown of the themes in relation of the number of submissions and the relevant Stakeholders.

Table 4-9 Shannon Estuary North and Mal Bay Submissions Summary - Environmental Themes and Stakeholders

Consultation Theme	Summary of topics covered by Consultation theme	Total No. of Submissions		Breakdown of Submissions by Stakeholder		
				DAU	SWAN	Other
Proposed Measures	Comments on measures proposed.	1		-	1	-
Natura Sites	Impacts / Impact assessment process for Natura Sites.	2		-	2	-
Assessment of Impacts	Comments on the assessment of impacts to sites / stakeholders / environment.	3		-	3	-
Matters & Mitigation relating to the Plan	Comments on: • Methodology/approach to assessment undertaken. • Legislative maintenance requirements. • Mitigation measures.	6		5	-	1
General	Comments on the report	1		1	-	
TOTAL		**13**		**6**	**6**	**1**

5. Influence of Environmental Considerations in the Final Plan

The SEA process accompanied the preparation of the Shannon Estuary North and Mal Bay River Basin and the NIS, to meet the requirements of the Irish Regulations transposing the EU SEA and Habitats Directive respectively [1] (European Commission, 2004) (European Commission, 2011). Therefore, from the outset, considerations of the environmental consequences during the development of the measures have been taken into account. At a formal level, the process involved a series of workshops, presentations, discussions and meetings between the SEA, NIS and Plan Teams as well as with statutory consultees, non-statutory stakeholders and the public.

The SEA and NIS processes have ensured that potential environmental impacts (both negative and positive) associated with the implementation of the Plan have been given consideration during its preparation.

5.1 Environmental Objectives

The SEA process was integrated with the development of flood risk management measures which included the comprehensive multi-criteria analysis process. The SEA objectives forming part of this multi-criteria analysis provide the means by which the potential environmental effects of proposed flood risk management measures can be tested. These SEA objectives comprise 12 of the 15 CFRAM Study objectives and have been used during the measure assessment process to determine the preferred flood risk management strategy. The SEA objectives are comprised of the economic, social and environmental objectives (i.e. no technical objectives are considered under SEA). The other objectives were social, economic and technical.

The 12 SEA objectives are outlined in Table 5.1. Details of the associated indicators and targets are presented in the SEA Environmental Report.

Table 5-1 SEA Objectives

Criteria	Objective	Sub-Objective
Economic	i) Minimise economic risk	Minimise economic risk
	ii) Minimise risk to transport infrastructure	Minimise risk to transport infrastructure
	iii) Minimise risk to utility infrastructure	Minimise risk to utility infrastructure
	iv) Minimise risk to agriculture	Minimise risk to agriculture
Social	v) Minimise risk to human health and life	Minimise risk to human health and life
		Minimise risk to high vulnerability properties
	vi) Minimise risk to community	Minimise risk to social infrastructure
		Minimise risk to local employment
Environmental	vii) Support the objectives of the WFD	Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives.
	viii) Support the objectives of the Habitats Directive	Avoid detrimental effects to, and where possible enhance, Natura 2000 network, protected species and their key habitats, recognising relevant landscape features and stepping stones.

[1] SI No. 435 of 2004 (SEA Directive) and SI No. 477 of 2011 (Habitats Directive)

Criteria	Objective	Sub-Objective
	ix) Avoid damage to, and where possible enhance, the flora and fauna of the catchment	Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern.
	x) Protect, and where possible enhance, fisheries resource within the catchment	Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.
	xi) Protect, and where possible enhance, landscape character and visual amenity within the river corridor	Protect, and where possible enhance, visual amenity, landscape protection zones and views into/from designated scenic areas within the river corridor.
	xii) Avoid damage to or loss of features of cultural heritage importance and their setting	Avoid damage to or loss of features of architectural value and their setting.
		Avoid damage to or loss of features of archaeological value and their setting.

5.2 Summary of Assessment

The integration of the SEA process within the development of the plan ensured that, where possible, the proposed flood risk management measures met the requirements of the SEA objectives set out in Table 5.1. Where possible, measures that could give rise to significant negative environmental effects (i.e. failing to meet the minimum targets set out for each of the SEA objectives) were not favoured during the measure selection process.

The SEA identified that there were also proposed flood risk management measures could give risk to a number of positive environmental effects. However, there were some negative environmental effects arising from the proposed flood risk management measures that could not be avoided through the selection of alternative measures.

5.3 Summary of Changes to the Final Plan

As a result of the consultation on the Draft Plan, which is summarised in Chapter 4, a number of changes were made to the Final Plan. This Chapter outlines these changes, which are categorised as follows:

- General change: Layout and level of detail;
- Changes to Measures: River Basin Scale;
- Changes to Measures: AFA Scale, and;
- Changes to Mitigation Measures: All Scales.

The following sections summarise the changes under each of the above respective headings, with the relevant comment ‘theme’ identified in Chapter 4 that has contributed to the change.

5.3.1 General Change: Layout and level of detail

There have been general changes to the overall layout and detail of the Final Plan, including:

- Details presented in Section 6 of the Draft Plan on Flood Risk Management Objectives, is provided in Section 1 of the Final Plan;
- Details presented in Section 2 of the Draft Plan, is provided in Appendix B of the Final Plan;
- The information and content of the Appendices has been rearranged in the Final Plan, and
- Details of the screening of measures and alternative measures considered for each AFA has been removed.

Along with these changes in overall layout, more detailed information has been included in the Final Plan on the implementation routes for measures once the Plan is adopted. This information is provided in Section 6 of the Plan, 'Environmental Considerations', and highlights that the adoption of the Plan does not constitute approval or permission for the installation / construction of any measure.

Section 6 in the Plan now states that the progression of any measure towards the implementation of flood relief works, or a 'Scheme', must include an EIA and/or AA Screening. Where this screening concludes the need for an Environmental Impact Assessment and / or Appropriate Assessment, it must be delivered in accordance with the relevant legislation and must take into account any new information available at that time. More details on the measures, or Schemes requiring planning consent is also included.

Additional details on the implementation of the Plan are provided in Section 8 'Implementation, Monitoring and Review of the Plan'. Within this Section, details of the different routes for promoting a Measure, or Scheme, are discussed and include:

- OPW Lead Scheme;
- Local Authority Lead Major Scheme;
- Local Authority Lead Minor Scheme.

The Consultation theme's (refer to Chapter 4), that have contributed to these changes in the Final Plan are as presented in Table 5.2.

Table 5-2 Consultation Themes influencing 'General Change'

Technical Theme		Environmental Theme	
Theme Title	**Resulted in Change**	**Theme Title**	**Resulted in Change**
Information	✗	Natura Sites	✗
Policy	✓	Nature Conservation	✗
Technical	✗	Matters & Mitigation relating to the Plan	✗
Non Flood Risk	✗	Assessment of Impacts	✗
		General	✗

5.3.2 Changes to Measures: River Basin Scale

Table 5.3, summarises the recommended measures for the River Basin Spatial Scale, identifying those that have changed in the Final Plan.

Table 5-3 Changes to River Basin Measures in the Plan

Measure	Change to the Final Plan
Prevention	
Sustainable Planning and Development Management	No Change
Sustainable Urban Drainage Systems	No Change
Voluntary Home Relocation Scheme	The Draft Plan noted that the Inter-Departmental Flood Policy Review Group was considering the policy options around voluntary home relocation for consideration by Government. The Final Plan notes the response to the floods of Winter 2015/2016, and the Government has agreed to the administrative arrangements for a voluntary homeowner relocation scheme, to provide humanitarian assistance for those primary residences worst affected by these floods. At present, there is no Scheme to provide financial assistance to other home-owners choosing to relocate due to their flood risk. The recommended measure is qualifying home owners affected by the flood event in Winter 2015/16 that may avail of a Voluntary Homeowner Relocation Scheme that has been put in place by Government.
Local Adaptation Planning	No Change
Land Use Management and Natural Flood Risk Management Measures	In the draft plan it was noted the OPW will continue to work with the EPA and other agencies implementing the WFD to identify, where possible, measures that will have benefits for both WFD and flood risk management objectives, such as natural water retention measures. While in the final plan this was clarified that the OPW will work with the EPA, local authorities and other agencies during the project-level assessments of physical works and more broadly at a catchment-level to identify, where possible, measures that will have benefits for both WFD and flood risk management objectives, such as natural water retention measures, and also for biodiversity and potentially other objectives, including the use of pilot studies and applications, where possible.
Protection	
Minor Works Scheme	The threshold for the Minor Works Scheme has increased from €500k to €750k. The BCR was also changed from 1.5 to 1.35.
Maintenance of Arterial Drainage Schemes and Existing Flood Relief Schemes	In the Final Plan ongoing maintenance of arterial drainage schemes is not recommended as a measure, having been removed since the publication of the Draft Plan. It is noted that 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. In the Final Plan there is also reference to existing Flood Relief Scheme's and that the Local Authorities should also maintain those Schemes for which they have maintenance responsibility. The plan does not amend these responsibilities to include additional flood relief.
Maintenance of Drainage Districts	The Final Plan does not recommend maintenance of drainage districts as a measure, having been removed since the publication of the Draft Plan. It is noted that Local Authorities have a statutory duty to maintain the Drainage Districts. This Plan does not amend these responsibilities to include additional flood relief.

Measure	Change to the Final Plan
Maintenance of Channels Not Part of a Scheme	In the Final Plan, there is no recommended measure but it is noted that outside of the Arterial Drainage and Drainage District Schemes, landowners who have watercourses on their lands have a responsibility for their maintenance. 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	No Change
Review of Emergency Response Plans for Severe Weather	No Change
Individual and Community Resilience	No Change
Individual Property Protection	In the Final Plan "Individual Property Protection" is the recommended measure for consideration by home owners (and also funded by the homeowner), along with consideration by the Inter-departmental Flood Policy Coordination Group of policy options, for consideration by Government, around installation of Individual Property Protection measures; this measure has been expanded since the Draft Plan. In the Draft Plan the measure was just "Assessment of Potential for Individual Property Protection Scheme" to be implemented by the Interdepartmental Flood Policy Coordination Group.

The Consultation theme's (refer to Chapter 4), that have contributed to these changes in the Final Plan are as presented in Table 5.4.

Table 5-4 Consultation Themes influencing 'Changes to Measures at River Basin Scale'.

Technical Theme		Environmental Theme	
Theme Title	**Resulted in Change**	**Theme Title**	**Resulted in Change**
Information	×	Natura Sites	×
Policy	✓	Nature Conservation	×
Technical	×	Matters & Mitigation relating to the Plan	×
Non Flood Risk	×	Assessment of Impacts	×
		General	×

5.3.3 Changes to Measures: AFA Scale

Table 5.5 confirms that none of the AFA's recommended measures within the Shannon Estuary North and Mal Bay River Basin, changed in the Final Plan.

Table 5-5 AFA Scale Changes

Sub-Catchment	Areas for Further Assessment (AFAs).	Changes to Measures in Final Plan
Kilrush Creek	Kilrush	No
Fergus	Quin	No
	Ennis	No
Shannon and Shannon Airport	Shannon	No
	Shannon Airport	No
Owenagarney	Bunratty	No
	Sixmilebridge	No
Moore Bay	Kilkee	No

Consequently, although Chapter 4's Consultation themes have been noted, Table 5.6 confirms that none of these contributed to changes in the Final Plan.

Table 5-6 Consultation Themes influencing 'Changes to Measures at AFA Scale'.

Technical Theme		Environmental Theme	
Theme Title	**Resulted in Change**	**Theme Title**	**Resulted in Change**
Information	×	Natura Sites	×
Policy	×	Nature Conservation	×
Technical	×	Matters & Mitigation relating to the Plan	×
Non Flood Risk	×	Assessment of Impacts	×
		General	×

5.3.4 Changes to Mitigation Measures: All Scales

The recommended mitigation is presented in Section 6.6.3 of the Plan. Projects stemming from the Plan will apply a range of standard processes and measures that will mitigate potential environmental impacts. While the applicability of processes and particular measures will be dependent on the nature and scale of each project, examples of typical processes and measures that will be implemented where applicable at the different stages of project implementation are set out below.

Project Mitigation: Consenting Process

The consenting process for the progression of measures involving physical works will require the applicable environmental assessments. Also, the consenting authorities may set out specific environmental conditions as part of the project approval.

Project Mitigation: Pre-Construction / Detailed Design

For the detailed design of projects, where options are available, the design uses a hierarchy to mitigation measures along the following principles:

- Avoidance: avoid creating the potential impact where feasible.

- Mitigation: minimise the potential impact through mitigating measures.
- Enhancement: Enhance the environment to better than pre-project conditions, where reasonably possible.

Project Mitigation: Construction Stage

For large and complex projects and sites, where environmental management may entail multiple aspects, a project specific Construction Environmental Management Plan (CEMP) may be developed. This will form a framework for all environmental management processes, mitigation measures and monitoring.

A designated environmental officer, project ecologist and project archaeologist will be appointed, as appropriate for the project.

Project Monitoring

The Plan, with its associated SEA and plan-level AA, sets out a series of monitoring requirements, in connection with the SEA objectives and the predicted effects of the Plan. For measures involving physical works, the project-level EIA and AA, where conducted, will set out the specific monitoring required for each measure.

The Consultation theme's (refer to Chapter 4), that have contributed to these changes in the Final Plan are as presented in Table 5.7.

Table 5-7 Consultation Themes influencing 'Changes to Mitigation Measures at all Scales'.

Technical Theme		Environmental Theme	
Theme Title	**Resulted in Change**	**Theme Title**	**Resulted in Change**
Information	✗	Natura Sites	✗
Policy	✗	Nature Conservation	✗
Technical	✗	Matters & Mitigation relating to the Plan	✓
Non Flood Risk	✗	Assessment of Impacts	✗
		General	✗

5.4 Mitigation Measures

Mitigation measures are the initiatives which have been identified in the SEA ER to prevent or reduce any potential significant effects on the environment. The SEA Option Appraisal process identified that the proposed FRM options could give rise to a number of permanent positive environmental effects, but also some temporary and permanent significant negative environmental effects.

For all identified negative effects, mitigation measures were proposed in the SEA ER to be taken forward to the future detailed option development stage in order to avoid or reduce (e.g. through appropriate design) these predicted effects.

The principal mitigation recommendation was that the predicted negative effects should be considered further during the future stages of options development, when option proposals (e.g. visual appearance, alignment of flood defences, etc.) can be optimised through detailed design in order to limit identified impacts on sensitive receptors.

Mitigation measures were identified in Section 9.4 of the SEA ER and relate to three key areas, namely:

1. Mitigation through design: maximising the design process to minimise environmental impacts. At this stage of option development, the requirement of all planning and environmental consent processes will be applicable;
2. Implementation of construction mitigation: implementation of typical construction best practise by appointed contractors during the construction stages of future options relevant to the Plan; and
3. "Aspect" specific mitigation measures relevant to aspects including ecology, fisheries, water quality, landscape and visual and cultural heritage to minimise environmental impacts on these receptors.

5.5 Reasons for Selection of the Final Plan (over other reasonable alternatives)

Table 5.8 summarises the reasons for selecting the potential measures in the Final Plan, over other considered measures.

Table 5.8 Reason for Selecting

Areas for Further Assessment (AFAs) and Individual Risk Receptors (IRRs)	Reason for selecting recommended measure in the Final Plan
Kilrush	There was only one viable measure identified for Kilrush.
Quin	The only viable measures identified for Quin are "Do Nothing", "Existing Regime" and "Public Awareness".
Ennis	Ennis already benefits from networks of existing flood relief schemes, therefore no additional measures specific to Ennis were proposed.
Shannon	The potential measure for Shannon was selected as it received the highest MCA Score/Cost Ratio.
Shannon Airport (IRR)	There is no flood risk to any properties within the Shannon Airport IRR in the 0.5% AEP event and therefore no assessment of measures has been carried out for this design standard.
Bunratty	There was only one viable measure identified for Bunratty.
Sixmilebridge	Sixmilebridge already benefits from an existing flood relief scheme, therefore no additional measures specific to Sixmilebridge were proposed.
Kilkee	The potential measure for Kilkee was selected as it received the highest MCA Score/Cost Ratio.

6. Measures to Monitor Significant Environmental Effects

The SEA Directive requires significant environmental effects resulting from the implementation of plans and programmes to be monitored, to identify at an early stage any unforeseen effects and to be able to take remedial action.

To address this requirement, a monitoring framework has been developed which is linked to the SEA objectives and their framework of indicators and targets. The monitoring proposals for the Shannon Estuary North and Mal Bay River Basin Plan are presented below in Table 6.1.

The monitoring framework will be reviewed during the 6-year review cycle for the Plan and the outcomes from it will be recorded.

Table 6.1 The Proposed Monitoring Framework

	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
Economic	Minimise economic risk	Minimise economic risk	Annual Average Damage (AAD) expressed in Euro / year, calculated in accordance with the economic risk assessment methods, but with no allowance for social / intangible benefits	AAD is not increased	Residential properties (GIS dataset)	Geo Directory	Quarterly	N/A
	Minimise risk to transport infrastructure	Minimise risk to transport infrastructure	Number and type of transport routes at risk from flooding	No increase in risk to transport infrastructure	Road network (GIS Data)	Local Authorities /NRA	Unknown	Local Authorities
					Rail & Airport (GIS Data)	Local Authorities / Irish Rail	Unknown	Local Authorities
	Minimise risk to utility infrastructure	Minimise risk to utility infrastructure	Number and type of infrastructure assets at risk from flooding	No increase in risk to utility infrastructure	Power Station (GIS Data) Geo Directory	An Post	Quarterly	N/A
					HV Substations (GIS Data) - Geo Directory	An Post	Quarterly	N/A
					Gas Assets (GIS Data)	Bord Gáis	Unknown	N/A
					Water Treatment Plants & Pumping Facilities (GIS Data)	EPA	Every 2-5 years	N/A
					Waste Water Plants & Pumping Facilities (GIS Data)	EPA	Every 2-5 years	N/A
					Telecommunications	Various providers	Unknown	N/A

	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
	Minimise risk to agriculture	Minimise risk to agriculture	Agricultural production	No increase in the negative impact of flooding on agricultural production	Agricultural Land (GIS Data) - Corine Land Cover	EPA	Every 6 years minimum	N/A
Social	Minimise risk to human health and life	Minimise risk to human health and life of residents	Annual Average Number of residential properties at risk from flooding	Number of properties at risk is not increased	Residential Property classification Geo Directory (GIS Data)	Geo Directory	Quarterly	N/A
		Minimise risk to high vulnerability properties	Number and type of high vulnerability properties at risk from flooding	Number of high vulnerability properties at risk not increased	Hospital, Nursing Homes (GIS Data)	HSE	Unknown	N/A
					Prisons	IPS	Unknown	N/A
					Camping, caravan Halting Sites - Geo Directory	An Post	Quarterly	N/A
					Schools (GIS Data)	Department of Education Higher Education Authority	Unknown	N/A
	Minimise risk to community	Minimise risk to social infrastructure	Number of social infrastructure assets at risk from flooding in a 0.1% AEP event	Number of social infrastructure assets at risk not increased	Social Amenity Assets (e.g. Libraries, Churches) (GIS Data) - Geo Directory	An Post	Quarterly	N/A

	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
		Minimise risk to local employment	Number of non-residential (i.e., commercial) properties at risk from flooding in a 1% AEP Event	Number of non-residential properties at risk not increased	Commercial Properties (GIS Data) - Geo Directory	An Post	Quarterly	N/A
Environmental	Support the objectives of the WFD	Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives.	Status of the water bodies	Provide no constraint to the achievement of water body objectives.	WFD Data (GIS data) Potential Pollution Sources (GIS data)	EPA	Every 6 years minimum	EPA – statutory authority responsible for on-going monitoring of surface water quality and trends in rivers, which are assessed with regard to ecological criteria and physico-chemical water quality standards. Annual survey of water quality of estuaries and near-shore coastal waters. National WFD groundwater monitoring programme.

	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
	Support the objectives of the Habitats Directive	Avoid detrimental effects to, and where possible enhance, Natura 2000 network, protected species and their key habitats, recognising relevant landscape features and stepping stones.	Conservation Status of qualifying habitats and Species	No deterioration in the conservation status of designated sites as a result of flood risk management measures	Article 17 Report	NWPS	Every 6 years minimum	NPWS - Under Article 11 of the Directive, each member state is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive.
	Avoid damage to, and where possible enhance, the flora and fauna of the catchment	Avoid damage to or loss of, and where possible enhance, nature conservation sites and protected species or other know species of conservation concern.	Conservation Status of qualifying habitats and Species	No deterioration of in condition of existing sites due to the implementation of flood risk management option	Article 17 Report	NWPS	Every 6 years minimum	NPWS – prepare conservation objectives and conservation management plans for the designated conservation sites. Local Authority Biodiversity Action Plans

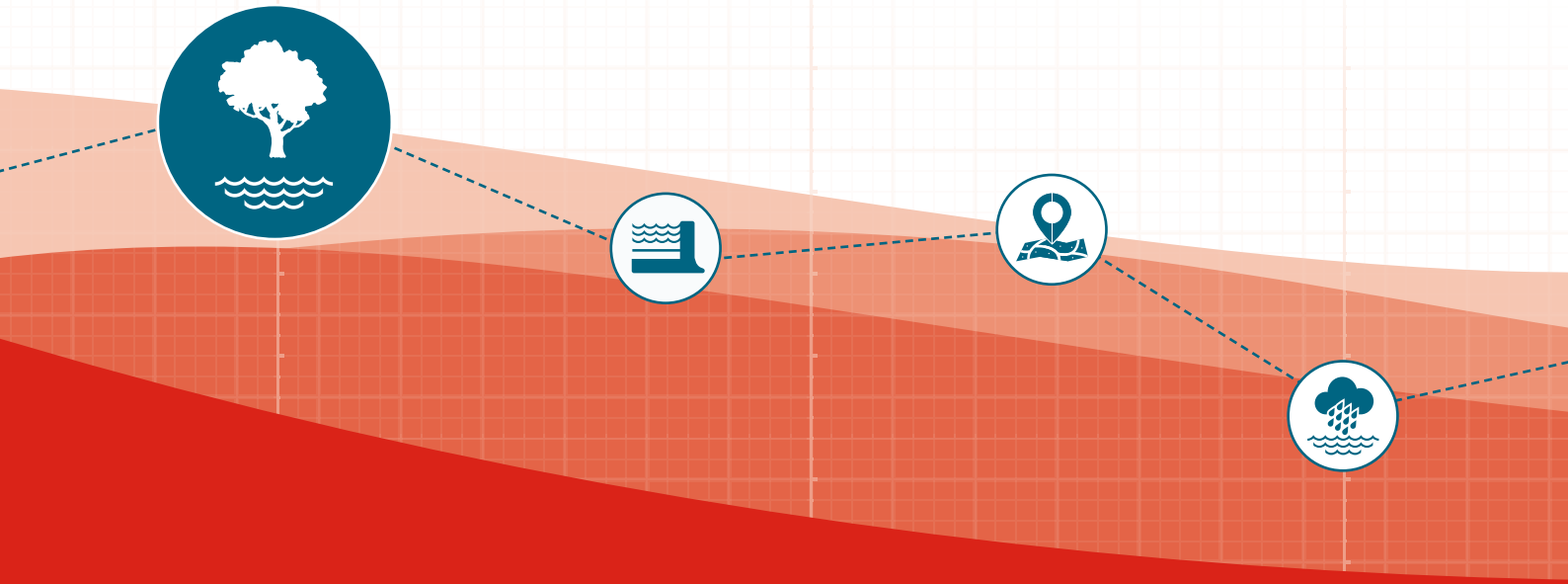
	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
	Protect, and where possible enhance, fisheries resource within the catchment	Maintain existing, and where possible create new, fisheries habitat including the maintenance or improvement of conditions that allow upstream migration for fish species.	Area of suitable habitat supporting salmonid and other fisheries	No loss of integrity of fisheries habitat Maintenance of upstream accessibility	Salmonid Water monitoring	IFI	Every 6 years minimum	Inland Fisheries Ireland responsible for management of fisheries in rivers and streams and provide records of fishing activities.
	Protect, and where possible enhance, landscape character and visual amenity within the river corridor	Protect, and where possible enhance, visual amenity, landscape protection zones and views into / from designated scenic areas within the river corridor.	Area designated as scenic, etc.	No significant impact on landscape designation (protected site, scenic route/amenity, natural landscape form) within zone of visibility of measures No significant change in the quality of existing landscape characteristics of the receiving environment	Landscape character areas, scenic routes/area	Local Authorities	During Development Plan Review every 5 years	Local Authorities through the landscape character assessment and development plans

	Objective	Sub-objective	Indicator	Basic Requirement	Data set	Data Source Owner	Frequency of Update	Responsibility of relevant existing Monitoring
	Avoid damage to or loss of features of cultural heritage importance and their setting	Avoid damage to or loss of features of architectural value and their setting.	Number and types of internationally, nationally and locally designated areas and structures at risk from flooding	No increase in risk to architectural features at risk from flooding. No detrimental impacts from flood risk management measures on architectural features.	NIAH (GIS data) RPS/ACA (GIS data)	NIAH of the DELG Local Authorities	Periodically During Development Plan Review every 5 years	N/A
		Avoid damage to or loss of features of archaeological value and their setting.	Number and types of internationally, nationally and locally designated areas and structures at risk from flooding	No increase in risk to archaeological features at risk from flooding. No detrimental impacts from flood risk management measures on archaeological features.	Record of Monuments and Places (RMP) National monuments subject to reservation orders/in state care	National Monuments Service of the DEHLG	Periodically	N/A

7. Conclusion

The purpose of this SEA Statement has been to demonstrate how the SEA process has influenced the development of the Flood Risk Management Plan (the Plan) for the Shannon Estuary North and Mal Bay River Basin. Full integration of the SEA with the Plan has ensured that the potential for adverse environmental effects will be subject to appropriate action as the measures recommended by the Plan are implemented.

Consultation comments have been taken into consideration throughout the development of the SEA and these have been incorporated where appropriate. These comments and concerns have contributed to the production of an assessment demonstrated through the Plan for the Shannon Estuary North and Mal Bay River Basin and the accompanying SEA documentation.



The Office of Public Works
Head Office
Jonathan Swift Street
Trim
Co. Meath
C15 NX36

Telephone: (0761) 106000, (046) 942 6000
E-mail: floodinfo@opw.ie
Website: www.floodinfo.ie