Department for Infrastructure
An Roinn Bonneagair
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Habitats Regulations Assessment Report

for

Northern Ireland Flood Risk Management Plan 2021-2027

DEC 2021

ACKNOWLEDGEMENTS

This report was prepared by **RPS Group Plc** for Water and Drainage Policy Division (WDPD) of the Department for Infrastructure (DfI)

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ABBREVIATIONS

AA	Appropriate Assessment
APSFR	Area(s) of Potential Significant Flood Risk
CJEU	Court of Justice of the European Union
DAERA	Department of Agriculture, Environment and Rural Affairs
DARD	Department of Agriculture and Rural Development
DfI	Department for Infrastructure
EC	European Commission
EcIA	Ecological Impact Assessments
ESCP	Erosion and Sedimentation Control Plan
EU	European Union
FAS	Flood Alleviation Scheme
FHRM	Flood Hazard and Risk Maps
FRMP	Flood Risk Management Plan
GIS	Geographical Information System
HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
LSE	Likely Significant Effect
NI	Northern Ireland
NIEA	Northern Ireland Environment Agency
NIFRA	Northern Ireland Flood Risk Assessment
NPWS	National Parks and Wildlife Service
pSPA	Proposed Special Protection Area
QI	Qualifying Interest
RBD	River Basin District
RSPB	Royal Society for Protection of Birds
SAC	Special Area of Conservation
SCI	Special Conservation Interest
SPA	Special Protection Area
SuDS	Sustainable Drainage Systems
WDPD	Water and Drainage Policy Division
WFD	Water Framework Directive

1 INTRODUCTION

In accordance with the EU Directive on the Assessment and Management of Flood Risks, known as the 'Floods Directive' (2007/60/EC), implemented in Northern Ireland through 'The Water Environment (Floods Directive) Regulations (Northern Ireland) 2009', the Water and Drainage Policy Division (WDPD) of the Department for Infrastructure (DfI) has updated the flood risk assessment for Northern Ireland (NIFRA18) and are preparing an updated Flood Risk Management Plan (FRMP) for 'at risk' areas for the period 2021-2027. This Plan will update the FRMPs for Northern Ireland developed for the period 2015-2021.

The "Habitats Regulations 1995" (The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)) provide a framework for the legal protection of habitats and species of international importance within Northern Ireland. Regulation 43 of the Habitats Regulations require that "*A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which is likely to have a significant effect on a European site in Northern Ireland (either alone or in combination with other plans or projects), and is not directly connected with or necessary to the management of the site, shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives*".

In Northern Ireland, this process is known as Habitats Regulations Assessment or 'HRA'. This document is the HRA Report of the updated NI FRMP 2021-2027, in accordance with the requirements of the 1995 Regulations and the Conservation (Natural Habitats, etc.) (Amendment) (Northern Ireland) (EU Exit) Regulations 2019 "the 2019 Regulations".

1.1 European Designated Sites

A key outcome of the Habitats Directive was the creation of a network of protected sites throughout Europe, maintained at a good conservation status. This network of sites was referred to as Natura 2000 sites[1]. These include the following:

- Special Areas of Conservation (SACs) – these are sites designated for flora, fauna and habitats of community interest under the EU Habitats Directive;
- Special Protection Areas (SPAs) – these are sites designated for rare, vulnerable or migratory birds under the EU Birds Directive; and
- Ramsar sites – these are wetlands of global importance, listed under the Convention on Wetlands of International Importance (1971). Most Ramsar sites overlap with SPAs and/or SACs. It is Northern Ireland Government policy to afford them the same protection as European sites[2].

The 1995 Regulations transposed the Habitats Directive and certain elements of the Wild Birds Directive (Directive 2009/147/EC), together termed the "Nature Directives" into Northern Ireland legislation. The 2019 Regulations, required to ensure that the 1995 Regulations remained operable following the UK's exit from the EU, created a national site network within the UK, comprising the protected sites already designated under the Nature Directives, and any further sites designated under these Regulations. The protection of European sites within the Republic of Ireland is underpinned by the European Communities (Birds and Habitats) Regulations 2011 (ROI S.I. No. 477 of 2011).

For the purposes of this assessment, the term "European sites" will be used to cover the above UK National Site Network and Ramsar Sites, as well as any relevant Natura 2000 sites within the Republic of Ireland.

[1] Under 'The Conservation (Natural Habitats) Regulations (NI) 1995' the term 'European site' applies to any designated SAC or SPA; any SCI; any candidate SCI (cSCI); any candidate SAC (cSAC); and any candidate or proposed SPA (pSPA).

[2] Paragraph 26 in Planning Policy Statement 2 Planning and Nature Conservation.

2 METHODOLOGY

A central protection mechanism of the Habitats Regulations is the requirement for competent authorities to undertake Appropriate Assessment[3] (AA) to consider the possible nature conservation implications of any Plan or Project on European sites before any decision is made to allow the plan or project to proceed.

Part IV of the Conservation (Natural Habitats) Regulations (1995) states the following: *"A competent Authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which-*

(a) is likely to have a significant effect on a European site in Northern Ireland (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site,

Shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives". In light of the conclusions of the appropriate assessment for the site, the competent authority shall agree to the plan or project only after ascertaining that it will not adversely affect the integrity of the site concerned.

2.1 Stages of the Article 6 (Habitats Regulations) Assessment

The Habitats Regulations promote a hierarchy of avoidance, mitigation and compensatory measures. First, the plan should aim to avoid any impacts on European sites by identifying possible impacts early in the plan-making process and writing the plan in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the plan is still likely to result in impacts on European sites, and no further practicable mitigation is possible, then it must be rejected. If no alternative solutions are identified and the plan is required for imperative reasons of overriding public interest (IROPI test) under Regulation 44 of the 1995 Regulations, as amended by Regulation 23 of the 2019 Regulations, then compensation measures are required for any remaining adverse effect.

This can be broken down into four main stages, summarised below:

Stage 1 Screening or 'Test of Likely Significance' – this stage identifies:

- If the plan or programme is directly connected with, or necessary to the management of European sites;
- The potential impact of the plan upon any European site, either alone or in combination with other plans or programmes, and assesses those impacts;
- All European sites in and around the plan area, and the conservation objectives of those sites which may, potentially, be affected by the plan.

Outcomes from Stage 1 –

- No significant effects likely; therefore no further assessment required; or
- Significant effects likely or uncertain; therefore commence to Stage 2.

Stage 2 Appropriate Assessment - Establishing an Impact Pathway – this stage considers:

- The method and scope of the assessment;

[3] 'Appropriate Assessment' has been historically used as an umbrella term to describe the process of assessment in its entirety from screening to IROPI (Imperative Reasons of Overriding Public Interest). The assessment process is now more commonly divided into distinct stages, one of which (Stage 2) is the 'appropriate assessment' stage.

- The potential impact on any European site which may be affected by the plan, either alone or in combination with other plans or programmes.

Outcomes from Stage 2 –

- No European site will be integrally affected by the plan; therefore no further assessment is required; or
- It cannot be certain that there will be no effect from the plan (precautionary principle); therefore commence to Stage 3

Stage 3 Assessment of Alternative Solutions / Mitigation – this stage considers:

- Whether any possible adverse effects on the integrity of the European site can be avoided by changes to the plan; e.g. by mitigation which would negate the impact.

Outcomes from Stage 3 –

- The integrity of the European site will not be adversely affected; therefore no further action required; or
- There is uncertainty about the potential impact of the plan on a European site; therefore alternatives, and potential plan redrafting is required; or
- There are no alternatives to the plan proposals, and impacts have been identified; therefore commence to stage 4.

Stage 4 Imperative Reasons of Overriding Public Interest **(IROPI)** – this stage establishes:

- That there is an over-riding public interest in the plan proceeding even though there may be a significant effect on a European site;
- Compensatory measures for the potential impact.

Outcomes from Stage 4 –

- Permission to proceed with the plan, including agreement on suitable compensatory measures.

2.2 Published Guidance on HRA

The Environment and Heritage Service of the then, Department of the Environment for Northern Ireland, published '*Habitats Regulations guidance notes for competent authorities'* (EHS, 2002). Their purpose was to help competent authorities and others with an interest in such sites interpret and implement the Habitats Regulations, and were intended to provide a framework for making judgements under the Regulations in order to promote consistency amongst decision-makers.

In addition to the guidelines published by the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including, '*Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC'* (EC, 2001), which sets out the principles of how to approach decision making during the process. These guidelines have been followed in the preparation of this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2000b);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001);

- Habitats Regulations Guidance Notes for Competent Authorities. Environment and Heritage Service. Belfast (EHS, 2002) [*not available online*];
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Publications Office of the European Union, Luxembourg (EC, 2007);
- The Appropriate Assessment of Plans in Northern Ireland. RSPB, Belfast (RSPB, 2008);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. Publications Office of the European Union, Luxembourg (EC, 2009);
- Interpretation Manual of European Union Habitats. Version EUR 28. Publications Office of the European Union, Luxembourg (EC, 2013);
- Guidance on Energy Transmission Infrastructure and EU nature legislation. Publications Office of the European Union, Luxembourg (EC, 2018);
- European Commission Notice C(2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC, 2019);
- Institute of Air Quality Management 'A guide to the assessment of air quality impacts on designated nature conservation sites (Version 1.1)' (IAQM, 2020); and
- Guidance explaining The Conservation (Natural Habitats, etc. (Amendment) (Northern Ireland) (EU Exit) Regulations 2019. DAERA December 2020 (Version 1).

DAERA's 2020 Guidance confirms that the existing guidance, as listed above, remains relevant.

2.3 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the Appropriate Assessment procedure is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

The requirement that the effect in question be 'significant' exists in order to lay down a *de minimis* threshold – thus, plans or projects that have no appreciable effect on the site are thereby excluded. A likely significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site;
- the plan is likely to undermine the site's conservation objectives; and
- a significant effect cannot be excluded on the basis of objective information.

The threshold for a Likely Significant Effect (LSE) is treated as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude, and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

EHS (2002) notes that any effect that may reasonably be predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated but excluding *de minimis* or inconsequential effects.

2.4 Mitigation Measures

In determining whether or not likely significant effects will occur or can be excluded in the Stage 1 appraisal, measures intended to avoid or reduce the harmful effects of the proposed development on European sites, (i.e. “mitigation measures”) or best practice measures have not been taken into account in the screening stage appraisal. This approach is consistent with EU guidance and the case law of the Court of Justice of the European Union (CJEU):

EC (2001) states that “project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site”. This direction in the European Commission’s guidance document is unambiguous in that it does not permit the inclusion of mitigation at screening stage.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 *People Over Wind & Peter Sweetman v Coillte Teoranta* (“People Over Wind”) that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

The judgment in People Over Wind is further reinforced in EC (2019) which refers to CJEU Case C-323/17.

2.5 Consideration of *ex-situ* Effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 *Brian Holohan and Others v An Bord Pleanála* (”Holohan”) that determined inter alia that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

In that regard, consideration has been given in this HRA to implications for habitats and species located both inside and outside of the European sites considered in the screening appraisal with reference to those sites’ Conservation Objectives, where effects upon those habitats and/or species are liable to affect the conservation objectives of the sites concerned.

2.6 In-combination Effects

Regulation 43(1)(a) of the 1995 Regulations require that in-combination effects with other plans or projects are also considered. As set out in the Commission’s 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

In addition, other plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that “as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced”.

3 THE PLAN

3.1 The Floods Directive

The European Directive on the Assessment and Management of Flood Risks (2007/60/EC) came into force on 26 November 2007. This Directive requires Member States to assess all watercourses and coastlines which are at risk from flooding, to map the flood extent and the assets and humans at risk in these areas, and to take adequate and co-ordinated measures to reduce this flood risk. This Directive also reinforces the rights of the public to access this information and to have a say in the planning process.

The Floods Directive was transposed into the Water Environment (Floods Directive) Regulations Northern Ireland in 2009 in order that the then Department of Agriculture and Rural Development (DARD [now DAERA]) would be able to exercise the powers conferred to it. At that time DARD was the competent authority for the purposes of implementation of the Floods Directive, and fulfilled this role through its Rivers Agency (now DfI Rivers). In the interim period, inter-Departmental restructuring has taken place, and responsibility for implementation of the Floods Directive now lies with DfI, fulfilled through the WDPD.

The Directive Timeline is geared to a rolling cycle, so its three key stages must be repeated on a cyclical basis (every six years) to ensure that flood risk is managed effectively and that it takes account of new information, changes in risk and new technologies. The first cycle of this work took place between 2009 and 2015, when the initial Flood Risk Management Plans (FRMP) for the North Eastern River Basin District (RBD), the North Western and the Neagh Bann International River Basin Districts (IRBD) were published.

Figure 3.1 shows the six-year cycle of assessment, mapping and planning for the Floods Directive and the work that has been undertaken for the second cycle in NI.

Figure 3.1: Six-year cycle of Flood Risk Management Planning in Northern Ireland

3.2 2nd Cycle NI FRMP 2021-2027

DfI reviewed the Preliminary Flood Risk Assessment (PFRA) for Northern Ireland and produced an updated technical assessment 'The Northern Ireland Flood Risk Assessment (NIFRA) 2018'. This identified:

- The sources of flooding [fluvial (rivers), coastal and pluvial (surface water)];
- The potential consequences of flood occurrence for different return periods (probability) and for different sources of flooding;
- The impacts on flood receptors for human health, environment, cultural heritage and economic activity in terms of severity, exposure and economic damages;
- Areas that should be identified as 'Areas of Potentially Significant Flood Risk', or APSFR and which should be included in the updated 2nd cycle FRMP for 2021-2027; and
- Areas that should no longer be identified as APSFR.

The NIFRA identified 12 areas as APSFR. The FRMP for the period 2021-2027 will aim to manage and mitigate the risk of flooding within these 12 APSFR. The 12 APSFR identified by the NIFRA 2018 and the River Basin District (RBD) to which they belong are as follows:

- **North Eastern RBD:** Newtownabbey, Belfast, Bangor, Carrickfergus, Larne;
- **North Western International RBD:** Londonderry, Omagh; and
- **Neagh Bann International RBD:** Ballymena, Glengormley & Mallusk, Lurgan, Portadown & Craigavon, Newry.

3.3 Objectives and Measures of the NI FRMP

3.3.1 The NI FRMP Objectives

The NI FRMP is required to set objectives for the management of flood risks for the APSFR, focusing on the reduction of potentially adverse consequences of flooding for human health, economic activity, the environment and cultural heritage; and identify measures to achieve those objectives.

The objectives that have been set to meet these requirements are detailed in **Table** 3-1**.**

Table 3-1: NI Flood Risk Management Plan objectives

Reference	Objective
Human Health	
1	To reduce the risk to life, health and wellbeing
2	To increase awareness and understanding of flooding and its adverse consequences and improve community resilience
3	To reduce the impact on people caused by the disruption to essential infrastructure and services
4	To improve recreation and public amenities (when the opportunity arises when undertaking measures)
Economic Activity	

5	To reduce the cost of potential future flood damages to properties and infrastructure
6	To reduce the economic costs caused by the disruption to essential infrastructure and services
7	To optimise the economic return on flood risk management investment
Environment and Cultural Heritage	
8	To consider and prepare for the impact of Climate Change for the main sources of flooding
9	To support the objectives of the Water Framework Directive and contribute to the achievement of good ecological potential/status for waterbodies
10	To protect and enhance the natural environment and cultural heritage

3.3.2 NI FRMP Measures

Measures are the specific actions that contribute to the delivery of the NI FRMP Objectives. In line with the Floods Directive, the measures identified in the NI FRMP give consideration to:

- ***Prevention*** of increased flood risk through appropriate land use planning;
- ***Protection*** of communities and the environment by provision of schemes and approaches to reduce the likelihood and severity of flooding; and
- ***Preparedness*** arrangements to improve dealing with flooding when it occurs.

Table 3-2 outlines the proposed measures, measure types and activities of the NI FRMP 2021-2027

The following information was used to inform development of the measures:

- the NIFRA 2018 (the review of PFRA 2011);
- Flood Maps (NI) (the second cycle FHRMs);
- the environmental objectives of the WFD;
- the forward work programmes for DfI Rivers, DfI Roads and NI Water;
- the costs and benefits of the various scheme options for managing flood risk;
- the opportunity for Natural Flood Management;
- the impacts of Climate Change, and
- other relevant plans, policies, guidance and strategies that set out the long-term strategy for flood risk and environmental management in NI.

Table 3-2 Proposed Measures, Types and Activities of the NI FRMP 2021-2027

Measures	Measures Type	Measures Activities
Flood Prevention	**Keep new development outside Flood Risk Areas**	• Provide advice to planning authorities to ensure that new zonings are located outside flood risk areas. • Provide advice to planning authorities to ensure that individual applications are located outside flood risk areas. • Include appropriate consideration of Climate Change in information and advice to planning authorities. UKCP18 to be considered in 2nd cycle FRMP
	Ensure new development within Flood Risk Areas is suitably constructed	• In accordance with Planning Policy Advice aim to ensure that any development which is located "by exception" in flood risk areas is appropriately built with flood resistance/resilience measures. • All proposed development applications are accompanied by a Flood Risk Assessment or Drainage Assessment.
	Surface Water Management	• Promote the application of SuDS to all new developments. • Develop Enhanced Drainage Area Plans for all APSFR.
Flood Protection	**Maintenance of Existing Drainage and Flood Defence Networks**	• Continue to Inspect and maintain designated watercourse grilles, road gullies as appropriate and as funding allows. • Continue to regularly inspect the condition of all Drainage and Flood Defence Assets. • Continue to implement a prioritised programme of works for the maintenance of all Drainage Assets and Flood Defence Assets. • Continue to implement a prioritised programme of works for the maintenance of public sewers and storm drainage systems.
	New Flood Alleviation and Drainage Schemes	• Continue to carry out feasibility studies to identify viable solutions. • Continue to implement a prioritised programme of works of flood defence and flood alleviation schemes. • Continue to implement a prioritised programme of works of integrated surface water drainage schemes. • Continue to implement a prioritised programme of works to separate surface water systems from combined sewer systems liaising with other drainage bodies.
	Catchment Based	• Work with others through partnership arrangements to progress measures that deliver multiple benefits for flood risk,

Measures	Measures Type	Measures Activities
	Management	climate change adaptation, water quality and biodiversity. • Initiate discussions with DAERA on how future agricultural and land support measures may include flood risk management options • Consider if there may be possible groundwater flood risk in APSFR.
Flood Preparedness	**Flood Emergency Response**	• Continue to engage with other responsible bodies on identifying local flooding hotspots and co-ordination of response procedures along with Blue Light responders. • Continue to prepare and engage with other responders on multi Agency flood emergency response plans to those areas at known flood risk, e.g. coastal flood response plans. • Continue to engage with local communities in those areas of known flood risk. • Continue to test emergency response plans through Multi Agency 'Exercising'. • Continue to work with Co responders in line with Flood Emergency Response "Best Practice Guidelines".
	Flood Warning and Informing suitable for NI	• Formal engagement with the Met Office in a 'partnering' approach to better inform the impact assessment of National Severe Weather Warnings for heavy rainfall. • Ensuring adequate 'Informing' in relation to flood risk through community engagement • Public dissemination of water level information. This includes the use of River level text warnings, where these are likely to be beneficial. • Review and Development.
	Community Engagement	• Continue to work with the other drainage agencies, the emergency services, local government, NIHE, Red Cross, Consumer Council, Met Office, etc., to develop and establish a consistent approach to flood warning and informing activities across Northern Ireland.
	Communication of Flood	• Continue to engage with communities to facilitate the informing aspect of 'Flood Warning and Information' proposals.

Measures	Measures Type	Measures Activities
	Risk	• Continue to update and improve flood risk information on the Flood Maps (NI). • Continue to improve information on flooding on the NI Direct Website. • Continue to work with NI Direct in the development of the Flooding Incident Line (FIL). • Continue to consult with communities and stakeholders to make them aware of their roles and responsibilities in assessing and managing flood risk. • Seek to issue timely media messages to inform the Public of significant flooding events.
	Individual Property Protection	• A Pilot scheme for grant aiding Individual Property Protection is currently operating. Eligibility is assessed on the likelihood of future flooding and the frequency of past flooding events.
	Flood Recovery, Welfare and Insurance Issues	• Continue to carry out and contribute to flood investigations to gather information and improve knowledge and action on future flood events. • Continue to work with Councils and local communities at flood risk in providing advice and information to aid recovery after a flood event. • Continue to engage and work with voluntary sector organisations such as the Red Cross in providing Welfare Support. • Continue to work with the insurance industry with respect to flood insurance issues, including “FloodRe” in NI, to help address long term flood insurance affordability issues.

4 STAGE 1 SCREENING APPRAISAL

4.1 Directly Connected with or Necessary to the Management of the Site

The first aspect of HRA Screening is to establish whether or not the proposed plan or project is directly connected with or necessary to the management of any site as a European site. In this case, the proposal to update the NI FRMP for the period 2021-2027 **is not directly connected with or necessary to the management of any site as a European site**. The proposals included in the 2nd cycle FRMP will therefore be subject to Screening for AA to assess, in view of best scientific knowledge and in view of the Conservation Objectives of those European sites considered, whether or not the plan, individually or in combination with other plans or projects, is likely to have a significant effect on any European site.

The measures, measure types and measure activities identified within the NI FRMP 2021-2027 include those that are plans or policy statements, those that are generic in nature i.e. measures which address aspects of flood risk management regardless of the geographic location (non-structural measures), and measures which deal with flood risk in specific geographic locations (structural and non-structural measures).

4.2 Screening of Generic Plan Measures

4.2.1 Prevention

Under this measure, the NI FRMP approach is to manage flood risk through land use planning. This is implemented through PPS 15 (a planning policy), which takes a precautionary approach of the prevention of new development in flood risk areas where there would be flood risk to the development or from the development to other areas. The policy considers flooding sources from the rivers, seas, high intensity rainfall and reservoirs. To implement this approach, DfI proposes to:

Keep new development outside Flood Risk Areas by –

- Informing the Development Planning Process to ensure, where possible, that new zonings within local development plans are located outside flood risk areas. *This approach is already carried out by DfI Rivers Planning Advisory and Modelling Unit.*
- Inputting to the development control process to ensure that individual applications, where possible are located outside flood risk areas. *This approach is also already carried out by DfI Rivers Planning Advisory and Modelling Unit.*
- Include appropriate consideration of Climate Change in information and advice to planning authorities. UKCP18 to be considered in 2nd cycle FRMP.

Ensure new development within Flood Risk areas is suitably constructed by -

- Through Planning NI and local councils, and in accordance with the SPPS and PPS 15, ensuring that any development which has to be located in flood risk areas is built in the appropriate manner with adequate flood resistance/resilience measures commensurate with the flood risk to the development and does not cause increased flood risk elsewhere.
- Stipulating that all proposed development applications within flood risk areas are accompanied by a Flood Risk or Drainage Assessment. *This approach is already carried out by DfI Rivers Planning Advisory and Modelling Unit.*

Manage surface water through:

- Promoting the application of SuDS to all new developments.
- Development of Enhanced Drainage Area Plans for all APSFR.

This Prevention measure, on its own, will not cause detriment to European sites, and indeed, may be beneficial in aiding the protection of those European sites which are situated in flood plain areas. The measure is based on the retention of the flood plain as part of the natural process of flooding and flood management. As the approaches within the measure are deemed to have no effect on European sites, there is consequently no potential for cumulative effects with other plans or programmes. **It is considered that this measure does not need to proceed any further under the HRA assessment.**

4.2.2 Protection

Under this measure, there are a number of Measure Types and Measure Activities proposed within the Plan. Many of these are under the direct control of the Department, while some involve coordinated work with others. To implement this approach, DfI proposes to:

Maintain existing drainage and flood defence networks by:

- Continuing to inspect and maintain designated watercourse grilles and road gullies, as appropriate and as funding allows.
- Continuing regular inspection of the condition of all Drainage and Flood Defence Assets.
- Continuing to implement a prioritised programme of works for the maintenance of all Drainage Assets and Flood Defence Assets.
- Continuing to implement a prioritised programme of works for the maintenance of public sewers and storm drainage systems.

Develop new Flood Alleviation and Drainage Schemes by:

- Continuing to carry out feasibility studies to identify viable solutions.
- Continuing to implement a prioritised programme of works of flood defence and flood alleviation schemes.
- Continuing to implement a prioritised programme of works of integrated surface water drainage schemes.
- Continuing to implement a prioritised programme of works to separate surface water systems from combined sewer systems, liaising with other drainage bodies.

Develop catchment based management by:

- Working in partnership with others to progress measures that can deliver multiple benefits for flood risk, climate change adaptation, water quality and biodiversity.
- Initiating discussions with DAERA on how future agricultural and land support measures may include flood risk management options.
- Consideration of the possible groundwater flood risk in APSFR.

As these approaches are focussed on the 12 APSFR, the assessment of potential adverse effects on European sites will be dealt with through the individual APSFR sub assessments (**Appendix 2**).

4.2.3 Preparedness

Approaches under this measure are based within the 12 APSFR. However, the Measure Types and Measure Activities divide broadly into those for flood warning and informing, and those focussed on individual property protection. To implement this approach, DfI proposes to:

- Raise awareness of flood risk and the limitations of infrastructure, through information (community engagement), flood maps and advice.

- Develop multi-agency emergency response plans, through enhanced links with weather forecasting and flood warning systems and also develop local community flood plans which will lead to community and self-help initiatives.
- Input into Individual Property Protection measures.

The flood warning, informing and emergency response approaches are proposed for implementation within the 12 APSFR, either as temporary approaches, or as long term approaches. These approaches are organisational and information based, and entail no structural aspects, or changes to land management which may have any effect on European sites. As the approaches themselves have no effect on the European sites, there is consequently no potential for cumulative effects with other plans or programmes. The building and flood resilience approaches are property based, and as such will not have any significant effect on any European site. Any more substantive resilience approaches would fall within the Protection measure and, as such, would require assessment through a specific Habitats Regulations Assessment. **It is considered that these approaches do not need to proceed any further under the HRA assessment.**

4.3 Screening of APSFR-specific Plan Measures and Measure Types

A screening appraisal has been undertaken for each of the 12 APSFR identified in the NIFRA 2018. This has assessed the 'Protection' measure, and the measure types included therein, for the potential to lead to adverse effects on European sites within the zone of influence of these APSFR. For each APSFR, the precautionary principle has been applied when assessing the potential for adverse effects on European sites. GIS has been used to exclude those sites that could not be affected, on the basis of geographic location, site type and catchment connectivity. On this basis, European sites have been identified that have the potential to be adversely affected by the implementation of 'Protection' approaches for the 12 APSFR.

4.3.1 European Sites

Qualifying Interests / Special Conservation Interests of the European sites within the zone of influence of the 12 APSFR identified by the NIFRA 2018 are listed in **Appendix A**. The location of Special Areas of Conservation (SACs) in the zone of influence of the 12 APSFR is illustrated in **Figure** 4.1. The location of Special Protection Areas (SPAs) in the zone of influence of the 12 APSFR is illustrated in **Figure** 4.2. The location of Ramsar sites in the zone of influence of the 12 APSFR is illustrated in **Figure** 4.3. These figures include the spatial extent of the potential projects that may fall out from the 12 APSFR identified by the NIFRA 2018, a 15km buffer around them and also any site situated downstream within the same catchment as an APSFR. A distance of 15km is recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). This zone of influence has been adopted in this assessment.

4.3.1.1 Conservation Objectives

The Conservation Objectives for each European site are to "maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species" for which the SAC has been selected or "to maintain each feature in favourable condition, as defined by a series of attributes and targets" for which the SPA has been selected.

The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

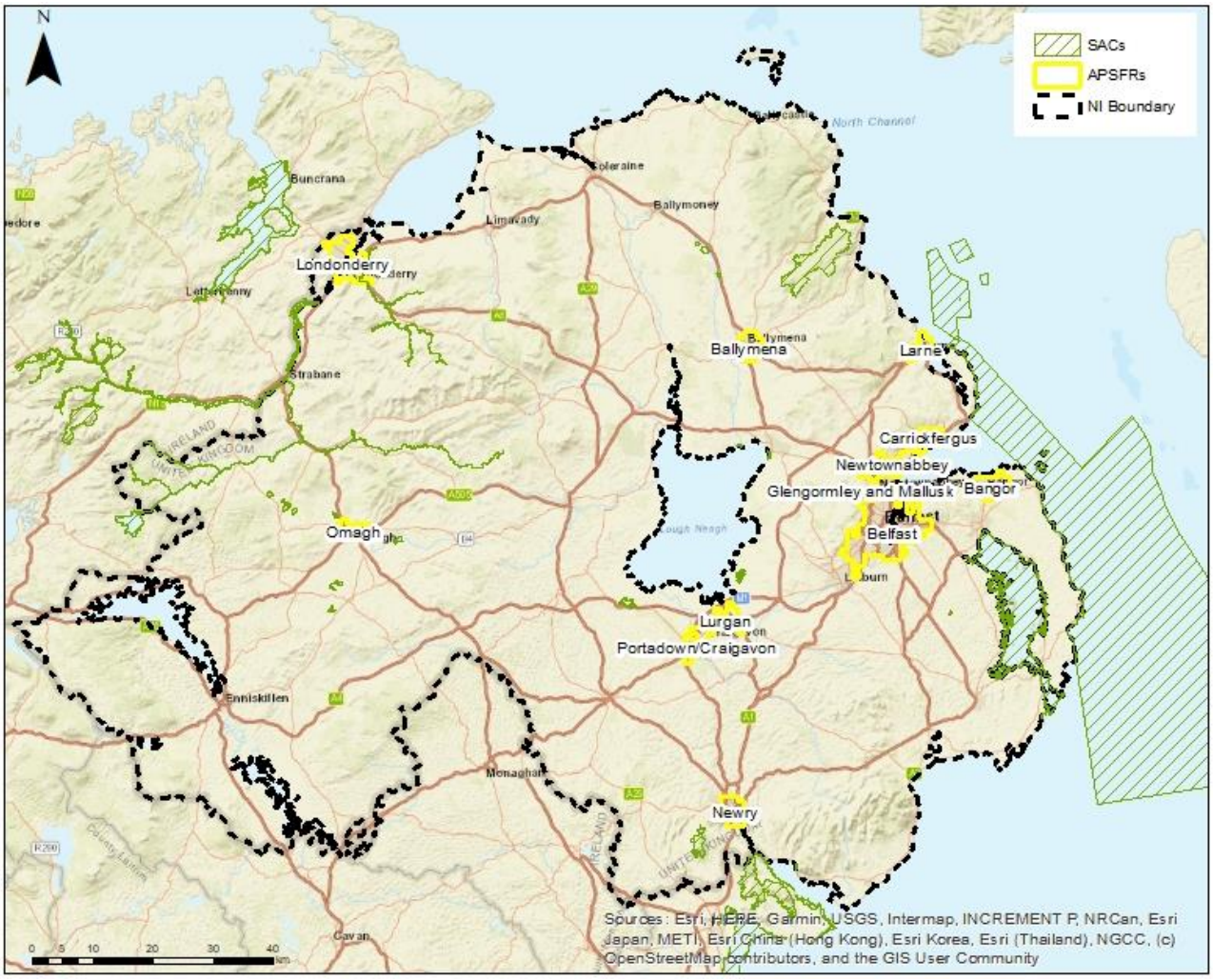

Figure 4.1: SACs (NI and ROI) within the Zone of Influence of the 12 APSFR

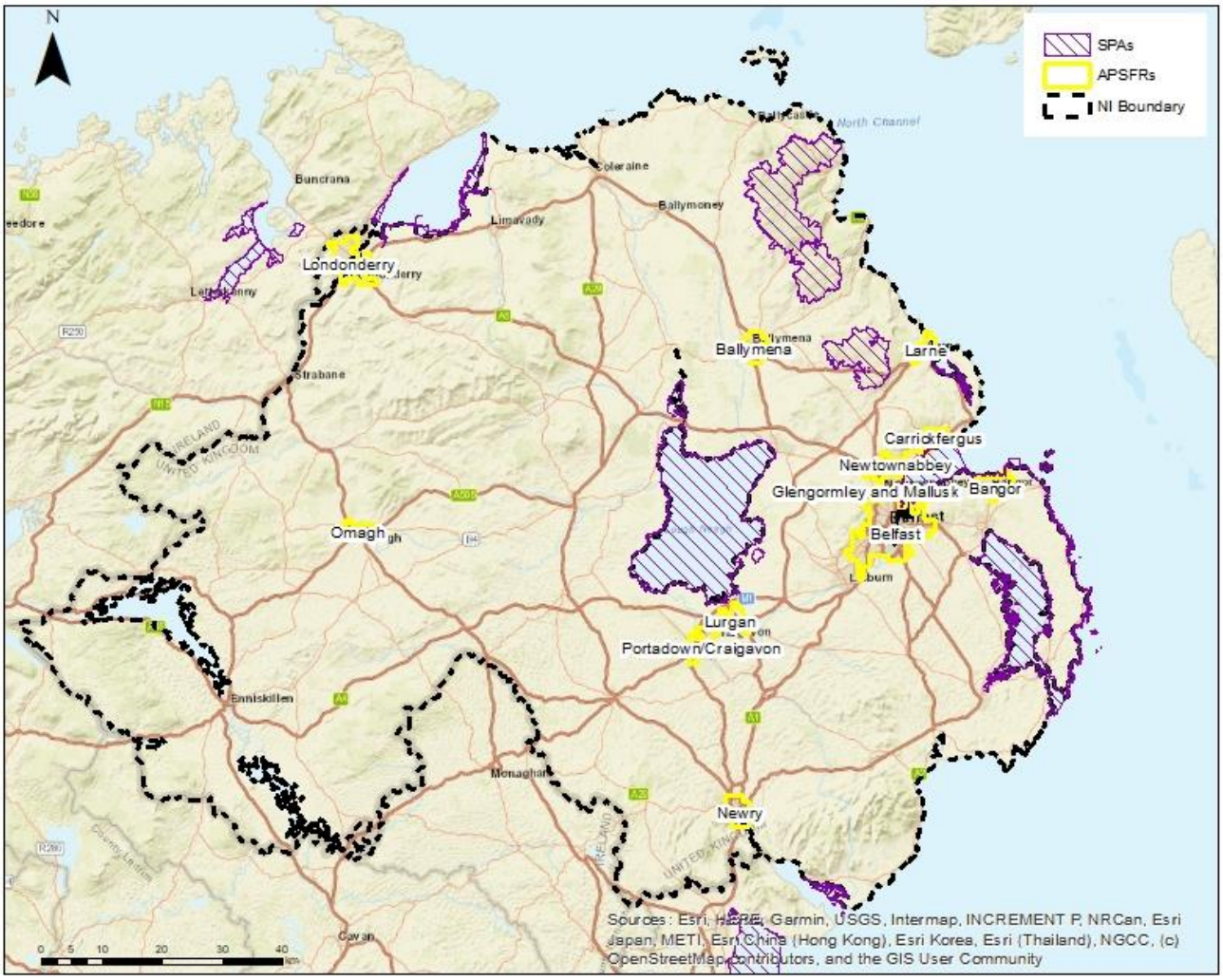

Figure 4.2: SPAs (NI and ROI) within the Zone of Influence of the 12 APSFR

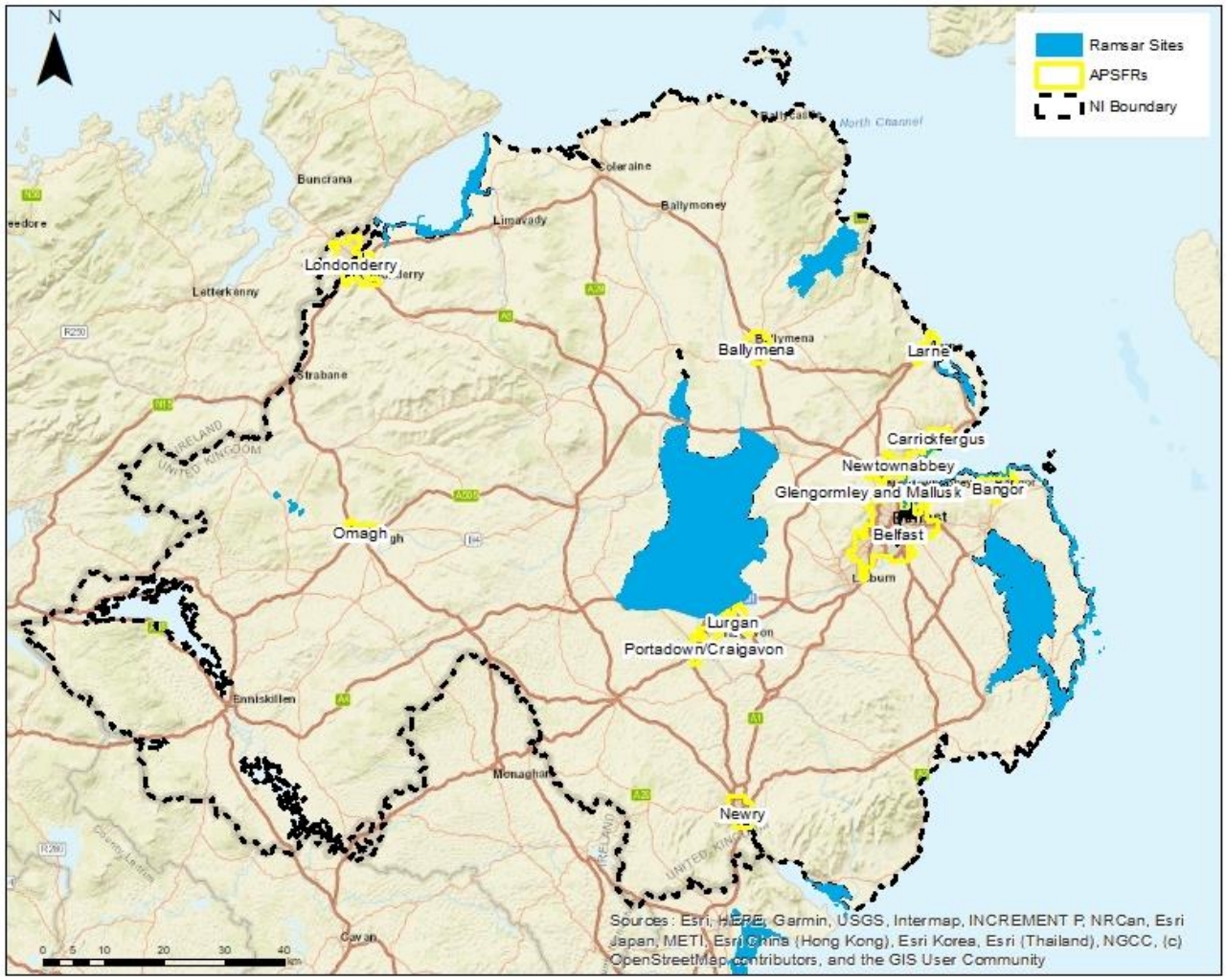

Figure 4.3: RAMSAR sites (NI and ROI) within the Zone of Influence of the 12 APSFR

4.3.2 Establishing an Impact Pathway

The possibility of significant effects is considered in this report using the source-pathway-receptor model. 'Source' is defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors. 'Pathway' is defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' is defined as the Qualifying Interests / Special Conservation Interests for which conservation objectives have been set for the European sites being screened. Each element can exist independently, however an effect is created when there is a linkage between the source, pathway and receptor.

Possible direct and indirect effects are discussed under three themes:

- Habitat Loss
- Water quality and habitat deterioration
- Disturbance and Displacement

The full screening appraisal undertaken for each of the 12 APSFR is detailed in **Appendix B**. **Table** 4-1 links the potential protection measures at the 12 APSFR with European sites at which a Likely Significant Effect could arise as a result of the impact pathways assessed.

4.3.2.1 Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. Hydrological or drainage effects may occur where hard engineering projects are located within wetland habitats.

4.3.2.2 Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species.

4.3.2.3 Disturbance and Displacement

The construction phase of any flood protection scheme may lead to disturbance of designated birds and otters within, and in close proximity to, European sites, from people and machinery working at the site. In the marine environment, construction of coastal defences has the potential to give rise to underwater noise causing disturbance to cetaceans or pinniped species.

Disturbance and displacement effects include:

- Disturbance to key species
- Habitat or species fragmentation
- Reduction in species density

Table 4-1: European sites that could have LSEs as a result of the implementation of the NI FRMP 2021-2027

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
Newtownabbey APSFR			
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
Bangor APSFR			
Maintenance of the existing flood defence and drainage networks		Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC	
New flood alleviation and drainage schemes	Outer Ards SPA Outer Ards Ramsar Site	Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC	Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
			North Channel SAC
Catchment based management		Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC	
Carrickfergus ASPFR			
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes	Belfast Lough SPA Belfast Lough Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar	
Belfast APSFR			
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
New flood alleviation and drainage schemes	Belfast Lough SPA Belfast Lough Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar	
Larne APSFR			
Maintenance of the existing flood defence and drainage networks		Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	
New flood alleviation and drainage schemes	Larne Lough SPA Larne Lough Ramsar Antrim Hills SPA	Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	Larne Lough SPA Larne Lough Ramsar Antrim Hills SPA East Coast Marine pSPA The Maidens SAC North Channel SAC
Catchment based management	Antrim Hills SPA	Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	Antrim Hills SPA
Londonderry APSFR			
Maintenance of the existing flood defence and drainage networks		River Faughan and Tributaries SAC Lough Foyle SPA Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	
New flood alleviation and drainage schemes	River Faughan and Tributaries SAC River Foyle and Tributaries SAC	River Faughan and Tributaries SAC Lough Foyle SPA	River Faughan and Tributaries SAC River Foyle and Tributaries SAC

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
	River Finn SAC	Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	River Finn SAC
Catchment based management	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC	River Faughan and Tributaries SAC Lough Foyle SPA Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC
Omagh APSFR			
Maintenance of the existing flood defence and drainage networks		River Foyle and Tributaries SAC	
New flood alleviation and drainage schemes		River Foyle and Tributaries SAC	
Catchment based management	Tully Bog SAC Fairy Water Bogs SAC Deroran Bog SAC	River Foyle and Tributaries SAC	
Ballymena APSFR			
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Catchment based management	Garron Plateau SAC Antrim Hills SPA Garron Plateau Ramsar	Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	Antrim Hills SPA Garron Plateau Ramsar
Glengormley & Mallusk APSFR			
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA	

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
		East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
Lurgan APSFR			
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar
Catchment based management		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Portadown & Craigavon APSFR			
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Catchment based management		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Newry APSFR			
Maintenance of the existing flood defence and drainage networks		Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	
New flood alleviation and drainage schemes		Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	

APSFR	European sites that could experience a likely significant effect		
	Habitat Loss	*Water quality and habitat deterioration*	*Disturbance and Displacement*
Catchment based management	Derryleckagh SAC	Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	

4.4 Summary of Screening Stage

The screening exercise was completed in compliance with the relevant European Commission and national guidelines to determine whether or not adopting the NI FRMP 2021-2027 is likely to have a significant effect on any European site.

From the findings of the screening exercise, the possibility of Likely Significant Effects upon European sites considered cannot be discounted from implementation of a number of potential flood protection measure types for the 12 APSFR, in light of their Qualifying Interests / Special Conservation Interests and Conservation Objectives. This conclusion was reached without having to consider the NI FRMP 2021-2027 in combination with any other plans or projects.

Any potential flood protection projects that could come forward under the NI FRMP 2021-2027 for the 12 APSFR during the plan period were screened for AA, or subjected to a test of likely significance. For potential flood protection projects that could come forward under the NI FRMP 2021-2027 within the 12 APSFR, likely significant effects could not be discounted as outlined in **Table** 4-1, and summarised below:

- The possibility of likely significant **Habitat Loss** effects could not be discounted for 16 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.
- The possibility of likely significant **Water Quality and Habitat Deterioration** effects could not be discounted for 21 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.
- The possibility of likely significant **Disturbance and Displacement** effects could not be discounted for 15 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

Having regard to the methodology employed and the findings of the screening stage exercise, it is concluded that an AA of the implications of the NI FRMP 2021-2027 on European sites is required, in view of their conservation objectives and in combination with any other relevant plans or projects.

5 STAGE 2 APPRAISAL FOR APPROPRIATE ASSESSMENT

Appropriate Assessment is the process which identifies the impact of a plan or project, either alone or in combination with other projects or plans, on the integrity of a European site, with respect to the conservation objectives of the site and to its structure and function; and considers whether it can be concluded that there will be no adverse effects on the integrity of the European site (EC, 2001). If the information provided suggests that adverse effects are likely, then it is necessary to devise mitigation measures to avoid, where possible, adverse effects.

5.1 Potential Adverse Effects

Based on the potential flood protection measures that could be implemented for each of the 12 APSFR described in Section 3.3.2, potential adverse effects have been identified (where likely significant effects could not be discounted) on a range of European sites under three impact themes, as set out in **Table** 4-1.

Possible direct and indirect effects are discussed under these three themes:

- Habitat Loss
- Water quality and habitat deterioration
- Disturbance and Displacement

5.1.1 Habitat Loss

5.1.1.1 Direct Habitat Loss

Direct habitat loss of natural and semi-natural habitat is associated with flood protection schemes where the construction of flood defences is required. Habitat loss can occur in the footprint and vicinity of the constructed defences. Although flood defences are likely to have a small physical footprint in terms of actual habitat removal, habitat loss in a European site may occur in an area containing qualifying Annex I habitat types. This is likely to undermine the site's conservation objective to maintain the habitat area of the qualifying habitat type.

The vast majority of potential flood protection projects that could be implemented for the 12 APSFR will not have potential to result in direct habitat loss to any European site. Londonderry is the sole APSFR that directly intersects a riverine SAC, River Faughan and Tributaries SAC, designated for the Annex I habitat oak woodland, and Annex II species otter and salmon. The main areas of oak woodland in this site can be found at Ness and Ervey Woods (both Country Parks on the Burntollet River), and Bonds Glen Wood (on the Bonds Glen), however woodland strips also occur elsewhere along the river banks. While direct impacts on this Annex I habitat are unlikely, they cannot be excluded should construction for flood protection be required within the boundary of this SAC for Londonderry APSFR.

For Bangor, Carrickfergus, and Larne APSFR, the potential for direct impacts on adjoining coastal European sites is unlikely to occur within the lifetime of the Plan. The flood risk for these areas is primarily fluvial and/or pluvial (NIFRA, 2018); however, as the boundaries of these APSFR intersect coastal European sites, the potential for adverse effects on these sites has not been excluded, based on the precautionary principle. These coastal European sites are SPA and Ramsar sites (**Table** 4-1); as such there is no potential for direct effects on designated Annex I habitats, however there is potential for adverse effects on coastal habitats that support the SCI bird species at these sites. For Belfast APSFR, the flood risk is coastal, fluvial and pluvial; within the lifetime of the Plan, the Belfast Tidal Flood Alleviation Scheme (FAS) will be progressed, to alleviate coastal flooding. This project is at an advanced stage and has been subject to project-level HRA.

This assessment did not identify any potential for direct impacts on coastal European sites within Belfast Lough.

Taking a precautionary approach, European sites have also been included that are hydrologically connected to APSFR in an upstream direction. The potential for adverse effects on these European sites could not be excluded at screening stage, should upstream storage or upstream catchment works occur within their site boundaries. For Londonderry APSFR, upstream European sites are river systems, containing the Annex I habitats oak woodland (River Faughan and Tributaries SAC), watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (River Foyle and Tributaries SAC), Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*), Northern Atlantic wet heaths with *Erica tetralix, Blanket bogs, and Transition mires and quaking bogs* (River Finn SAC). For Omagh APSFR and Newry APSFR, upstream European sites are designated for Annex I bog habitats (Active raised bog at Deroran Bog SAC, Tully Bog SAC and Fairy Bogs SAC, upstream of Omagh APSFR; Transition mires and quaking bogs at Derryleckagh SAC, upstream of Newry APSFR). For Larne and Ballymena, upstream European sites are in the Antrim Hills (Antrim Hills SPA and, for Ballymena APSFR Garron Plateau SAC and Ramsar site). Garron Plateau SAC and Ramsar sites include riverine and wetland habitats. It is unlikely that any upper catchment works to manage flood risk for these APSFR would result in adverse effects on supporting habitat of the SCI bird species of Antrim Hills SPA that could lead to impacts at the population level.

5.1.1.2 Habitat Damage and Disturbance

Movements of machinery and personnel during construction can cause compaction and damage leading to the degradation of habitat quality. Placement of excavated material directly on the habitat surface can also lead to damage, including during temporary storage and also when the excavated deeper soil and surface vegetated material is lifted for replacement in excavations.

Marine, wetland and peatland habitats depend on specific hydrological conditions, and are particularly vulnerable to disturbance. For example, peat soils can be locally destabilised during construction of projects. Should any construction activities take place within or adjacent to an European site boundary, there is potential for damage to, or disturbance of, designated habitat. European sites considered in Section 5.1.1.1. for the potential for direct habitat loss will also have the potential for habitat damage and disturbance in this manner.

5.1.1.3 Spread of Invasive Species

Invasive species can have a major negative impact on native biodiversity. When non-native species become invasive, they can transform ecosystems and threaten native and endangered species. The most prominent negative effect of invasive species, in terms of ecology, is competition with native biota and alteration of habitats.

Habitat removal, in particular along riparian corridors, can encourage the spread of invasive species by the creation of edge effects, and the direct introduction of non-native plant species by transfer of vector material on construction vehicles or equipment or washed downstream. The spread of invasive species within a European site may occur if transferred there at construction stage. This is likely to undermine the sites conservation objective to keep invasive or negative indicator species at a very low level.

As the potential flood protection projects that could be implemented for the 12 APSFR involve green/blue and/or hard engineering along watercourses, the potential to spread invasive species that may be present is very high. This is especially true for species such as Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*), which are easily spread if disturbed.

5.1.2 Water Quality and Habitat Deterioration

Given the nature of the NI FRMP and the potential flood protection measures proposed within it, it is unsurprising that potential flood protection projects within all of the APSFR link, in some way, to European sites downstream.

A number of potential impacts on water quality and aquatic species of downstream European sites may result from the flood protection measure types described in Section 3.3.2 (i.e. maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes, catchment based management). The potential for adverse effects via this pathway could not be excluded for 21 no. European sites within or downstream of the 12 APSFR.

5.1.2.1 Sedimentation

Excavation works related to flood protection projects, and the associated storage of excavated spoil material, can pose a significant risk for sediment release into surface water drainage channels, streams and rivers. Instream works for construction, or during maintenance of channels or material assets within or connected to surface waters can also pose a significant risk of sediment release. Ground damage from construction vehicles and machinery can also cause rutting and increased erosion of soils. Access tracks used during construction may affect surface run-off patterns, creating alternative flow paths, promoting erosion and localised flooding. Hydrological connectivity between a construction site and a downstream European site is a key factor which affects the risk of erosion and subsequent delivery of sediment to a designated wetland site. Some of the key concerns with elevated levels of sediment include the impact on spawning fish, through issues including the sedimentation of spawning gravels, clogging of fish gills and reduction in dissolved oxygen (Acornley & Sear, 1999; Sear *et al*., 2008; Collins *et al.,* 2011).

Increased sediment supply and the potential for associated degradation in water quality can lead to adverse effects on European sites situated within or downstream of potential flood protection projects.

Several European sites are situated within Belfast Lough (Belfast Lough SPA and Ramsar Site, Belfast Lough Open Water SPA, East Coast Marine (NI) pSPA, Outer Ards SPA and Ramsar Site, North Channel SAC). The wetland and coastal habitats within these sites provide a supporting function for the designated SCI bird species, and mobile marine mammals, that use these sites. These European sites are situated downstream of Newtownabbey, Bangor, Carrickfergus, Belfast, and Glengormley and Mallusk APSFR.

Larne Lough SPA, Larne Lough Ramsar Site and East Coast Marine pSPA are situated within Larne Lough, downstream of Larne APSFR. The wetland and coastal habitats within these sites provide a supporting function for the designated SCI bird species that use these sites. In Larne Lough, this includes coastal saltmarsh and saline lagoon habitat. According to the conservation objectives of Larne Lough SPA, the Lough is currently enriched, most notably through sewage discharge from Ballystrudder and Ballycarry, with the potential to alter inter-tidal habitat.

River Faughan and Tributaries SAC, Lough Foyle SPA and Ramsar Sites, Lough Swilly SAC and SPA are all situated downstream of Londonderry APSFR. The wetland and coastal habitats within SPA and Ramsar sites provide a supporting function for the designated SCI bird species that use these sites, while Lough Swilly SAC includes Annex I estuarine, coastal lagoon and saltmarsh habitats.

River Foyle and Tributaries SAC is situated downstream of Omagh APSFR, and includes the Annex I riverine habitat ‘Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.

Lough Neagh and Lough Beg SPA and Ramsar Sites are situated downstream of Ballymena, Lurgan, and Portadown and Craigavon APSFR. Wetland habitats within these sites provide a supporting function for the SCI bird species that use these sites.

Several European sites are situated within Carlingford Lough (Carlingford Shore SAC, Carlingford Lough SPA (IE), Carlingford Lough SPA (NI) and Carlingford Lough Ramsar Site), downstream of Newry APSFR. The wetland and coastal habitats within these SPA and Ramsar sites provide a supporting function for the designated SCI bird species that use these sites, while Carlingford Shore SAC includes the Annex I intertidal habitats 'Annual vegetation of drift lines' and 'Perennial vegetation of stony banks'.

Increased sediments and associated nutrient loads to these downstream habitats could impact upon the extent and/or quality of these Annex I habitats, and to the intertidal and coastal habitats that provide a supporting function for the SCI bird species and mobile marine mammals of these European sites.

5.1.2.2 Hydrocarbons

Hydrocarbons are products made from crude oil such as machinery fuels and lubricants. Leaks of these contaminants into watercourses can have serious impacts on aquatic species, particularly fish. Oil spillage and leaks are a common source of hydrocarbon contamination of groundwater and surface water (Manoli and Samara, 1999). A pollution event can occur as a result of poorly maintained vehicles and machinery including portable generators and accidental spillage during re-fuelling of same.

When hydrocarbons are released into the environment as a result of accidental spillages, there may be some fractions that float on top of the water, forming a thin surface film. Other heavier fractions may sink through the water column and accumulate in the sediment at the bottom of the waterbody, which may affect bottom feeding fish and organisms.

The release of hydrocarbons into the aquatic environment can result in chronic impacts upon water dependent species downstream in a European site. The potential impacts include disruption to neurosensors, abnormal behaviour and development issues as well as direct impacts upon fertility. Oil spills can reduce the capacity of a water body to exchange oxygen as well as result in oil coating the gills of aquatic species causing lesions on respiratory surfaces. This can result in significant respiratory difficulties for aquatic organisms. Benthic invertebrates can be adversely affected if fractions of hydrocarbons settle and accumulate in sediments. This can result in the mortality of populations and prevent future colonisation (Bhattacharyya *et al.,* 2003), which could also impact upon SCI bird species feeding on these organisms.

There is potential for leaks or spillages of hydrocarbons into watercourses during flood protection projects for the 12 APSFR, which could have serious consequences for aquatic species downstream in a European site. These downstream European sites are listed in **Table** 4-1 and impact pathways are described in Section 5.1.2.1 and Appendix 2.

5.1.3 Disturbance and Displacement

The construction phase of flood protection projects can lead to disturbance and displacement effects on species within the vicinity of the works.

5.1.3.1 Birds

Some bird species may be temporarily displaced from suitable habitat by the presence of machinery and personnel during construction. Indirect loss of wintering habitats for bird species of conservation concern in Ireland (Colhoun and Cummins, 2013) may occur if they do not use traditional feeding or roosting sites during construction of flood protection projects.

The main potential impact on designated bird species is disturbance during the construction phase of any flood protection scheme arising from the NI FRMP, from people and machinery working at the site. There is potential for disturbance and displacement effects on designated SCI bird species within Belfast Lough European sites arising from potential flood protection projects at, or in close proximity to, the coast at Newtownabbey, Bangor, Carrickfergus and Belfast APSFR, and within Larne Lough European sites from any

projects close to the coast at Larne APSFR. It should be noted that, with the exception of Belfast, the flood risk for these APSFR is primarily fluvial and/or pluvial, and coastal flood protection measures are unlikely to be necessary within the lifetime of the Plan. The construction phase of any flood protection scheme for these APSFR is likely to be short term in nature, and not expected to lead to wide scale displacement effects that might affect any species at a population scale. Nevertheless, it is recommended that consideration is given to the timing of any flood protection works in close proximity to the coastline and the potential impacts in areas which are important for overwintering birds, in particular species listed as Conservation Interests for the European Sites.

Taking a precautionary approach, European sites have also been included that are hydrologically connected to APSFR in an upstream direction. There is potential for adverse effects on these European sites, should upstream storage or upstream catchment works occur within their site boundaries. Antrim Hills SPA is situated upstream of both Larne and Ballymena APSFR. Should any flood protection projects involving upstream storage or upper catchment management be implemented within the boundaries of this site, there is potential for disturbance and displacement of the designated SCI bird species, Hen harrier and Merlin. As noted above, the construction phase of any flood protection scheme for these APSFR is likely to be short term in nature, and not expected to lead to wide scale displacement effects that might affect any species at a population scale; however consideration should be given to potential impacts in areas of importance to these species should any scheme be proposed within the site boundary.

5.1.3.2 Marine Mammals

In the marine environment, the construction phase of any coastal flood protection scheme could give rise to underwater noise causing disturbance to cetaceans or pinniped species. The potential for adverse effects on the Grey seal population of the Maidens SAC and the Harbour porpoise population of North Channel SAC via this pathway could not be excluded during screening, in the absence of any mitigation measures to be implemented at project level.

5.1.3.3 Otter

Otter are sensitive to disturbance from people and machinery working at a site, and may avoid areas where works are being undertaken. Construction works have potential to adversely affect habitat use by otter, which require lying up areas throughout their territory. The River Faughan and Tributaries SAC intersects Londonderry APSFR, while River Foyle and Tributaries SAC and River Finn SAC are situated directly upstream of this APSFR. Otter occur throughout most of these sites, and disturbance during construction has potential to result in adverse effects on their distribution. The potential for adverse effects on the otter populations of these sites could not be excluded during screening, in the absence of any mitigation measures to be implemented at project level.

5.1.4 In-combination Effects

5.1.4.1 NI FRMP 2021-2027

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are considered. Some flood protection projects may be brought forward within the same geographical location and thus have more potential for in-combination effects. This section looks at the projects that may be developed within the Plan period, within the same vicinity, therefore giving the potential for in-combination effects.

There is potential for in-combination water quality and habitat deterioration effects on downstream European sites from construction works associated with flood protection projects should more than one project be

progressed and constructed simultaneously within an APSFR, or within APSFR that are linked with the same downstream European sites, as detailed in Section 5.1.2.

There is also potential for in-combination disturbance and displacement effects on species of European sites situated within or in close proximity to APSFR from construction works associated with flood protection projects should projects be progressed and constructed simultaneously within an APSFR, or within APSFR that are in close proximity to the same European site.

5.1.4.2 River Basin and Flood Risk Management Plans

Table 5.1 lists River Basin and Flood Risk Management Plans that have been considered for in-combination effects with implementation of the NI FRMP. Where these Plans have been subject to a Habitats Regulations Assessment, the outcome of this assessment has been summarised in the table.

None of the River Basin or Flood Risk Management Plans considered are predicted to result in adverse effects on the respective European sites considered in each of the assessments, in many cases with the application of plan level mitigation strategies and the safeguarding regime of lower level screening for AA or AA as the case may be at a project level prior to projects being consented.

When the implementation of these plans are considered in combination with the NI FRMP, and taking into consideration the measures intended to avoid or reduce the harmful effects of the plan on European sites proposed both in the NI FRMP and in each of these respective plans, adverse effects on the integrity of the European sites considered in this assessment are not predicted.

Table 5-1: River Basin Management Plans considered for in-combination effects

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
Draft 2nd River Basin Management Plan 2018-2021 (2017) (Ireland)	Aims to set out river basin management planning in Ireland. This leads on from the 1st Cycle River Basin Management Plans: 2009-2014.	Details the most recent water quality results and the outcomes of the risk characterisation process. Informs on the significant pressures for at-risk water bodies. Sets out the environmental objectives of the WFD and the priorities. Outlines the key measures aimed at meeting our environmental objectives. Outlines measures to be taken to improve stakeholder engagement.	A NIS was prepared for the 2nd cycle RBMP, which concludes that actions arising out of the RBMP shall be required to include measures preventing pollution or other environmental effects likely to adversely affect the integrity of European Sites, and where applicable projects arising from the implementation of the RBMP will themselves be subject to screening for AA and where relevant, AA.
Neagh Bann River Basin Management Plan	Describes existing condition of waters in the international River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements. • Establish a framework for the protection of water bodies at River Basin District (RBD) level • Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD • Promote sustainable water usage	Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive Identifies and manages water bodies in the RBD Establishes a programme of measures for monitoring and improving water quality in the RBD Involves the public through consultations RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.	The plan was subject to HRA prior to its adoption. The outcome of this assessment found that the plan was unlikely to give rise to any significant effects upon European sites at this stage.
North Western River Basin Management Plan	Describes existing condition of waters in the international River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements. • Establish a framework for the protection of water bodies at River Basin District (RBD) level • Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD Promote sustainable water usage	Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive Identifies and manages water bodies in the RBD Establishes a programme of measures for monitoring and improving water quality in the RBD Involves the public through consultations RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.	The plan was subject to HRA prior to its adoption. The outcome of this assessment found that the plan was unlikely to give rise to any significant effects upon European sites at this stage.
North Eastern River Basin Management Plan	Describes existing condition of waters in the River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements. • Establish a framework for the	Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive	The plan was subject to HRA prior to its adoption. The outcome of this assessment found that the plan was unlikely to give rise to any significant effects upon European sites at this

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
	protection of water bodies at River Basin District (RBD) level • Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD • Promote sustainable water usage	Identifies and manages water bodies in the RBD Establishes a programme of measures for monitoring and improving water quality in the RBD Involves the public through consultations RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.	stage.
Republic of Ireland Flood Risk Management Plans (CFRAMS) 2016	Flood Risk Management Plans (FRMPs) are a key requirement of the Floods Directive (Directive 2007/60/EC on the assessment and management of flood risks) and are aimed at reducing the potential adverse consequences of significant floods on human health, economic activity, cultural heritage and the environment. The FRMPs are coordinated at the River Basin District level to align with the Water Framework Directive’s River Basin Management Plans and focus on managing the flood risk in the River Basins. FRMPs have been prepared for each of the 29 River Basins that include the 300 communities assessed as being at potentially significant flood risk (termed Areas of Further Assessment or “AFAs”).	The Flood Plans detail the flood risk and proposed feasible flood risk management measures for 300 areas of significant flood risk throughout the country. These Plans set out the roadmap for both investment and policy decisions for the coming 5-10 years. The FRMPs address all aspects of flood risk management, and take into account the characteristics of the particular river catchments in which the AFAs are located. Key elements contained within the FRMPs include: A description of the objectives set for the management of flood risks. Identification of structural and non-structural measures for achieving those objectives within each AFA. A summary of the information and consultation measures taken in connection with the preparation of the FRMPs and a description of the coordination process with the Northern Ireland’s DARD Rivers Agency (now DfI), in relation to shared International River Basin Districts.	AA was undertaken individually for each Unit of Management (River Basin). In many cases, the Natura Impact Statements (NIS) found that proposed flood protection approaches include the possibility of structural approaches, and may result in potentially significant impacts upon European sites, but that at a project level, structural approaches will require consent including project level AA and targeted mitigation as necessary to ensure no adverse effect on the integrity of European sites.
River Basin – Local Management Area Action Plans	Local Management Area Action Plans implement the WFD River Basin Management Plans within the 2010 to 2015 planning cycle. The action plans detail the local measures identified to improve the water environment.	Local Management Areas (LMAs) were derived from surface water bodies. They were created to manage and improve water quality at a local level through local involvement.	The various specific LMA Action Plans have not been subject to HRA.

5.1.4.3 Land Use Area Plans

Table 5.2 lists Land Use Area Plans that have been considered for in-combination effects with implementation of the NI FRMP. Where these Plans have been subject to AA, the outcome of this assessment has been summarised in the table.

None of the Land Use Area Plans considered are predicted to result in adverse effects on the respective European sites considered in each of the assessments, in many cases with the application of plan level mitigation strategies and the safeguarding regime of lower level screening for AA or AA as the case may be at a project level prior to projects being consented.

It is noted that a number of draft Local Development Plans have been published by local authorities, these plans, given their draft state, do not include for all the specifics in respect of allocations or zoning of sites for development which are likely to come forward. As such the extent to which the potential for significant effects arising upon European sites can be accurately assessed is largely limited to the draft strategy and policies. Where such plans are not available in draft form no assessment of the potential for in-combination effects can be undertaken. It is further noted that where plans are unadopted and not yet subject to inspection the potential for such effects to arise is not yet certain.

When the implementation of these plans are considered in combination with the NI FRMP, and taking into consideration the measures intended to avoid or reduce the harmful effects of the plan on European sites proposed both in the NI FRMP and in each of these respective plans, adverse effects on the integrity of the European sites considered in this assessment are not predicted.

5.1.4.4 Living with Water Programme (LWWP)

The Living with Water Programme (LWWP) is taking a new long-term strategic approach to drainage which will:

- protect against flooding by managing the flow of water through a catchment from source to sea;
- enhance the environment through effective wastewater management and the provision of enhanced blue / green spaces to benefit local communities; and
- grow the economy, by providing the necessary capacity in our sewer and wastewater treatment systems to allow development and house building.

This new approach will be taken forward for Belfast through the development and delivery of a Strategic Drainage Infrastructure Plan (SDIP). Whilst DfI is leading the LWWP, there are many key stakeholders involved from across central and local government, with support from the private sector. All are working together to develop drainage solutions that move away from conventional and expensive hard engineering solutions towards a more integrated and sustainable approach to managing water through the urban area.

The plan was subject to HRA by RPS on behalf of DfI. The potential for likely significant habitat loss, water quality and habitat deterioration and disturbance and displacement effects could not be discounted for several European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites. However the HRA concludes that, having applied measures appropriate at a plan level intended to avoid or reduce the harmful effects of the implementation of the plan on European sites; and taking into consideration the safeguarding regime of lower level screening for AA or AA as the case may be at a project level for each of the projects brought forward from the LWWP prior to those projects being consented under the planning code; implementation of the LWWP would not adversely affect the integrity of any European site.

There is potential for in-combination water quality and habitat deterioration, and disturbance and displacement effects to occur for European sites within Belfast Lough, should any projects proposed under LWWP be progressed and constructed at the same time as those under NI FRMP within the same catchment.

Table 5-2: Land Use Area Plans considered for in-combination effects

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
Regional Development Strategy for Northern Ireland 2025	A Strategy to guide the future development of Northern Ireland to 2025. The RDS will be material to decisions on planning applications and appeals.	The 8 aims of the RDS are: • Support strong, sustainable growth for the benefit of all parts of Northern Ireland • Strengthen Belfast as the regional economic driver and Londonderry as the principal city of the North West • Support our towns, villages and rural communities to maximise their potential • Promote development which improves the health and well-being of communities • Improve connectivity to enhance the movement of people, goods, energy and information between places • Protect and enhance the environment • Take actions to reduce our carbon footprint and facilitate adaptation to climate change • Strengthen links between north and south, east and west, with Europe and the rest of the world	The Plan was not subject to HRA.
The Regional Development Strategy 2035 – Shaping Our Future	The strategy aims to take account of the economic ambitions and needs of the Region, and put in place spatial planning, transport and housing priorities that will support and enable the aspirations of the Region to be met.		The Strategy was subject to HRA. This assessment concluded that subject to the strategy appropriately taking account of the predicted potential effects upon European designated sites, the strategy would have little potential to give rise to any significant adverse effects on European sites.
A Planning Strategy for Rural Northern Ireland	This document considers the inter-relationships between town and country and seeks to present a clear vision for the future development of the rural area.	• Strategic Objectives: • to protect and enhance the natural and man-made environment; • to meet the future development needs of the rural community; • to facilitate regeneration of the rural economy; • to accommodate change, while maintaining the character of the countryside; • to revitalise rural towns and villages in order to make them more attractive places in which to live and work; and • to promote a high quality of design new development	The Plan was not subject to HRA, however European sites are broadly addressed at Regional Policy CON 1.
Ards and Down Area Plan	The purpose of the Plan is to inform the general	Identifies issues of relevance to the area and	The Plan was subject to HRA, undertaken by

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
2015	public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within Ards Borough and Down District over the Plan period 2000 -2015.	outlines principles for future development of area	NIEA. While a number of European sites were identified as requiring AA, it was concluded that the Plan would not result in any significant adverse effects upon any European designated sites.
Belfast Local Development Plan 2035 – Draft Plan Strategy	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2035. It is noted that the draft form of this plan does not include for all specific allocations likely to come forward.	Identifies issues of relevance to the area and outlines principles for future development of area.	The draft plan was subject to HRA by SES on behalf of the Belfast City Council. This assessment concluded that significant uncertainty remains as to the potential for significant effects, given the plan's draft status, and as such any further detail to be included within the finalised plan, will be further addressed within the updated HRA and will ensure that no significant effects arise upon any European sites.
Belfast Metropolitan Area Plan 2015	The purpose of the Plan is to inform the general public, statutory authorities' developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Belfast Metropolitan Area over the Plan period. The Plan will help to give effect to the Regional Development Strategy. The Plan covers Belfast City, Lisburn City, Carrickfergus Borough, Castlereagh Borough, Newtownabbey Borough and North Down Borough Councils.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan was subject to HRA, undertaken by the Department for the Environment Northern Ireland. While a number of European sites were deemed to require Appropriate Assessment, it was concluded that the Plan would not result in any significant adverse effect upon any European designated sites.
Antrim and Newtownabbey Local Development Plan 2030 (In preparation)	The purpose of the new LDP will be to inform the public, statutory authorities, developers and other interested parties of how the Borough should develop in the years ahead. The Plan will be prepared in the context of the Council's overall Corporate Plan and wider government policy including the Regional Development Strategy 2035 and the Strategic Planning Policy Statement. It will also take account of the Council's published Community Plan Love Living Here.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan is currently in development, and therefore has not, as of yet, been subject to HRA.
Mid and East Antrim	The draft Plan Strategy provides a plan-led policy	Identifies issues of relevance to the area and	The draft strategy was subject to HRA,

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
Borough Council Local Development Plan 2030 - Draft Plan Strategy (2019)	framework for making day-to-day decisions to help Mid and East Antrim Borough Council (the Council) deliver sustainable development for employment, homes and infrastructure in a high quality environment across the Borough. It sets out how the area will change and grow until 2030.	outlines principles for future development of area.	undertaken by Mid and East Antrim Borough Council. While a number of European sites were deemed to require Appropriate Assessment, it was concluded that the raft strategy would not result in any significant adverse effect upon any European designated sites, assuming that the recommended mitigation measures are all accepted, and the Plan amended accordingly.
Antrim, Ballymena and Larne Plan 2016 – Issues Paper	The Plan will play a major role in guiding the future development of the Antrim, Ballymena and Larne Borough Council areas over the Plan period. In so doing, it will help to give effect to the Regional Development Strategy 2025 (RDS), published in 2001, which provides an overarching strategic framework to help achieve a strong, balanced economy, a healthy environment and an inclusive society, in accordance with the Programme for Government 2001. The Plan identifies issues of relevance to the area and outlines principles for future development of the area.	Identifies issues of relevance to the area and outlines principles for future development of area.	As the associated Plan is in development, this paper has not, as of yet, been subject to HRA. However, European site issues are addressed at 5.7.1.
Larne Area Plan 2010	Previous Area Plan for the Larne Borough Council area that set out the development framework until 2010. The Plan identifies issues of relevance to the area and outlines principles for future development of the area.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan was not subject to HRA, however, in the Section entitled Natural Environment (pg. 22) it is stated that due consideration will be given to the Habitats Regulations and associated designated sites.
Derry City and Strabane Local Development Plan 2032 – Draft Plan Strategy (2019)	The LDP draft Plan Strategy sets out the Council's vision, objectives and strategic Planning policies in relation to the development and use of land in the City and District to 2032.	Identifies issues of relevance to the area and outlines principles for future development of area.	The draft strategy was subject to HRA, undertaken by Shared Environmental Services on behalf of Derry City and Strabane District Council. While a number of European sites were deemed to require Appropriate Assessment, it was concluded that the draft strategy would not result in any significant adverse effect upon any European designated sites, assuming that the recommended mitigation measures are all accepted, and the Plan amended accordingly.

Plan / Programme	High Level Description	Key Objectives and Policies	Effects on European sites
Fermanagh and Omagh District Council Local Development Plan (In preparation)	The LDP will set out the Council's vision, objectives and strategic Planning policies in relation to the development and use of land in the District.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan is currently in development and, as such, has not been subject to HRA.
Armagh City, Banbridge and Craigavon Borough Council Local Development Plan 2030 (In preparation)	The LDP will set out the Council's vision, objectives and strategic Planning policies in relation to the development and use of land in the Borough to 2030.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan is currently in development and, as such, has not been subject to HRA.
Newry, Mourne and Down Local Development Plan	The LDP will set out the Council's vision, objectives and strategic Planning policies in relation to the development and use of land in the District.	Identifies issues of relevance to the area and outlines principles for future development of area.	The Plan is currently in development and, as such, has not been subject to HRA.

6 AVOIDANCE AND MITIGATION

This section sets out the strategic approach to mitigation to address potential adverse effects on the integrity of European sites outlined in **Table 4-1**. The mitigation hierarchy shown in **Table 6-1.** highlights the need to focus on the avoidance and minimising aspects of mitigation.

Table 6-1: Mitigation Hierarchy

Avoidance	Seek options that avoid harm to ecological features (for example, by locating project on an alternative site).
Mitigation	Adverse effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.
Compensation	Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
Enhancement	Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

Where a likely significant adverse effect has been identified (or cannot be discounted) during this Plan level HRA, mitigation measures can be implemented to address the adverse effect. This section outlines the mitigation measures proposed.

6.1 Avoidance

The NI FRMP is a strategic level Plan, and does not define the precise location or approach of any flood management project that may arise from it. Specific flood protection projects have been proposed for a number of the APSFR; these are at various stages of progression, from the need to undergo feasibility studies to detailed design stage. In most cases, there is no certainty as to the location or nature of flood protection measures required. In addition, there is no certainty at this strategic stage as to whether any additional flood protection projects will be proposed for the 12 APSFR within the lifetime of the plan, and what their nature and location would be. This will depend on the undertaking and outcome of feasibility studies. The approach taken in this HRA has been to identify the possible plan approaches, or measure types, for each APSFR (i.e. maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes, catchment based management) and assess these for their potential to result in adverse effects on the network of European sites.

Avoidance measures will be carried out at the earliest opportunity at the project stage. DfI has adopted the mitigation hierarchy (**Table 6.1**) in their approach to the development of flood protection infrastructure, in order to avoid impacts on the integrity of European sites.

In developing future projects, DfI will seek to find options that avoid impacts on European sites, and infrastructure that is developed through the implementation of the NI FRMP will be subject to Constraints Studies. Through these processes, significant direct and indirect effects on European sites can be identified and avoided, where possible. Any future projects developed as a result of the NI FRMP will be subject to examination of constraints and, where appropriate, to project level AA. As all European sites are also ASSIs under national legislation, any proposals will have to go through the assent process, with all proposals and approaches requiring agreement from NIEA before any works can proceed. This process will act as a second line of protection for European sites, and will ensure that any approaches implemented have been agreed through consultation with NIEA as the statutory environmental consultee. The proposals will also have to undergo assessment through the Drainage (Environmental Impact Assessment) Regulations (Northern Ireland) 2006, which will assess any potential impact on European sites, along with a number of other criteria.

Screening for and/or AA will be carried out on all relevant projects and, where impacts are identified that may prevent achieving conservation objectives for the features of any given European site, mitigation measures will be proposed to ensure that does not happen. This will be informed by detailed ecological survey and assessment, so that sensitive receptors are avoided. Avoidance of European sites will always be a key consideration in future flood protection projects.

Should any case arise, whereby protected species or habitats within the Republic of Ireland have potential to be adversely affected by the implementation of projects arising from the NI FRMP, there should be consultation with the National Parks and Wildlife Service (NPWS).

Assessment of impacts for a project, where the design details are known and where the location of infrastructure has been confirmed through constraints studies and the site selection process, will allow for accurate prediction of effects on European sites, their protected species and habitats.

6.2 Mitigation

AA of individual projects, where required, will include timely consultation with relevant planning and environmental authorities, the evaluation of up to date mapping, designations and development plans, policies, and a consideration of any relevant sectoral guidance.

Where avoidance is not possible, adverse effects on site integrity will be avoided through project specific mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation. Mitigation measures shall aim to ensure no adverse effects on the integrity of a European site.

Consideration should be given to the planning and timing of any construction works. Flood protection works on adjoining reaches of rivers should not be scheduled to occur simultaneously with each other, or with other parallel projects.

The following measures will be incorporated into future project specific HRAs and Ecological Impact Assessments (EcIAs) / Environmental Impact Assessments (EIAs), where appropriate. This list of mitigation measures is not designed to be exhaustive and shall be supplemented by project and site-specific mitigation developed by project level AA and EcIA / EIA.

6.2.1 Habitat Loss

Direct habitat loss within European sites will be avoided for new-build infrastructure and avoided where reasonably practicable for refurbishment of infrastructure within European sites.

Where construction occurs within a designated site, sensitive construction techniques will be used to minimise the potential impact, such as the use of bog mats for machinery access.

Ecological monitoring will be undertaken at sensitive sites during construction, as appropriate. Such sites will be identified on a case by case basis.

Restricted working areas will be imposed to ensure minimal disturbance to sensitive habitats.

Re-distribute vegetation and soil stripped from the construction areas to provide a seedbank and do not re-seed with Perennial Ryegrass.

Land within the working area will be reinstated to its former condition or as near as is reasonably practicable.

6.2.2 Water Quality

In all cases where works have the potential to impact on protected surface water or riparian habitats within or upstream of a European site, measures must be put in place to manage and minimise the risk of escape of elevated levels of suspended solids or polluting substances into watercourses.

Develop, implement and enforce an Erosion and Sedimentation Control Plan (ESCP) where risks are identified to downstream European sites.

The ESCP must include sufficient pollution control measures to prevent run-off, silt, hydrocarbons or any other harmful substances or substrates from entering any surrounding surface waters.

Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with plant, refuelling and construction equipment into the environment.

All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice.

Develop, implement and enforce a Water Pollution Prevention and Environmental Emergency Response Plan for all work sites. This should include good site practices as described in NIEA Pollution Prevention Guidance and applicable CIRIA Technical Guidance (CIRIA, 2001; CIRIA, 2006) including methods and procedures to deal with any spills and the timely reporting of incidents.

- Silty water will be collected in settlement ponds prior to discharge to watercourses.
- All works involving open cut crossings shall be carried out during the period May to September to avoid interruption of salmonid spawning runs, spawning, incubation of eggs and the early developmental stages.
- Where appropriate and practical, bank vegetation and bed material which has been removed shall be stored to facilitate its replacement when channel works in the vicinity of a watercourse have been completed.
- Works in the vicinity of a watercourse shall be carried out with reference to a water quality protection or surface water management plan for each site which shall ensure that:
    - All necessary measures shall be taken to minimise the generation and release of sediments into all watercourses.
    - Levels of suspended solids in watercourses shall be monitored during the works.
    - Precautions shall be put in place to avoid spillages of diesel, oil or other polluting substances.

6.2.3 Disturbance and Displacement

6.2.3.1 Birds

Site clearance involving the cutting or destruction of vegetation and hedgerows shall not take place in the bird breeding season between March 1st and August 31st inclusive.

Mitigation measures to reduce disturbance effects on SCI bird species may include but not be limited to:

- Timing of works (e.g. avoiding works in the vicinity of SPAs with over wintering birds between the months of November and March inclusive).
- Avoid working simultaneously with other projects which could also cause disturbance.
- Screening of works to reduce disturbance impacts.

6.2.3.2 Marine Mammals

Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010), Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland) (jncc.gov.uk), and appropriate legislation (i.e. The Habitats Regulations (as amended) and Wildlife (NI) Order 1985 (as amended)) will be followed for any marine based activities arising from implementation of the NI FRMP.

6.2.3.3 Otter

Best practice protocols and Standard Operating Procedures (SOPs), including otter SOPs, should be strictly adhered to during any construction and maintenance works in order to minimise physical disturbance.

In-channel working should be avoided, unless essential.

No in-channel or bankside works to be conducted within 50m of a known or potential otter holt / resting site.

7 CONCLUSION

Having regard to the relevant legislation and the methodology followed and conclusions of a screening stage exercise, an HRA was prepared to document an Appropriate Assessment of the implications of the NI FRMP 2021-2027 on European sites in view of their conservation objectives.

The approaches proposed within the NI FRMP are grouped under three main measures:

- Prevention;
- Preparedness; and
- Protection.

Approaches proposed under **Prevention** are policy based, affecting all areas of Northern Ireland. As such, the HRA has been carried out in a generic manner, to reflect the policy based nature of this measure. The HRA finds that there is no potential for likely significant effects on the integrity of any European sites resulting from the Prevention measure, either alone or in combination with other plans or programmes.

Approaches proposed under **Preparedness** include both site specific approaches (individual property protection and resilience) and information and planning approaches (emergency plans, flood warning, advice). Owing to the nature of the approaches (non-invasive or very site specific), the HRA finds that these approaches have no potential to result in likely significant effects on the integrity of any European sites, either alone or in combination with other plans or programmes.

Approaches proposed under **Protection** include the possibility of structural measure types and activities. The HRA has identified that there is the potential for impact on any European site which may be affected by any structural approaches, based on geographic location, qualifying criteria and catchment connectivity with the 12 APSFR.

The HRA considered three broad impact themes and focused on the following possible LSEs from implementation of Protection Measure types, as outlined in **Table** 4-1:

- The possibility of likely significant **Habitat Loss** effects could not be discounted for 16 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.
- The possibility of likely significant **Water Quality and Habitat Deterioration** effects could not be discounted for 21 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.
- The possibility of likely significant **Disturbance and Displacement** effects could not be discounted for 15 no. European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

Having conducted further investigation and analysis; and having applied measures appropriate at a plan level intended to avoid or reduce the harmful effects of the implementation of the plan on European sites; and taking into consideration the safeguarding regime of lower level screening for AA, or AA as the case may be, at a project level for any flood protection projects brought forward from the NI FRMP prior to those projects being consented under the planning code; it is concluded that implementation of the NI FRMP 2021-2027 will not adversely affect the integrity of any European site.

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APPENDIX A

Details of European sites within the Zone of Influence of the 12 APSFR

Table A.1: Background information for SACs within the zone of influence of the 12 APSFR

Site Name /Qualifying Interests Code		Conservation Objectives	Condition Assessment	Trend
Northern Ireland Sites				
North Channel SAC [UK0030399]	Harbour porpoise (*Phocoena phocoena*)	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters		
The Maidens SAC [UK0030384]	H1170 Reefs, H1110 Sandbanks which are slightly covered by sea water all the time, S1364 Grey seal *(Halichoerus grypus)*	To maintain (or restore where appropriate) the following features to favourable condition: Annex I Habitats Reefs [1170] Sandbanks which are slightly covered by seawater all the time [1110] Annex II Species Grey seal (*Halichoerus grypus*) [1364]		
Strangford Lough SAC [UK0016618]	H1160 Large shallow inlets and bays	Maintain the extent of the large shallow inlet and bay Allow the natural processes which determine the development, structure, function and extent of the large shallow inlet and bay, to operate appropriately Maintain and enhance, as appropriate, the species diversity within this habitat.	No info	
	H1170 Reefs	To maintain the reefs and their characteristic species in favourable condition, allowing for natural change. Sub-features: Subtidal rock and boulder communities; Subtidal rocky reef communities; Intertidal rock and boulder communities Attributes: extent of the feature and subfeatures; the presence of a selection of characteristic biotopes at sites chosen to indicate the distribution and extent of each subfeature; species composition of selected biotopes at monitoring sites Sub-feature: Horse Mussel (*Modiolus modiolus*) beds Attributes: distribution of *Modiolus* beds; extent and percentage cover of *Modiolus* beds; structure of *Modiolus* beds; species index of Modiolus beds.	Unfavourable	Unclassified
	H1150 Coastal lagoons	Maintain the extent of the coastal lagoons Allow the natural processes which determine the development, structure, function and extent of the coastal lagoons, to operate appropriately Maintain and enhance, as appropriate, the species diversity within this habitat	Favourable	Unclassified
	H1140 Mudflats and sandflats not covered by seawater at low tide	Maintain the extent of mudflats and sandflats not covered by sea water at low tide Allow the natural processes which determine the development, structure and extent of mudflats and sandflats not covered by sea water at low tide, to operate appropriately Maintain and enhance, as appropriate, the species diversity within this habitat.	Favourable	Unclassified
	H1220 Perennial vegetation of stony banks	To maintain the perennial vegetation of stony banks and their characteristic species in favourable condition, allowing for natural change. Attributes: extent of the feature; substrate mobility; vegetation structure; vegetation composition	Unfavourable	Recovering
	S1365 Harbour seal (*Phoca vitulina*)	To maintain the population of *Phoca vitulina* in favourable condition, allowing for natural change. Attributes: number of adults; number of pups; mother and pup resident time; habitat availability	Favourable	Unclassified
	H1330 Atlantic salt meadows (*Glauco-*	To maintain the Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and their characteristic species in favourable condition,	Unfavourable	Unclassified

	Puccinellietalia maritimae)	allowing for natural change Attributes: extent of the feature; substrate mobility; vegetation composition; vegetation structure.		
	H1210 Annual vegetation of drift lines	To maintain the annual vegetation of drift lines and their characteristic species in favourable condition, allowing for natural change. Attributes: extent of the feature; substrate mobility; substrate availability; presence of characteristic species; presence of rare and notable species.	Favourable	Unclassified
River Faughan and tributaries SAC [UK0030361]	S1106 Salmon (*Salmo salar*)	Maintain and if possible expand existing population numbers and distribution (preferably through natural recruitment), and improve age structure of population. Maintain and if possible enhance the extent and quality of suitable Salmon habitat - particularly the chemical and biological quality of the water and the condition of the river channel and substrate.		
	S1355 Otter (*Lutra lutra*)	Maintain and if possible increase population numbers and distribution. Maintain the extent and quality of suitable Otter habitat, in particular the chemical and biological quality of the water and all associated wetland habitats		
	H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.	Maintain and where feasible expand the extent of existing oak woodland but not at the expense of other SAC (ABC) features. (There are areas of degraded heath, wetland and damp grassland which have the potential to develop into Oak woodland) Maintain and enhance Oak woodland species diversity and structural diversity. Maintain the diversity and quality of habitats associated with the Oak woodland, e.g. fen, swamp, grasslands, scrub, especially where these exhibit natural transition to Oak woodland Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion		
River Foyle and Tributaries SAC [UK0030320]	H3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Maintain and if possible enhance extent and composition of community. Improve water quality. Improve channel substrate quality by reducing siltation. Maintain and if feasible enhance the river morphology	Not assessed	
	S1106 Salmon (*Salmo salar)*	Maintain and if possible expand existing population numbers and distribution (preferably through natural recruitment), and improve age structure of population. Maintain and if possible enhance the extent and quality of suitable Salmon habitat - particularly the chemical and biological quality of the water and the condition of the river channel and substrate.	Not assessed	
	S1355 Otter (*Lutra lutra*)	Maintain the extent and quality of suitable Otter habitat, in particular the chemical and biological quality of the water and all associated wetland habitats. Maintain and if possible expand existing population numbers and distribution.	Not assessed	
Deroran Bog SAC [UK0030324]	H7110 Active raised bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.	Unfavourable	Recovering

Tully Bog SAC [UK0030326]	H7110 Active raised bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.	Unfavourable	Unclassified
Fairy Water Bogs SAC [UK0016611]	H7110 Active raised bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.	Unfavourable	Unclassified
Owenkillew River SAC [UK0030233]	S1029 Freshwater pearl mussel (*Margaritifera margaritifera*)	Maintain and if feasible enhance population numbers through natural recruitment. Improve age structure of population. Improve water quality. Improve channel substrate quality by reducing siltation. Ensure host fish population is adequate for recruitment. Increase the amount of shading through marginal tree cover along those sections of river currently supporting this species.	Unfavourable	Unclassified
	H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Maintain and expand the extent of existing oak woodland. (There is an area of degraded bog, wetland and damp grassland which have the potential to develop into oak woodland). Maintain and enhance Oak woodland species diversity and structural diversity Maintain the diversity and quality of habitats associated with the Oak woodland, e.g. fen, swamp, grasslands, scrub, especially where these exhibit natural transition to Oak woodland. Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.	Unfavourable	Recovering
	H3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Maintain and if feasible enhance extent and composition of community. Improve water quality. Improve channel substrate quality by reducing siltation. Maintain and if feasible enhance the river morphology	Favourable	Unclassified
	S1355 Otter (*Lutra lutra*)	Population numbers and distribution to be maintained and if possible, expanded. Maintain the extent and quality of suitable Otter habitat, in particular the chemical and	Favourable	Unclassified

		biological quality of the water, and all associated wetland habitats		
	H91D0 Bog woodland	Maintain and expand the extent of existing bog woodland. (There is an area of degraded bog, wetland and damp grassland that have the potential to develop into bog woodland). Maintain and enhance bog woodland species diversity and structural diversity. Maintain the diversity and quality of habitats associated with the bog woodland, e.g. fen, swamp, especially where these exhibit natural transition to swamp woodland. Seek nature conservation management over	Favourable	Recovering
	S1106 Salmon (*Salmo salar*)	Maintain and where possible, enhance the extent and quality of suitable Salmon habitat, in particular the chemical and biological quality of the water. Maintain and if possible, expand existing population numbers and distribution. Maintain and where possible, enhance the extent and quality of suitable Salmon habitat, in particular the chemical and biological quality of the water.	Favourable	Unclassified
Cranny Bogs SAC [UK0030321]	H7110 Active raised bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.	Unfavourable	Unclassified
Tonnagh Beg Bog SAC [UK0030325]	H7110 Active raised bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types, including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transitions to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.	Unfavourable	Recovering
Garron Plateau SAC [UK0016606]	S1528 Marsh Saxifrage (*Saxifraga hirculus*)	Expand the existing population of Marsh Saxifrage *Saxifraga hirculus*. Seek nature conservation management over suitable areas within the SAC where there is possibility of restoring Marsh Saxifrage.		
	H7130 Blanket bogs	Maintain the extent of intact blanket bog and actively regenerating blanket bog vegetation. Maintain and enhance the quality of the blanket bog community types including the presence of notable species. Seek to expand the extent of actively regenerating blanket bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the blanket bog, especially where these exhibit natural transition to the blanket bog. Maintain the hydrology of the intact blanket bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may	Unfavourable	

		be the potential for blanket bog rehabilitation.	
	H7230 Alkaline fens	Identify the main areas of upland alkaline fen, describe and delineate them with more precision. Maintain the extent of existing alkaline fen. Maintain the diversity and quality of different alkaline fen habitat. Maintain and enhance fen species diversity including the presence of notable or rare species, within each type. Maintain the diversity and quality of associated habitats. Absence of erosion features associated with human impacts, and no exacerbation of nature erosion features.	Favourable
	H3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto- Nanojuncetea*	Open water area and water level regime to remain stable. The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits. Characteristic aquatic vegetation to remain present. Minimal negative impacts from artificial structures. Minimal negative impacts from recreation.	Favourable
	H4010 Northern Atlantic wet heaths with *Erica tetralix*	Maintain the extent of existing Northern Atlantic wet heath vegetation. Maintain and enhance the quality of the existing wet heathland. Seek to expand the extent of the wet heath communities into degraded areas of species poor, wet acid grassland. Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the Northern Atlantic wet heath. Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for wet heath rehabilitation.	Unfavourable
	H3160 Natural dystrophic lakes and ponds	Maintain the open water area of ponds and lakes. Maintain the extent of pool complexes and the numbers of pools within. The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits. Characteristic aquatic vegetation to remain present. Minimal negative impacts from artificial structures. Minimal negative impacts from recreation. Identify the main areas of transition mires and quaking bog and describe and delineate the with more precision.	Favourable
	H7140 Transition mires and quaking bogs	Identify the main areas of transition mires and quaking bog and describe and delineate the with more precision. Maintain the area of open transition mire vegetation. Maintain the integrity of the various plant communities that are typical in different situations where this feature occurs. Maintain the water table at or very close to the surface. Ground should be soft, bouncy & squelchy.	Favourable
Main Valley Bogs SAC [UK0030199]	H7710 Active Raised Bogs	Maintain the extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog.	Unfavourable

		Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.		
Rea's Wood and Farr's Bog SAC [UK0030244]	H91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno- Padion, Alnion incanae, Salicion albae*)	Maintain and expand the extent of existing swamp woodland. (There is an area of wetland and damp grassland which have the potential to develop into carr woodland) Maintain and enhance swamp woodland species diversity and structural diversity Maintain the diversity and quality of habitats associated with the swamp woodland, e.g. fen, swamp, especially where these exhibit natural transition to swamp woodland. Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.	Unfavourable	Unclassified
Montiagh Moss SAC [UK0030214]	S1065 Marsh Fritillary (*Euphydryas (Eurodryas, Hypodryas) aurinia*)	To maintain (and if feasible enhance) population numbers and distribution. To maintain (and if feasible enhance) the extent and quality of suitable Marsh Fritillary breeding habitat, particularly suitable rosettes of the larval food plant *Succisa pratensis*	Unfavourable	Unclassified
Peatlands Park SAC [UK0030236]	H91D0 Bog woodland	Maintain and where appropriate expand the existing area of bog woodland. Maintain and enhance bog woodland species diversity and structural diversity. Maintain the diversity and quality of habitats associated with the bog woodland, e.g. fen, swamp, especially where these exhibit natural transition to swamp woodland. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion	Favourable	Unclassified
	H7120 Degraded raised bogs still capable of natural regeneration	No loss in extent of degraded raised bog to agricultural reclamation, scrub encroachment, development, or further peat cutting. Expand the extent of actively regenerating cutover bog vegetation into areas of degraded (non-active) areas of cutover bog. Ensure that the hydrology of the cutover raised bog is favourable for active bog regeneration. Maintain and enhance the quality of actively regenerating cutover bog community types (Sphagnum moss, Eriophorum spp. and ericoid cover) including the presence of notable species. Maintain the diversity and quality of other habitats of conservation interest. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for further raised bog regeneration	Unfavourable	Unclassified
	H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Maintain and where appropriate expand the existing area of oak woodland. (There is an area of wetland and damp grassland which have the potential to develop into oak woodland). Maintain and enhance Oak woodland species diversity and structural diversity. Maintain the diversity and quality of habitats associated with the Oak woodland, e.g. fen, swamp, grasslands, scrub, especially where these exhibit natural transition to Oak woodland. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.	Unfavourable	Unclassified
	H7110 Active raised bogs	Maintain the extent of intact raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of the lowland raised bog community types including the presence of notable species. Seek to expand the extent of actively regenerating raised bog vegetation into degraded (non-active) areas of cutover bog.	Unfavourable	Unclassified

		Maintain the diversity and quality of other habitats associated with the active raised bog, e.g. acid grassland, fen and swamp, especially where these exhibit natural transition to the raised bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation.		
Derryleckagh SAC [UK0016620]	H7140 Transition mires and quaking bogs	Maintain and the extent of the existing mire. Maintain and enhance mire species and community diversity. Maintain and enhance mire vegetation structure Maintain edge transitions to existing semi-natural mineral soil communities. Maintain the diversity and quality of habitats associated with the mire, e.g. pools and soaks.	Unfavourable	Unclassified
	H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Maintain and expand the extent of existing oak woodland. Maintain and enhance woodland species diversity. Maintain and enhance woodland structure Maintain the diversity and quality of habitats associated with the woodland. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.	Unfavourable	Recovering
Slieve Gullion SAC [UK0030277]	H4030 European dry heaths	Maintain the extent of existing European dry heath vegetation. Maintain and enhance the quality of the European dry heath community types. Seek to expand the extent of the dry heath communities into degraded areas of species-poor, dry acid grassland. Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transitions to the dry heath. Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for dry heath rehabilitation.	Unfavourable	Recovering
Rostrevor Woods SAC [UK0030268]	H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Maintain the extent of the existing oak woodland. Maintain and enhance Oak woodland species diversity and structural diversity. Maintain the diversity and quality of habitats associated with the Oak woodland, e.g. fen, swamp, grasslands, scrub, especially where these exhibit natural transition to Oak woodland Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation. Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.	Unfavourable	Unclassified
Aughnadarragh Lough SAC [UK0030318]	S1065 Marsh Fritillary *Euphydryas (Eurodryas, Hypodryas)* aurinia	To maintain (or restore where appropriate) the Marsh Fritillary Butterfly population to favourable condition. To maintain (and if feasible enhance) population numbers and distribution. To maintain (and if feasible enhance) the extent and quality of suitable Marsh Fritillary breeding habitat, particularly suitable rosettes of the larval food plant Succisa pratensis		
Republic of Ireland Sites				
Carlingford Shore SAC [IE0002306]	1210 Annual vegetation of drift lines	To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status.		
	1220 Perennial vegetation of stony banks	To maintain the Annex II habitats for which the cSAC has been selected at favourable conservation status.		
Carlingford	8110 Siliceous scree	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II		

Mountains SAC [IE0000453]	of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)	species for which the SAC has been selected.
	8210 Calcareous rocky slopes with chasmophytic vegetation	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	8220 Siliceous rocky slopes with hasmophytic vegetation	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	4060 Alpine and Boreal heaths	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	4010 Northern Atlantic wet heaths with *Erica tetralix*	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	4030 European dry heaths	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	7140 Transition mires and quaking bogs	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
	7230 Alkaline fens	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.
Dundalk Bay SAC [IE0000455]	1130 Estuaries	To maintain the favourable conservation condition of Estuaries in Dundalk Bay SAC
	1140 Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide at Dundalk Bay SAC
	1220 Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in Dundalk Bay SAC
	1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To maintain the favourable conservation condition of Atlantic salt meadows in Dundalk Bay SAC
	1310 *Salicornia* and other annuals colonizing mud and	To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in Dundalk Bay SAC

	sand	
	1410 Mediterranean salt meadows (*Juncetalia maritimi*)	To maintain the favourable conservation condition of Mediterranean salt meadows in Dundalk Bay SAC
River Finn SAC [IE0002301]	3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)	To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) in River Finn SAC,
	4010 Northern Atlantic wet heaths with *Erica tetralix*	To restore the favourable conservation condition of Northern Atlantic wet heaths with *Erica tetralix* in River Finn SAC
	7130 Blanket bog (*active only)	To restore the favourable conservation condition of Blanket bogs (*if active bog) in River Finn SAC
	7140 Transition mires and quaking bogs	To restore the favourable conservation condition of Transition mires and quaking bogs in River Finn SAC
	1106 Salmon (*Salmo salar*)	To maintain the favourable conservation condition of Atlantic Salmon in River Finn SAC
	1355 Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter in River Finn SAC
Lough Swilly SAC [IE0002287]	1130 Estuaries	To maintain the favourable conservation condition of Estuaries
	1150 Coastal lagoons	To maintain and restore the favourable conservation condition of Lagoons
	1330 Atlantic salt meadows (*Glauco-Puccinellietalia Maritimae*)	To maintain and restore the favourable conservation condition of Atlantic salt meadows
	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	To restore the favourable conservation condition of Atlantic salt meadows
	91A0 Old sessile oak woods with *Ilex* and *Blechnum* in British Isles	To maintain and restore the favourable conservation condition of Old oak woodland with Ilex and Blechnum
	1355 Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter

Table A.2: Background information for SPAs within the zone of influence of the 12 APSFR

Site Name / Code	Special Conservation Interests	Conservation Objectives	Condition Assessment	Trend

Northern Ireland Sites			
Antrim Hills SPA [UK902301]	Hen Harrier; Merlin	No significant decrease in population against national trends, caused by on-site factors. Fledging success sufficient to maintain or enhance population.	Both favourable
Larne Lough SPA [UK9020042]	Common Tern; Lightbellied Brent Goose; Roseate Tern; Sandwich Tern	No significant decrease in population against national trends, caused by on-site factors. Fledging sites. To maintain or enhance the area of natural and seminatural habitats potentially usable by Feature bird species, subject to natural processes. Maintain the extent of the main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Favourable
Belfast Lough SPA [UK9020101]	Redshank	No significant decrease in population against national trends, caused by on-site factors. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species, subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable
Belfast Lough Open Water SPA [UK9020090]	Great Crested Grebe	No significant decrease in population against national trends	Favourable
East Coast Marine (NI) pSPA [UK9020320]	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck	To maintain or enhance the population of the qualifying species To maintain or enhance the range of habitats utilised by the qualifying species To ensure that the integrity of the site is maintained; To ensure there is no significant disturbance of the species and To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species	No information
Outer Ards SPA [UK9020271]	Arctic tern; Ringer Plover; Golden Plover; Light bellied Brent Goose; Turnstone	No significant decrease in population against national trends, caused by on-site factors. Fledging success. To maintain or enhance the area of natural and seminatural habitats potentially usable by feature bird species, subject to natural processes. Maintain the extent of the main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable
Strangford Lough SPA [UK9020111]	Arctic Tern	To maintain in favourable condition the nationally and internationally important populations of breeding Sandwich Tern, breeding Common Tern and breeding Arctic Tern, allowing for natural change. Favourable condition of each of the populations	Favourable
Copeland Islands SPA [UK9020291]	Arctic Tern, Manx Shearwater	No significant decrease in population against national trends, caused by on-site factors. Fledging success. Maintain the area of natural and semi-natural habitats used by feature bird species, within the SPA, subject to natural processes.	Favourable
Lough Neagh and Lough Beg SPA	Common Tern; Golden Plover; Goldeneye; Great Crested Grebe	No significant decrease in population against national trends, caused by on-site factors. Fledging success. Maintain the area of natural and semi-natural habitats used by notified species, within the SPA,	Bewick's Swan; Goldeneye; Pochard;

[UK9020091]	(wintering, breeding and passage); Pochard; Scaup; Tufted Duck; Waterbird Assemblage; Bewick's Swan; Whooper Swan	subject to natural processes.	Tufted Duck; Waterbird assemblage – unfavourable.;	
Lough Foyle SPA [UK9020031]	Bar-tailed Godwit; Golden Plover; Light-bellied Brent Goose; Waterbird assemblage; Whooper Swan; Bewick Swan	To maintain or enhance the population of the qualifying species; To maintain or enhance the range of habitats utilised by the qualifying species; To ensure that the integrity of the site is maintained; To ensure there is no significant disturbance of the species; and To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species Maintain species diversity contributing to the Waterfowl Assemblage. Maintain or enhance the area of natural and semi-natural habitats used or potentially usable by Feature bird species. (2056.13 ha intertidal area) subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts	Golden Plover – favourable Bewick Swan – unfavourable Whooper Swan – favourable Bar-tailed Godwit – favourable Light-bellied Brent Goose – favourable Waterbird assemblage - favourable	Golden plover – Stable Bewick Swan – declining Whooper Swan – declining Bar-tailed Godwit – declining Light-bellied Brent Goose – fluctuating Waterbird assemblage - fluctuating
Carlingford Lough SPA [UK9020161]	Common Tern	No significant decrease in breeding population against national trends, caused by on-site factors. Fledging success. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable	
	Light-bellied Brent Goose	No significant decrease in breeding population against national trends, caused by on-site factors. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Favourable	
	Sandwich Tern	No significant decrease in breeding population against national trends, caused by on-site factors. Fledging success. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable	
Republic of Ireland Sites				
Lough Foyle SPA [SPA004087]	Red-throated Diver, Great Crested Grebe, Bewick's Swan,	To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for Lough Foyle SPA. To maintain the favourable conservation condition of the wetland habitat at Lough Foyle SPA as a	Bewicks Swan, Wigeon, Knot – highly	Declining - Bewicks Swan, Wigeon,

	Whooper Swan, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Golden Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull, Herring Gull, Wetland and Waterbirds	resource for the regularly-occurring migratory waterbirds that utilise it.	unfavourable. Light-bellied brent Goose, Shelduck, Mallard, Dunlin, Herring Gull – unfavourable Great crested grebe, Lapwing, Bar-tailed Godwit, Curlew – intermediate unfavourable. All others - favourable	Mallard, Great-crested Grebe, Golden Plover, Dunlin, Curlew. Increasing – Whooper Swan, Eider
Lough Swilly SPA [SPA004075]	Great Crested Grebe, Grey Heron, Shelduck, Teal, Mallard, Red-breasted Merganser, Redshank, Greenshank, Oystercatcher, Knot, Dunlin , Scaup, Curlew, Coot, Shoveler, Redshank, Goldeneye, Whooper Swan, Greenland White fronted Goose; Greylag Goose; Blackheaded Gull (breeding); Common Gull, Sandwich Tern (breeding); Common tern (breeding).	To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Lough Swilly SPA. To maintain the favourable conservation condition of the wetland habitat at Lough Swilly SPA as a resource for the regularly occurring migratory waterbirds that utilise it.	Great crested Grebe, Dunlin, Goldeneye – moderately unfavourable; Common gull, Curlew, Shelduck, Redbreasted Merganser, Scaup – intermediate (unfavourable). All others - favourable	
Carlingford Lough SPA [IE004078]	Light-bellied Brent Goose, Wetland and Waterbirds	To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Carlingford Lough SPA To maintain the favourable conservation condition of the wetland habitat at Carlingford Lough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it	Light-bellied Brent Goose – intermediate (unfavourable).	Light-bellied Brent Goose – Declining

Table A.3: Background information for RAMSAR sites within the zone of influence of the 12 APSFR

Site Name / Code	Special Conservation Interests	Conservation Objectives	Condition Assessment	Trend
Belfast Lough Ramsar Site [7UK117]	Redshank	No significant decrease in population against national trends, caused by on-site factors. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species, subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable	
Outer Ards Ramsar Site [UK12018]	Arctic Term, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone	No significant decrease in population against national trends, caused by on-site factors. Fledging success. To maintain or enhance the area of natural and seminatural habitats potentially usable by feature bird species, subject to natural processes. Maintain the extent of the main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Unfavourable	
Larne Lough Ramsar Site [UK002004]	Common Tern; Lightbellied Brent Goose; Roseate Tern; Sandwich Tern	No significant decrease in population against national trends, caused by on-site factors. Fledging sites. To maintain or enhance the area of natural and seminatural habitats potentially usable by Feature bird species, subject to natural processes. Maintain the extent of the main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Favourable	
Strangford Lough Ramsar Site [7UK116]	Arctic Tern	To maintain in favourable condition the nationally and internationally important populations of breeding Sandwich Tern, breeding Common Tern and breeding Arctic Tern, allowing for natural change. Favourable condition of each of the populations	Favourable	
Lough Neagh and Lough Beg Ramsar Site [UK12016]	Common Tern; Golden Plover; Goldeneye; Great Crested Grebe (wintering, breeding and passage); Pochard; Scaup; Tufted Duck; Waterbird Assemblage; Bewick's Swan; Whooper Swan	No significant decrease in population against national trends, caused by on-site factors. Fledging success. Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Bewick's Swan; Goldeneye; Pochard; Tufted Duck; Waterbird assemblage – unfavourable.;	
Lough Foyle Ramsar Site [7UK130]	Red-throated Diver, Great Crested Grebe, Bewick's Swan, Whooper Swan, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Golden	To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for Lough Foyle SPA. To maintain the favourable conservation condition of the wetland habitat at Lough Foyle SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	Bewicks Swan, Wigeon, Knot – highly unfavourable. Light-bellied brent Goose, Shelduck, Mallard, Dunlin, Herring Gull – unfavourable Great crested grebe, Lapwing,	Declining - Bewicks Swan, Wigeon, Mallard, Great-crested Grebe, Golden Plover, Dunlin, Curlew. Increasing – Whooper Swan, Eider

	Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull, Herring Gull, Wetland and Waterbirds		Bar-tailed Godwit, Curlew – intermediate unfavourable. All others - favourable	
Fairy Water Bogs Ramsar Site [7UK142]	H7110 Active raised bogs	Maintain extent of intact lowland raised bog and actively regenerating raised bog vegetation. Maintain and enhance the quality of existing lowland raised bog community types (Sphagnum moss and Ericoid cover) including the presence of notable species. Maintain the diversity and quality of other habitats associated with the active raised bog e.g. degraded raised bog, depressions on peat substrates, transition mires and quaking bogs, especially where these exhibit natural transition to the raised bog. Seek to expand the extent of actively regenerating bog vegetation into degraded (non-active) areas of cutover bog. Maintain the hydrology of the raised bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be potential for lowland raised bog rehabilitation. Maintain the hydrology of the raised bog peat mass.	Unfavourable	Unclassified
Garron Plateau Ramsar Site [7UK129]	S1528 Saxifraga hirculus	Expand the existing population of Marsh Saxifrage Saxifraga hirculus. Seek nature conservation management over suitable areas within the cSAC where there is possibility of restoring Marsh Saxifrage.		
	H7130 Blanket bogs	Maintain the extent of intact blanket bog and actively regenerating blanket bog vegetation. Maintain and enhance the quality of the blanket bog community types including the presence of notable species. Seek to expand the extent of actively regenerating blanket bog vegetation into degraded (non-active) areas of cutover bog. Maintain the diversity and quality of other habitats associated with the blanket bog, especially where these exhibit natural transition to the blanket bog. Maintain the hydrology of the intact blanket bog peat mass. Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for blanket bog rehabilitation.	Unfavourable	
	H7230 Alkaline fens	Identify the main areas of upland alkaline fen, describe and delineate them with more precision. Maintain the extent of existing alkaline fen. Maintain the diversity and quality of different alkaline fen habitat. Maintain and enhance fen species diversity including the presence of notable or rare species, within each type. Maintain the diversity and quality of associated habitats. Absence of erosion features associated with human impacts, and no exacerbation of nature erosion features.	Favourable	
	H3130 Oligotrophic to mesotrophic standing	Open water area and water level regime to remain stable. The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits.	Favourable	

	waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto- Nanojuncetea	Characteristic aquatic vegetation to remain present. Minimal negative impacts from artificial structures. Minimal negative impacts from recreation.	
	H4010 Northern Atlantic wet heaths with Erica tetralix	Maintain the extent of existing Northern Atlantic wet heath vegetation. Maintain and enhance the quality of the existing wet heathland. Seek to expand the extent of the wet heath communities into degraded areas of species poor, wet acid grassland. Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the Northern Atlantic wet heath. Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for wet heath rehabilitation.	Unfavourable
	H3160 Natural dystrophic lakes and ponds	Maintain the open water area of ponds and lakes. Maintain the extent of pool complexes and the numbers of pools within. The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits. Characteristic aquatic vegetation to remain present. Minimal negative impacts from artificial structures. Minimal negative impacts from recreation. Identify the main areas of transition mires and quaking bog and describe and delineate the with more precision.	Favourable
	H7140 Transition mires and quaking bogs	Identify the main areas of transition mires and quaking bog and describe and delineate the with more precision. Maintain the area of open transition mire vegetation. Maintain the integrity of the various plant communities that are typical in different situations where this feature occurs. Maintain the water table at or very close to the surface. Ground should be soft, bouncy & squelchy.	Favourable
Carlingford Lough Ramsar Site [UK12004]	Sandwich Tern, Light-bellied brent goose	No significant decrease in breeding population against national trends, caused by on-site factors. Fledging success. To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species subject to natural processes. Maintain the extent of main habitat components subject to natural processes. Maintain or enhance sites utilised as roosts.	Sandwich Tern- Unfavourable Light-bellied brent goose - Favourable

APPENDIX B

Screening Appraisal for the APSFR

Newtownabbey APSFR

The possible plan approaches for Newtownabbey APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood Protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The NI FRMP 2021-2027 includes proposals for three Flood Alleviation Schemes (FASs) within Newtownabbey APSFR, for the Three Mile Water, Jointure Bay Stream and Greenisland. These proposed schemes require further feasibility work; should they identify viable schemes, detailed design and construction will follow. At this stage, there is no certainty as to the location of these schemes, and whether any further flood protection approaches will be necessary to mitigate flooding within Newtownabbey APSFR within the lifetime of the NI FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Newtownabbey APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed flood protection measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Newtownabbey APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measure types.

Newtownabbey APSFR is located within 15km of one SAC, six SPAs and three Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Newtownabbey APSFR are given in **Table B.1**. Further details of these sites, including Conservation Objectives, are provided in **Appendix A**.

Table B.1: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Newtownabbey APSFR.

Site Name / Code	Approx. distance from APSFR (km)	Qualifying Interests / Special Conservation Interests
North Channel SAC [UK0030399]	10	Harbour porpoise (*Phocoena phocoena*)
Belfast Lough SPA [UK9020101]	0	Redshank
Belfast Lough Open Water SPA [UK9020090]	0	Great Crested Grebe
East Coast Marine (NI) pSPA [UK9020320]	0	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck
Outer Ards SPA [UK9020271]	7.2	Arctic tern; Ringer Plover; Golden Plover; Light bellied Brent Goose; Turnstone

Larne Lough SPA [UK9020042]	10.8	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Antrim Hills SPA [UK902301]	10.8	Hen Harrier, Merlin
Belfast Lough Ramsar Site [7UK117]	0	Redshank
Outer Ards Ramsar Site [UK12018]	7.2	Arctic Term, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone
Larne Lough Ramsar Site [UK002004]	10.8	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Newtownabbey APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Newtownabbey APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. Although the boundary of Newtownabbey APSFR overlies European sites within Belfast Lough, given the lack of flood risk from coastal sources for this APSFR, no coastal flood protection schemes will be necessary and the potential for LSEs on the Qualifying Interests of these sites via direct habitat loss can be excluded. There are no European sites hydrologically linked to Newtownabbey APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species. At the Plan level, the potential for LSEs on the downstream European sites within Belfast Lough (Belfast Lough SPA / Ramsar Site, Belfast Lough Open Water SPA, East Coast Marine (NI) pSPA, North Channel SAC, Outer Ards SPA / Ramsar Site) cannot be excluded, from the implementation of flood protection measures, and maintenance of the existing flood defence and drainage networks, for Newtownabbey APSFR. As there is no hydrological connectivity between Newtownabbey APSFR and Larne Lough SPA / Ramsar Site, there is no pathway for impacts on these sites from any potential flood protection approaches.

Disturbance and Displacement

The construction phase of any flood protection scheme at Newtownabbey APSFR may lead to disturbance of designated birds at nearby European sites, from people and machinery working at the site. The NIFRA 2018 indicated that the flood risk to Newtownabbey APSFR is from fluvial and pluvial sources. Owing to the lack of flood risk from coastal sources for this APSFR, no coastal flood protection schemes will be necessary. There is therefore no potential for disturbance or displacement impacts on the Harbour porpoise population of North Channel SAC. Given that the boundary of Newtownabbey APSFR overlies Belfast Lough SPA, Belfast Lough Ramsar Site, Belfast Lough Open Water SPA and East Coast Marine (NI) pSPA, the potential for LSEs on the designated bird species at these sites via construction disturbance cannot be excluded for any works that could be required in close proximity to the shoreline. Given the distance, there is not considered to be any potential for disturbance and displacement impacts on the SCI species of Outer Ards SPA / Ramsar Site, Larne Lough SPA / Ramsar Site and Antrim Hills SPA. There is not considered to be any

potential for disturbance and displacement impacts arising from maintenance of the existing flood defence and drainage networks.

Summary of the screening stage

Figure B-1 shows the location of sites that cannot be excluded at screening stage for LSEs from potential flood protection approaches at Newtownabbey APSFR. **Table B.2** summarises those potential flood protection approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

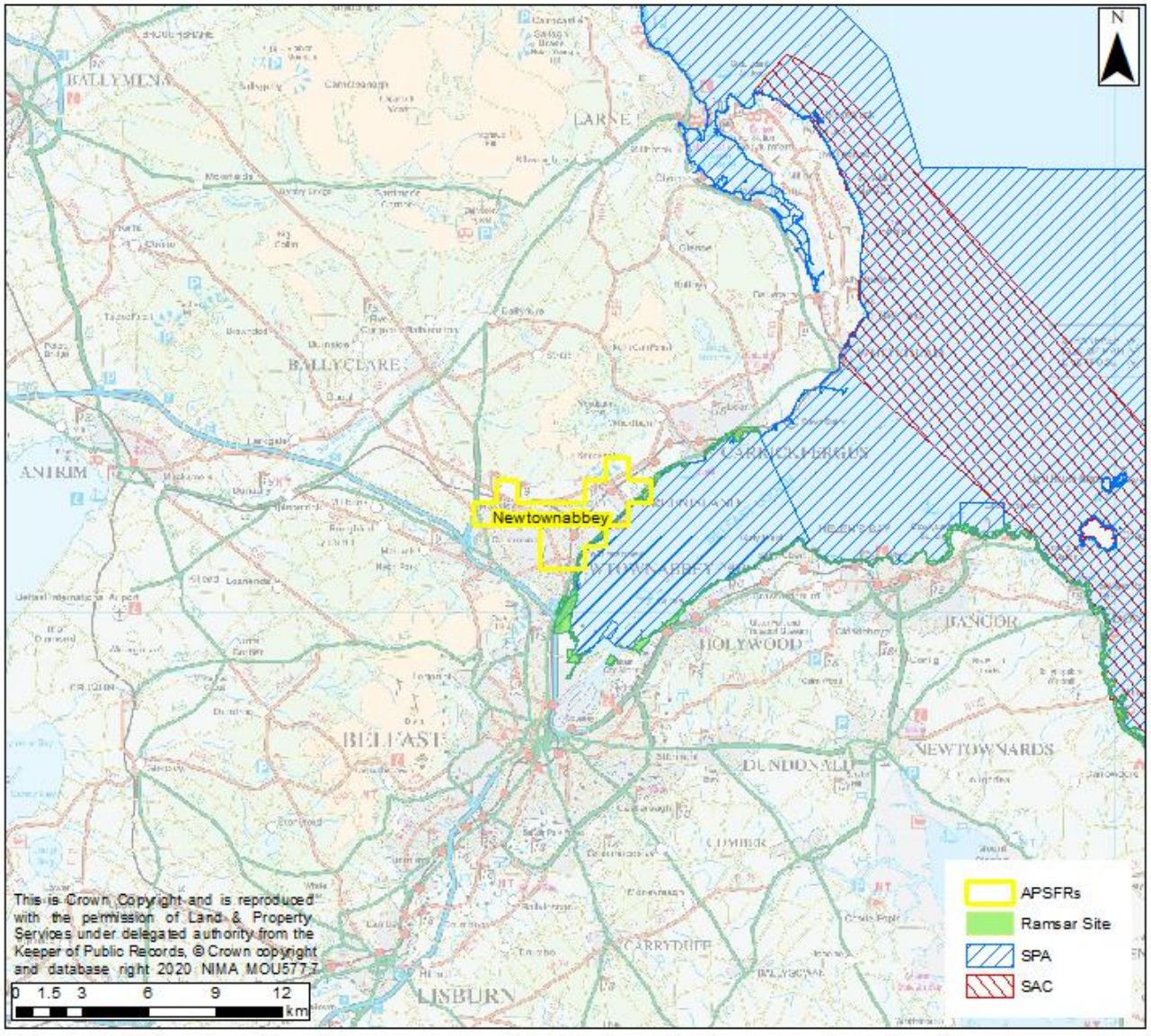

Figure B-1: European sites for which a LSE may arise from flood protection measures at Newtownabbey APSFR.

Table B.2: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Newtownabbey APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	

Bangor APSFR

The possible plan approaches for Bangor APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The FRMP 2021-2027 includes a proposal for a Flood Alleviation Scheme within Bangor APSFR, for the Cotton River/Ballyholme Stream. This proposed scheme requires further feasibility work; should it identify a viable scheme, detailed design and construction will follow. At this stage, there is no certainty as to the location of this scheme, and whether any further flood protection approaches will be necessary to mitigate flooding within Bangor APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Bangor APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Bangor APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Bangor APSFR is located within 15km of two SACs, seven SPAs and four Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Bangor APSFR are given in **Table B.3**. Further details of these sites, including Conservation Objectives, are provided in **Appendix A**.

Table B.3: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Bangor APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
North Channel SAC [UK0030399]	2.6	Harbour porpoise (*Phocoena phocoena*)
Strangford Lough SAC [UK0016618]	5	H1160 Large shallow inlets and bays, H1170 Reefs, H1150 Coastal lagoons, H1140 Mudflats and sandflats not covered by seawater at low tide, H1220 Perennial vegetation of stony banks, S1365 Phoca vitulina, H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae), H1210 Annual vegetation of drift lines
Strangford Lough SPA [UK9020111]	5	Arctic Tern

Belfast Lough SPA [UK9020101]	2.3	Redshank
Belfast Lough Open Water SPA [UK9020090]	2.3	Great Crested Grebe
East Coast Marine (NI) pSPA [UK9020320]	0	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck
Outer Ards SPA [UK9020271]	0	Arctic tern; Ringer Plover; Golden Plover; Light bellied Brent Goose; Turnstone
Copeland Islands SPA [UK9020291]	4.7	Arctic Tern, Manx Shearwater
Larne Lough SPA [UK9020042]	11.8	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Belfast Lough Ramsar Site [7UK117]	2.3	Redshank
Larne Lough Ramsar Site [UK002004]	11.8	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Strangford Lough Ramsar Site [7UK116]	5	Arctic Tern
Outer Ards Ramsar Site [UK12018]	0	Arctic Tern, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that, while Bangor is a coastal town, the main risk of flooding arises from pluvial and fluvial sources. There are no European sites within Bangor APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. The boundary of Bangor APSFR overlies European sites Outer Ards SPA and Outer Ards Ramsar Site; should any coastal flood protection scheme be proposed for Bangor APSFR, the potential for LSEs on the Special Conservation Interests of these sites via direct habitat loss of damage cannot be excluded. There are no European sites hydrologically linked to Bangor APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species. At the Plan level, the potential for LSEs on the downstream European sites within Belfast Lough (Belfast Lough SPA / Ramsar Site, Belfast Lough Open Water SPA, East Coast Marine (NI) pSPA, North Channel SAC, Outer Ards SPA / Ramsar Site) cannot be excluded, from the implementation of flood protection measures, and maintenance of the existing flood defence and drainage networks, for Bangor APSFR. As there is no hydrological connectivity between Bangor

APSFR and Larne Lough SPA / Ramsar Site or Strangford Lough SAC / SPA / Ramsar Site, there is no pathway for impacts on these sites from any potential flood protection approaches.

Disturbance and Displacement

The construction phase of any flood protection scheme at Bangor APSFR may lead to disturbance of designated birds at nearby European sites, from people and machinery working at the site. Although the NIFRA 2018 indicates that flood risk for Bangor APSFR is primarily pluvial and fluvial, the necessity for any coastal flood protection schemes within the lifetime of the plan cannot be definitively excluded. Given that the boundary of Bangor APSFR overlies Outer Ards SPA, Outer Ards Ramsar Site, and East Coast Marine (NI) pSPA, the potential for LSEs on the designated SCI bird species at these sites via construction disturbance cannot be excluded for any works that could be required in proximity to the shoreline. Owing to proximity, the potential for disturbance and displacement impacts cannot be excluded for SCI bird species within Belfast Lough SPA and Belfast Lough Open Water SPA, and for the Harbour porpoise population of North Channel SAC. Given the distance, there is not considered to be any potential for disturbance and displacement impacts on the SCI species of Strangford Lough SPA, Strangford Lough Ramsar Site, Copeland Islands SPA, Larne Lough SPA and Larne Lough Ramsar Site. There is not considered to be any potential for disturbance and displacement impacts arising from maintenance of the existing flood defence and drainage networks.

Summary of the screening stage

Figure B-2 shows the location of sites that cannot be excluded at screening stage for LSEs from potential flood protection approaches at Bangor APSFR. **Table B.4** summarises these potential flood protection approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

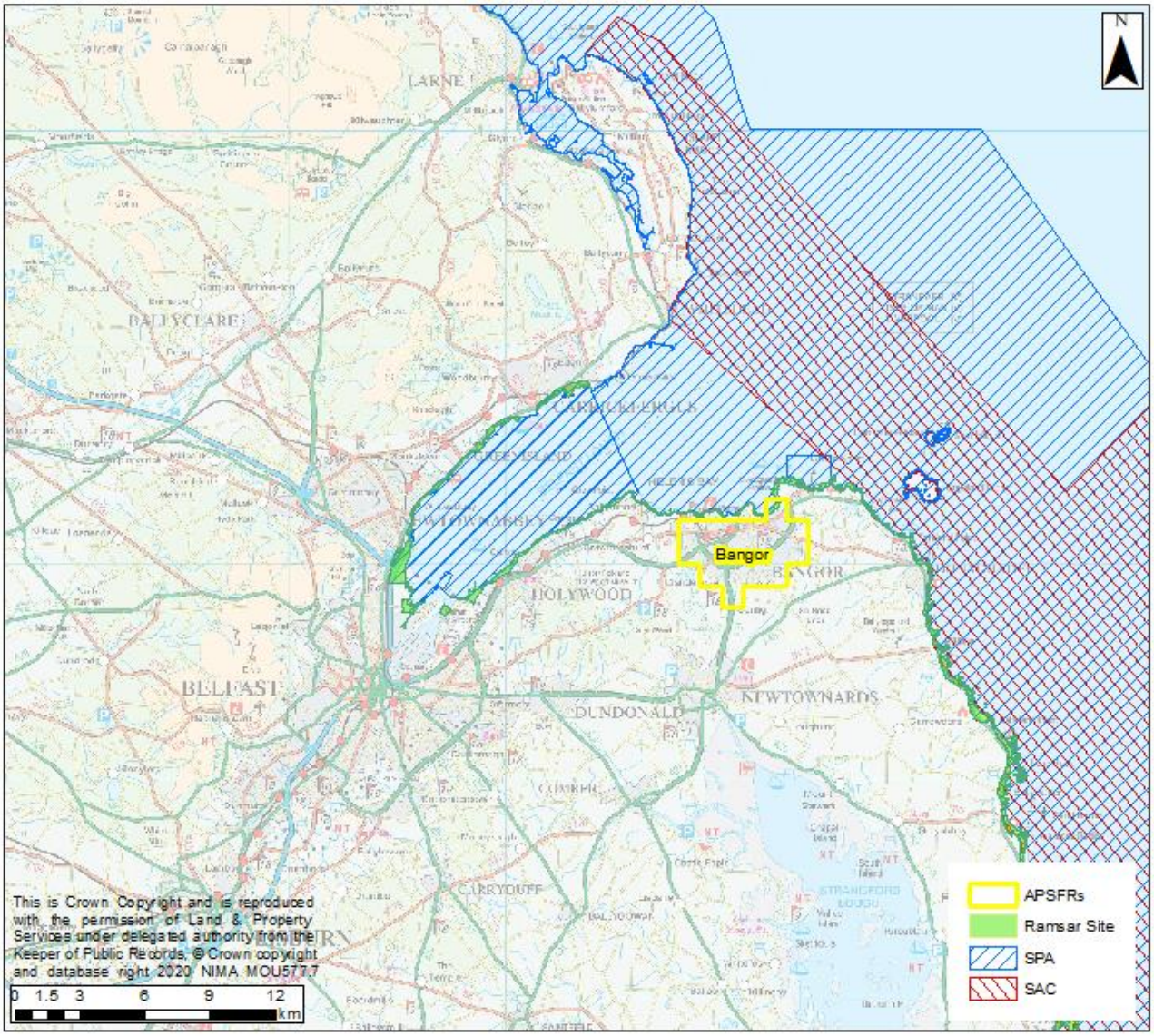

Figure B-2: European sites for which a LSE may arise from flood protection measures at Bangor APSFR.

Table B.4: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Bangor APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC	
New flood alleviation and drainage schemes	Outer Ards SPA Outer Ards Ramsar Site	Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC	Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA North Channel SAC

Catchment based management	Outer Ards SPA Outer Ards Ramsar Site East Coast Marine (NI) pSPA North Channel SAC

Carrickfergus APSFR

The possible plan approaches for Carrickfergus APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The FRMP 2021-2027 includes a proposal for a Flood Alleviation Scheme within Carrickfergus APSFR, for the Carrickfergus & Kilroot Power Station, North West and North East Diversions and associated watercourses. This proposed scheme requires further feasibility work; should it identify a viable scheme, detailed design and construction will follow. At this stage, there is no certainty as to the location of this scheme, and whether any further flood protection approaches will be necessary to mitigate flooding within Carrickfergus APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Carrickfergus APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Carrickfergus APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Carrickfergus APSFR is located within 15km of one SAC, six SPAs and three Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Carrickfergus APSFR are given in **Table B.5**. Further details of these sites, including Conservation Objectives, are provided in **Appendix A**.

Table B.5: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Carrickfergus APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
North Channel SAC [UK0030399]	4.3	Harbour porpoise (*Phocoena phocoena*)
Belfast Lough SPA [UK9020101]	0	Redshank
Belfast Lough Open Water SPA [UK9020090]	0	Great Crested Grebe
East Coast Marine (NI) pSPA [UK9020320]	0	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck

Outer Ards SPA [UK9020271]	5.3	Arctic tern; Ringer Plover; Golden Plover; Light bellied Brent Goose; Turnstone
Larne Lough SPA [UK9020042]	5.2	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Antrim Hills SPA [UK902301]	9.9	Hen Harrier, Merlin
Belfast Lough Ramsar Site [7UK117]	0	Redshank
Larne Lough Ramsar Site [UK002004]	5.2	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Outer Ards Ramsar Site [UK12018]	5.3	Arctic Term, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that, while Carrickfergus is a coastal town, the main risk of flooding arises from pluvial and fluvial sources. There are no European sites within Carrickfergus APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. The boundary of Carrickfergus APSFR overlies European sites Belfast Lough SPA and Belfast Lough Ramsar Site; should any coastal flood protection scheme be proposed for Carrickfergus APSFR, the potential for LSEs on the Special Conservation Interests of these sites via direct habitat loss or damage cannot be excluded. There are no European sites hydrologically linked to Carrickfergus APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species. At the Plan level, the potential for LSEs on the downstream European sites within Belfast Lough (Belfast Lough SPA / Ramsar Site, Belfast Lough Open Water SPA, East Coast Marine (NI) pSPA, North Channel SAC, Outer Ards SPA / Ramsar Site) cannot be excluded, from the implementation of flood protection measures, and maintenance of the existing flood defence and drainage networks, for Carrickfergus APSFR. As there is no hydrological connectivity between Carrickfergus APSFR and Larne Lough SPA / Ramsar Site, there is no pathway for impacts on these sites from any potential flood protection approaches.

Disturbance and Displacement

The construction phase of any flood protection scheme at Carrickfergus APSFR may lead to disturbance of designated birds at nearby European sites, from people and machinery working at the site. Although the NIFRA 2018 indicates that flood risk for Carrickfergus APSFR is primarily pluvial and fluvial, the necessity for any coastal flood protection schemes within the lifetime of the plan cannot be definitively excluded. Given that the boundary of Carrickfergus APSFR overlies Belfast Lough SPA, Belfast Lough Ramsar Site, Belfast

Lough Open Water SPA and East Coast Marine (NI) pSPA, the potential for LSEs on the designated bird species at these sites via construction disturbance cannot be excluded for any works that could be required in proximity to the shoreline. Owing to proximity, the potential for disturbance and displacement impacts cannot be excluded for the Harbour porpoise population of North Channel SAC. Given the distance, there is not considered to be any potential for disturbance and displacement impacts on the SCI species of Outer Ards SPA, Outer Ards Ramsar Site, Larne Lough SPA, Larne Lough Ramsar Site and Antrim Hills SPA. There is not considered to be any potential for disturbance and displacement impacts arising from maintenance of the existing flood defence and drainage networks.

Summary of the screening stage

Figure B-3 shows the location of sites that cannot be excluded at screening stage for LSEs from potential flood protection approaches at Carrickfergus APSFR. **Table B.6** summarises these potential flood protection approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

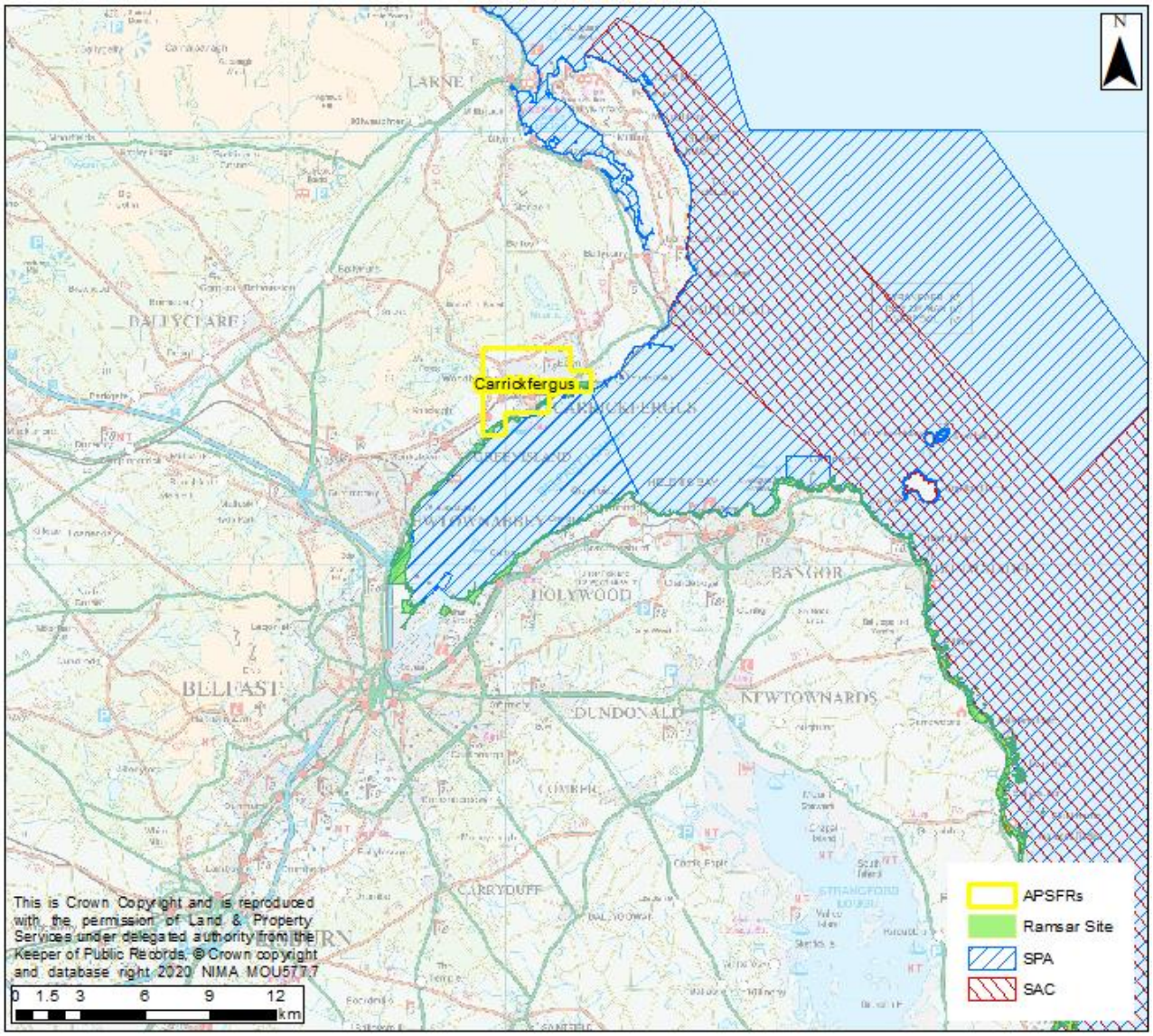

Figure B-3: European sites for which a LSE may arise from flood protection measures at Carrickfergus APSFR.

Table B.6: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Carrickfergus APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes	Belfast Lough SPA Belfast Lough Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar	

Belfast APSFR

The possible plan approaches for Belfast APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The FRMP 2021-2027 includes proposals for several flood protection measures within Belfast APSFR; the Belfast Tidal Flood Alleviation Scheme, Glenmachan area Flood Alleviation Scheme, refurbishment of Stranmillis Weir, Merok Burn Tributaries East Belfast Flood Alleviation Scheme, Glenbrook River East Belfast Flood Alleviation Scheme, Riverdale Park East flood alleviation scheme, Knock River East Belfast Flood Alleviation Scheme, Premier Drive area Flood Alleviation Scheme, and integration of sustainable drainage systems into improvements to the York Street Interchange. These proposed flood protection measures are currently at various stages of progression. The Belfast Tidal FAS has progressed to detailed design stage, and has undergone Habitats Regulations Assessment; the outcomes of this process will be taken into consideration. The Glenbrook River and Stranmillis Weir schemes have also completed feasibility work and are currently at detailed design stage. Other proposed schemes will require further feasibility work; should they identify a viable scheme, detailed design and construction will follow. At this stage, there is no certainty as to the location of these schemes, and whether any further flood protection approaches will be necessary to mitigate flooding within Belfast APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Belfast APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Belfast APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Belfast APSFR is located within 15km of three SACs, five SPAs and four Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Belfast APSFR are given in **Table B.7**. Further details of these sites, including Conservation Objectives, are provided in **Appendix A**.

Table B.7: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Belfast APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
North Channel SAC [UK0030399]	15.6	Harbour porpoise (*Phocoena phocoena*)

Strangford Lough SAC [UK0016618]	7.8	H1160 Large shallow inlets and bays, H1170 Reefs, H1150 Coastal lagoons, H1140 Mudflats and sandflats not covered by seawater at low tide, H1220 Perennial vegetation of stony banks, S1365 Phoca vitulina, H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae), H1210 Annual vegetation of drift lines
Aughnadarragh Lough SAC [UK0030318]	11.9	Euphydryas *(Eurodryas, Hypodryas)* aurinia
Strangford Lough SPA [UK9020111]	7.5	Arctic Tern
Belfast Lough SPA [UK9020101]	0	Redshank
Belfast Lough Open Water SPA [UK9020090]	0	Great Crested Grebe
East Coast Marine (NI) pSPA [UK9020320]	0	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck
Outer Ards SPA [UK9020271]	9	Arctic tern; Ringer Plover; Golden Plover; Light bellied Brent Goose; Turnstone
Lough Neagh and Lough Beg Ramsar Site [UK12016]	14	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan
Belfast Lough Ramsar Site [7UK117]	0	Redshank
Outer Ards Ramsar Site [UK12018]	8.6	Arctic Term, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone
Strangford Lough Ramsar Site [7UK116]	7.7	Arctic Tern

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Belfast APSFR is at risk of flooding from pluvial, fluvial and coastal sources. There are no European sites within Belfast APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. The boundary of Belfast APSFR overlies European sites Belfast Lough SPA and Belfast Lough Ramsar Site; should any coastal flood protection scheme be proposed for Belfast APSFR, the potential for LSEs on the Special Conservation Interests of these sites via direct habitat loss or damage cannot be excluded. There are no European sites hydrologically linked to Belfast APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and

fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species. The HRA for the Belfast Tidal Scheme identified, at screening stage, the potential for impacts relating to the construction of the proposed scheme resulting in reduced water quality or the introduction and spread of invasive species in 6 no. European sites; Belfast Lough SPA, Belfast Lough Open Water SPA, Belfast Lough Ramsar, East Coast Marine (NI) pSPA, The Maidens SAC and North Channel SAC. Following Stage 2 Appropriate Assessment, and the inclusion of appropriate mitigation, the HRA concluded that the scheme would not affect the integrity of these sites. The Glenbrook River and Stranmillis Weir schemes were subject to environmental assessment (Record of Environmental Considerations) by DfI at feasibility stage under Article 12 of the Drainage Order, which identified no requirement for Article 6 (Habitats Directive) assessment. As other schemes are at feasibility stage, there is no certainty as to the location and nature of any works required; furthermore it is not known at this time if any further flood protection works will be required to mitigate against flooding within Belfast APSFR. Therefore, at the Plan level, the potential for LSEs on the downstream European sites within Belfast Lough cannot be excluded, from the implementation of flood protection measures for Belfast APSFR.

Disturbance and Displacement

The construction phase of any flood protection scheme at Belfast APSFR may lead to disturbance of designated birds at nearby European sites, from people and machinery working at the site. The NIFRA 2018 indicates that flood risk for Belfast APSFR is pluvial, fluvial and coastal, therefore there is potential for coastal flood protection schemes to be necessary. Given that the boundary of Belfast APSFR overlies Belfast Lough SPA, Belfast Lough Ramsar Site, Belfast Lough Open Water SPA and East Coast Marine (NI) pSPA, the potential for LSEs on the designated bird species at these sites via construction disturbance cannot be excluded for any works that could be required in proximity to the shoreline. Owing to proximity, the potential for disturbance and displacement impacts cannot be excluded for the Harbour porpoise population of North Channel SAC. Given the distance, there is not considered to be any potential for disturbance and displacement impacts on the SCI species of Outer Ards SPA, Outer Ards Ramsar Site, Larne Lough SPA, Larne Lough Ramsar Site and Antrim Hills SPA. There is not considered to be any potential for disturbance and displacement impacts arising from maintenance of the existing flood defence and drainage networks.

Summary of the screening stage

Figure B-4 shows the location of sites that cannot be excluded at screening stage for LSEs from potential flood protection approaches at Belfast APSFR. **Table B.8** summarises these potential flood protection approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

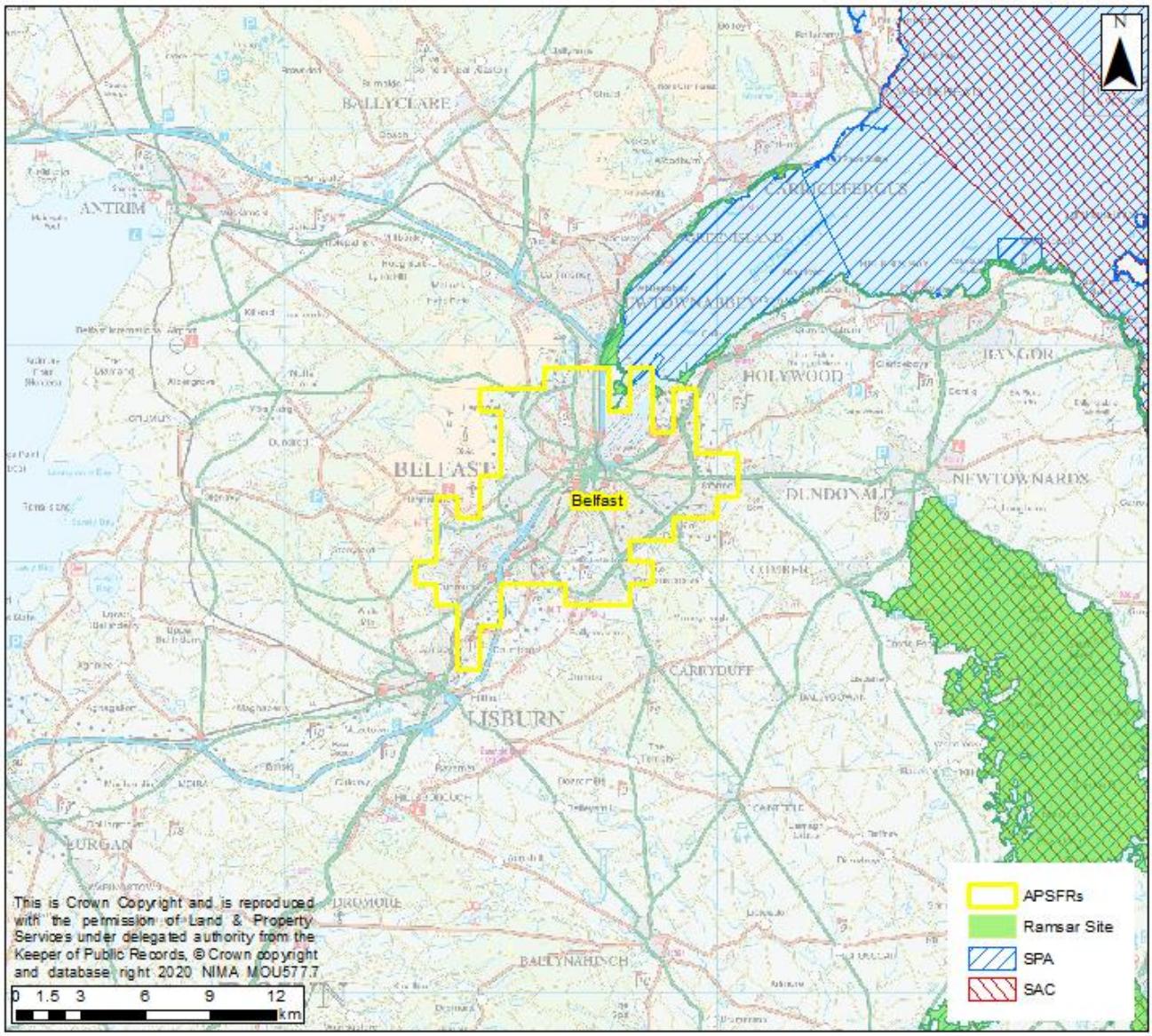

Figure B-4: European sites for which a LSE may arise from flood protection measures at Belfast APSFR.

Table B.8: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Belfast APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes	Belfast Lough SPA Belfast Lough Ramsar Site	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA

	North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	North Channel SAC
Catchment based management	Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar	

Larne APSFR

The possible plan approaches for Larne APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The FRMP 2021-2027 does not propose any specific schemes for Larne APSFR. At this stage, there is no certainty as to the nature or location of any flood protection approaches necessary to mitigate flooding within Larne APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Larne APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Larne APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Larne APSFR is located within 15km of two SACs, five SPAs and two Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Larne APSFR are given in **Table B.9**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.9: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Larne APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
North Channel SAC [UK0030399]	1.8	Harbour porpoise (*Phocoena phocoena*)
The Maidens SAC [UK0030384]	1.9	Reef, Sandbanks which are slightly covered by sea water all the time, Grey seal *(Halichoerus grypus)*
Larne Lough SPA [UK9020042]	0	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern
Antrim Hills SPA [UK902301]	3.9	Hen Harrier, Merlin
Belfast Lough SPA [UK9020101]	14	Redshank
Belfast Lough Open Water SPA	14	Great Crested Grebe

[UK9020090]		
East Coast Marine (NI) pSPA [UK9020320]	<1	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck
Belfast Lough Ramsar Site [7UK117]	14	Redshank
Larne Lough Ramsar Site [UK002004]	0	Common Tern, Lightbellied Brent Goose, Roseate Tern, Sandwich Tern

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. There are no European sites within Larne APSFR that could be directly affected by any fluvial flood protection scheme. The NIFRA 2018 indicates that the flood risk to Larne APSFR is primarily pluvial. However, as the boundaries of Larne Lough SPA and Ramsar are directly adjacent to Larne APSFR, should any coastal flood protection scheme be proposed for Larne APSFR, the potential for LSEs on the Qualifying Interests of these sites via direct habitat loss cannot be excluded. Antrim Hills SPA is hydrologically linked to Larne APSFR in an upstream direction; should any flood protection scheme involving upstream storage or upper catchment works be proposed for Larne APSFR, the potential for LSEs on the designated bird species of this site via disturbance of habitat cannot be excluded.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species. At the Plan level, the potential for LSEs on the downstream European sites cannot be excluded, from the implementation of flood protection measures for Larne APSFR.

Disturbance and Displacement

The construction phase of any flood protection scheme at Larne APSFR may lead to disturbance of designated mammals and birds at nearby European sites, from people and machinery working at the site. The NIFRA 2018 indicated that the flood risk to Larne APSFR is primarily pluvial. However, as the boundaries of Larne Lough SPA and Ramsar are directly adjacent to Larne APSFR, the potential for LSEs on the designated bird species at these sites via construction disturbance cannot be excluded should any coastal flood protection scheme be proposed. The proposed East Coast Marine SPA includes the marine area of Larne Lough, and the potential for disturbance or displacement of the designated bird species at this site cannot be excluded. As the Great-crested Grebe population of Belfast Lough SPA and Ramsar and Belfast Lough Open Water SPA may utilise the habitat of East Coast Marine SPA (Belfast Lough Open Water SPA will be subsumed into the East Coast Marine SPA when formally designated), the potential for LSEs on these sites cannot be excluded at this stage. In the marine environment, the construction phase of any coastal flood protection scheme could give rise to underwater noise causing disturbance to cetaceans or pinniped species. The potential for LSEs on the Grey seal population of the Maidens SAC and the Harbour porpoise population of North Channel SAC via this pathway cannot be excluded. In addition, should any flood protection scheme involving upstream storage or upper catchment works be proposed for Larne APSFR, there is potential for disturbance and displacement impacts on the designated birds of Antrim Hills SPA.

Summary of the screening stage

Figure B-5 shows the location of sites that cannot be excluded at screening stage for LSEs from potential flood protection approaches at Larne APSFR. **Table B.10** summarises these potential flood protection approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

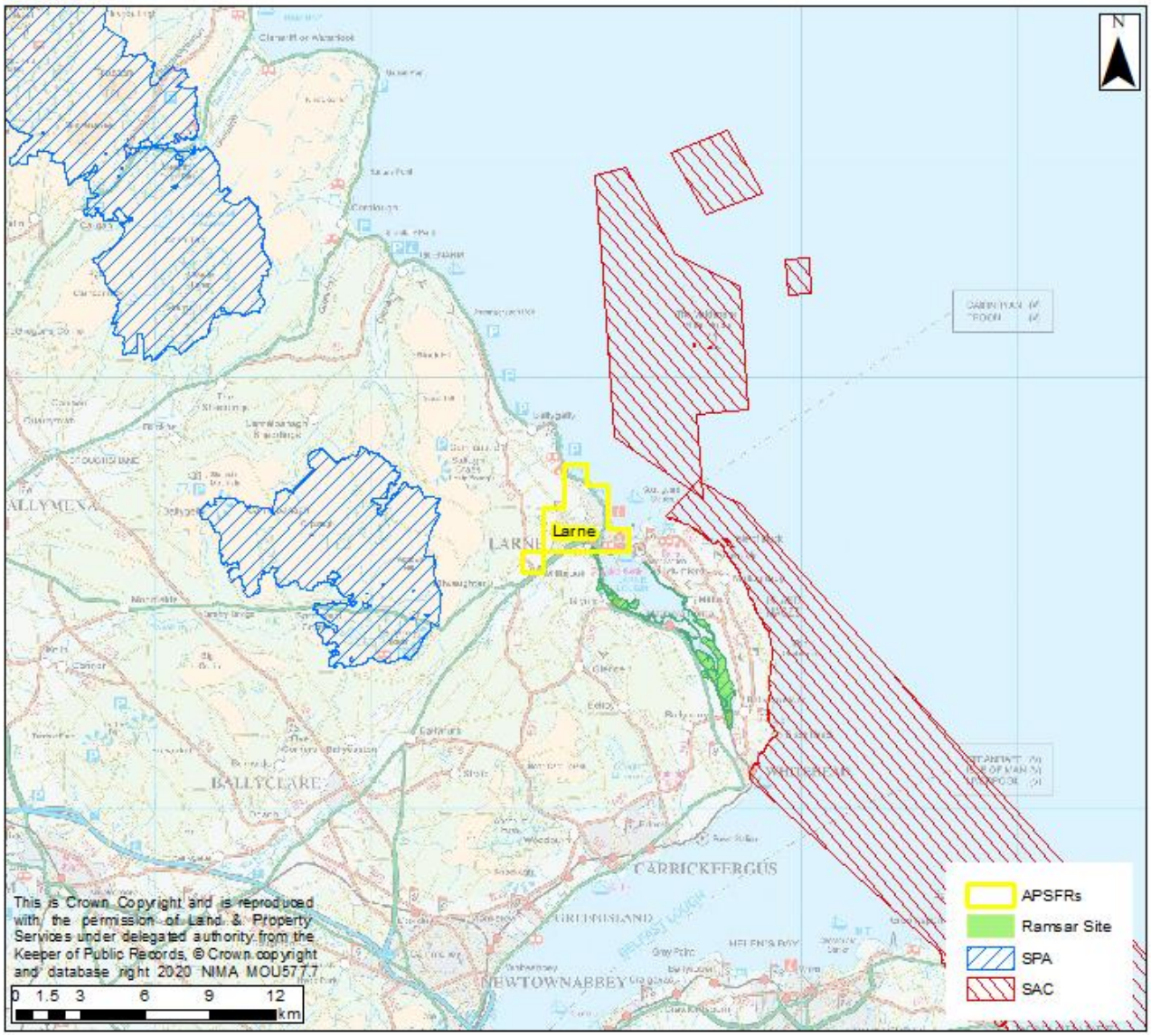

Figure B-5: European sites for which a LSE may arise from flood protection measures at Larne APSFR.

Table B.10: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Larne APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	

New flood alleviation and drainage schemes	Larne Lough SPA Larne Lough Ramsar Antrim Hills SPA	Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	Larne Lough SPA Larne Lough Ramsar Antrim Hills SPA East Coast Marine pSPA The Maidens SAC North Channel SAC
Catchment based management	Antrim Hills SPA	Larne Lough SPA Larne Lough Ramsar East Coast Marine pSPA	Antrim Hills SPA

Londonderry APSFR

The possible plan approaches for Londonderry APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes a proposal for several Flood Alleviation Schemes within Londonderry APSFR, including the progression of flood alleviation schemes for the Ardnabrocky Drain, Burnagibbagh, Woodburn Park Stream, Pennyburn Stream and Creggan Burn through detailed design and construction to alleviate fluvial flooding, undertaking detailed design work and subsequent construction of the Foyle Coastal flood alleviation scheme, and the integration of sustainable drainage systems into improvements to the A2 road to alleviate pluvial flooding. These proposed flood protection measures are currently at various stages of progression, and will require further feasibility work / detailed design before any construction works take place. At this stage, there is no certainty as to the location of these schemes, and whether any further flood protection approaches will be necessary to mitigate flooding within Londonderry APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Londonderry APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Londonderry APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Londonderry APSFR is located within 15km of four SACs, three SPAs and one Ramsar European site. Qualifying Interests/Special Conservation Interests and approximate distances from Londonderry APSFR are given in **Table B.11**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.11: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Londonderry APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
River Faughan and tributaries SAC [UK0030361]	0	S1106 Salmo salar, S1355 Lutra lutra, H91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles.
River Foyle and Tributaries SAC	4	H3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation, S1106

[UK0030320]		Salmo salar, S1355 Lutra lutra
River Finn SAC [IE0002301]	4.2	3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae), 4010 Northern Atlantic wet heaths with Erica tetralix, 7130 Blanket bog (*active only), 7140 Transition mires and quaking bogs, 1106 Salmo salar, 1355 Lutra lutra
Lough Swilly SAC [IE0002287]	4.6	1130 Estuaries, 1150 Coastal lagoons, 1330 Atlantic salt meadows (Glauco-Puccinellietalia Maritimae), 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
Lough Foyle SPA [UK9020031]	2.2	Bar-tailed Godwit, Golden Plover, Light-bellied Brent Goose, Waterbird assemblage, Whooper Swan, Bewick Swan
Lough Foyle SPA [IE004087]	3.6	Red-throated Diver, Great Crested Grebe, Bewick's Swan, Whooper Swan, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Golden Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull, Herring Gull, Wetland and Waterbirds
Lough Swilly SPA [IE004075]	1.6	Great Crested Grebe, Grey Heron, Shelduck, Teal, Mallard, Red-breasted Merganser, Redshank, Greenshank, Oystercatcher, Knot, Dunlin , Scaup, Curlew, Coot, Shoveler, Redshank, Goldeneye, Whooper Swan, Greenland White fronted Goose, Greylag Goose, Blackheaded Gull (breeding), Common Gull, Sandwich Tern (breeding), Common tern (breeding)
Lough Foyle Ramsar Site [7UK130]	2.2	Red-throated Diver, Great Crested Grebe, Bewick's Swan, Whooper Swan, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Golden Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull, Herring Gull, Wetland and Waterbirds

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Londonderry APSFR is at risk of flooding from pluvial, fluvial and coastal sources. The boundary of Londonderry APSFR intersects River Faughan and Tributaries SAC; therefore the potential for direct impacts on this site from any fluvial flood protection scheme cannot be excluded. There is no potential for direct impacts on any European site from any coastal scheme within Londonderry APSFR. River Faughan and Tributaries SAC and River Foyle and Tributaries SAC (NI) / River Finn SAC (RoI) are hydrologically linked to Londonderry APSFR in an upstream direction; the potential for direct adverse impacts on these European sites from any flood protection scheme involving upstream storage or upstream catchment works cannot be excluded.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At

the Plan level, the potential for LSEs on the downstream European sites within both Lough Foyle (via the Foyle and Faughan Rivers and their tributaries) and Lough Swilly (via the Skeoge River and tributaries) cannot be excluded, from the implementation of flood protection measures for Londonderry APSFR.

Disturbance and Displacement

The construction phase of any flood protection scheme at Londonderry APSFR may lead to disturbance of designated birds at nearby European sites, from people and machinery working at the site. The NIFRA 2018 indicates that flood risk for Londonderry APSFR is pluvial, fluvial and coastal. There is potential for disturbance and displacement impacts on Otter and Salmon within River Faughan and Tributaries SAC, which intersects the APSFR, and also for these mobile species within River Foyle and Tributaries SAC (NI) / River Finn SAC (RoI), the boundaries of which are several km upstream of the APSFR from implementation of any fluvial protection scheme on these river systems. There is also potential for disturbance and displacement impacts on these sites from maintenance of the existing flood defence networks.

Summary of the screening stage

Figure B-6 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.12** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

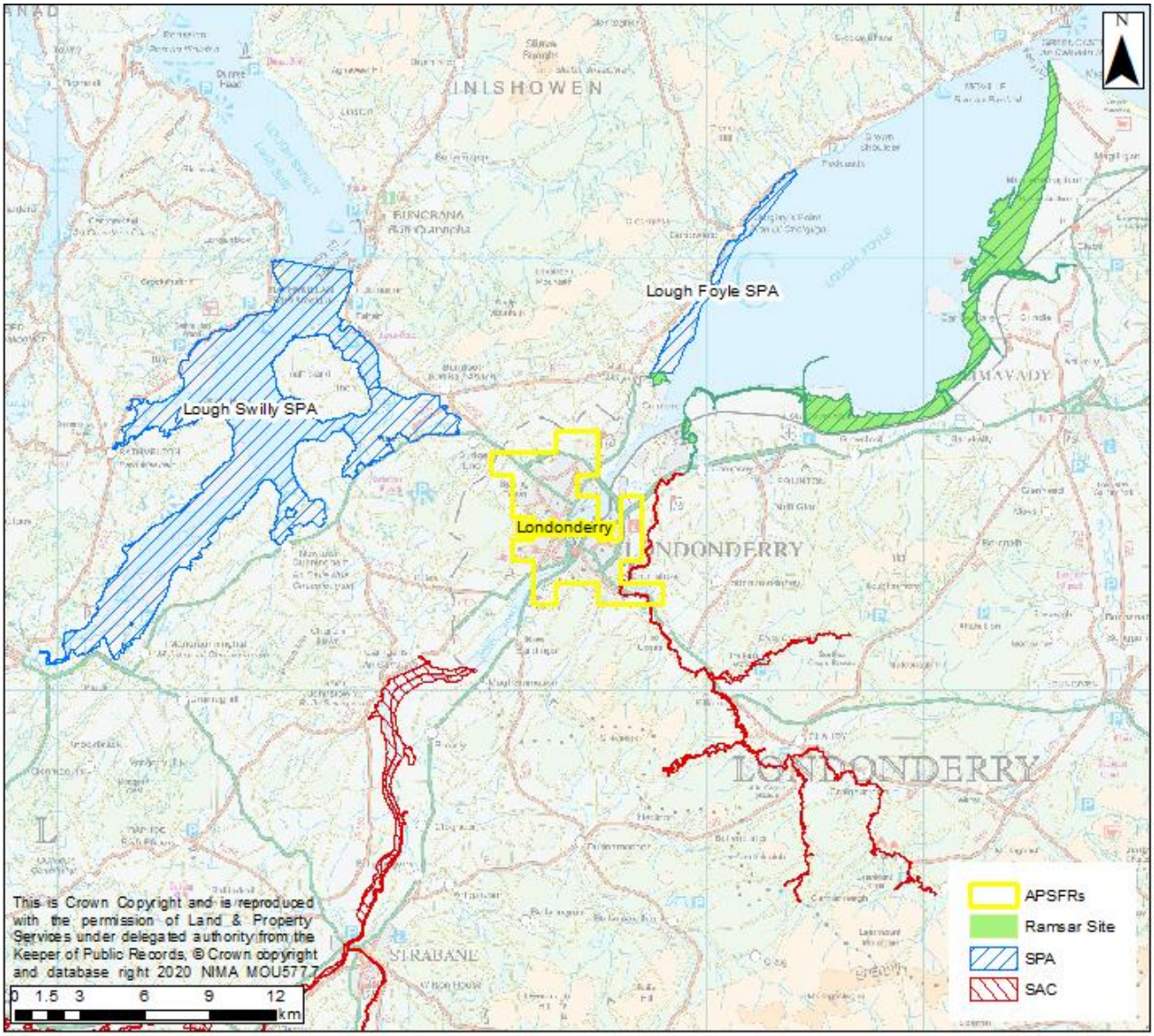

Figure B-6: European sites for which a LSE may arise from flood protection measures at Londonderry APSFR.

Table B.12: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Londonderry APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		River Faughan and Tributaries SAC Lough Foyle SPA Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	
New flood alleviation and drainage schemes	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC	River Faughan and Tributaries SAC Lough Foyle SPA Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC

Catchment based management	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC	River Faughan and Tributaries SAC Lough Foyle SPA Lough Foyle Ramsar Site Lough Swilly SAC Lough Swilly SPA	River Faughan and Tributaries SAC River Foyle and Tributaries SAC River Finn SAC

Omagh APSFR

The possible plan approaches for Omagh APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes a proposal for a Flood Alleviation Scheme within Omagh Town Centre. This proposed scheme requires further feasibility work; should it identify a viable scheme, detailed design and construction will follow. At this stage, there is no certainty as to the location of this scheme, and whether any further flood protection approaches will be necessary to mitigate flooding within Omagh APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Omagh APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Omagh APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

Omagh APSFR is located within 15km of seven SACs, and one Ramsar European site. Qualifying Interests/Special Conservation Interests and approximate distances from Omagh APSFR are given in **Table B.13**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.13: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Omagh APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
Deroran Bog SAC [UK0030324]	4.2	H7110 Active raised bogs
Tully Bog SAC [UK0030326]	1.4	H7110 Active raised bogs
Fairy Water Bogs SAC [UK0016611]	7	H7110 Active raised bogs
Owenkillew River SAC [UK0030233]	11.9	S1029 Margaritifera margaritifera, H91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles, H3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation, S1355 Lutra lutra, H91D0 Bog woodland, S1106 Salmo salar
River Foyle and Tributaries	10.9	H3260 Water courses of plain to montane levels with the

SAC [UK0030320]		Ranunculion fluitantis and Callitricho-Batrachion vegetation, S1106 Salmo salar, S1355 Lutra lutra
Cranny Bogs SAC [UK0030321]	7.5	H7110 Active raised bogs
Tonnagh Beg Bog SAC [UK0030325]	12.1	H7110 Active raised bogs
Fairy Water Bogs Ramsar Site [7UK142]	7	H7110 Active raised bogs

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Omagh APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Omagh APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. Tully Bog SAC, Fairy Water Bogs SAC, and Deroran Bog SAC are hydrologically linked to Omagh APSFR in an upstream direction; should any flood protection scheme involving upper catchment works be proposed for Omagh APSFR, the potential for LSEs on the Qualifying Interests of these sites cannot be excluded.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on River Foyle and Tributaries SAC, situated downstream of Omagh APSFR via the Skeoge River cannot be excluded, from the implementation of flood protection measures for Omagh APSFR.

Disturbance and Displacement

Owing to the distance of >10km downstream from Omagh APSFR to Owenkillew River SAC and River Foyle and Tributaries SAC, there is not considered to be any potential for disturbance and displacement impacts on the Qualifying Interests of these sites from any flood protection scheme proposed for Omagh APSFR or the maintenance of existing flood defence and drainage networks.

Summary of the screening stage

Figure B-7 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.14** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

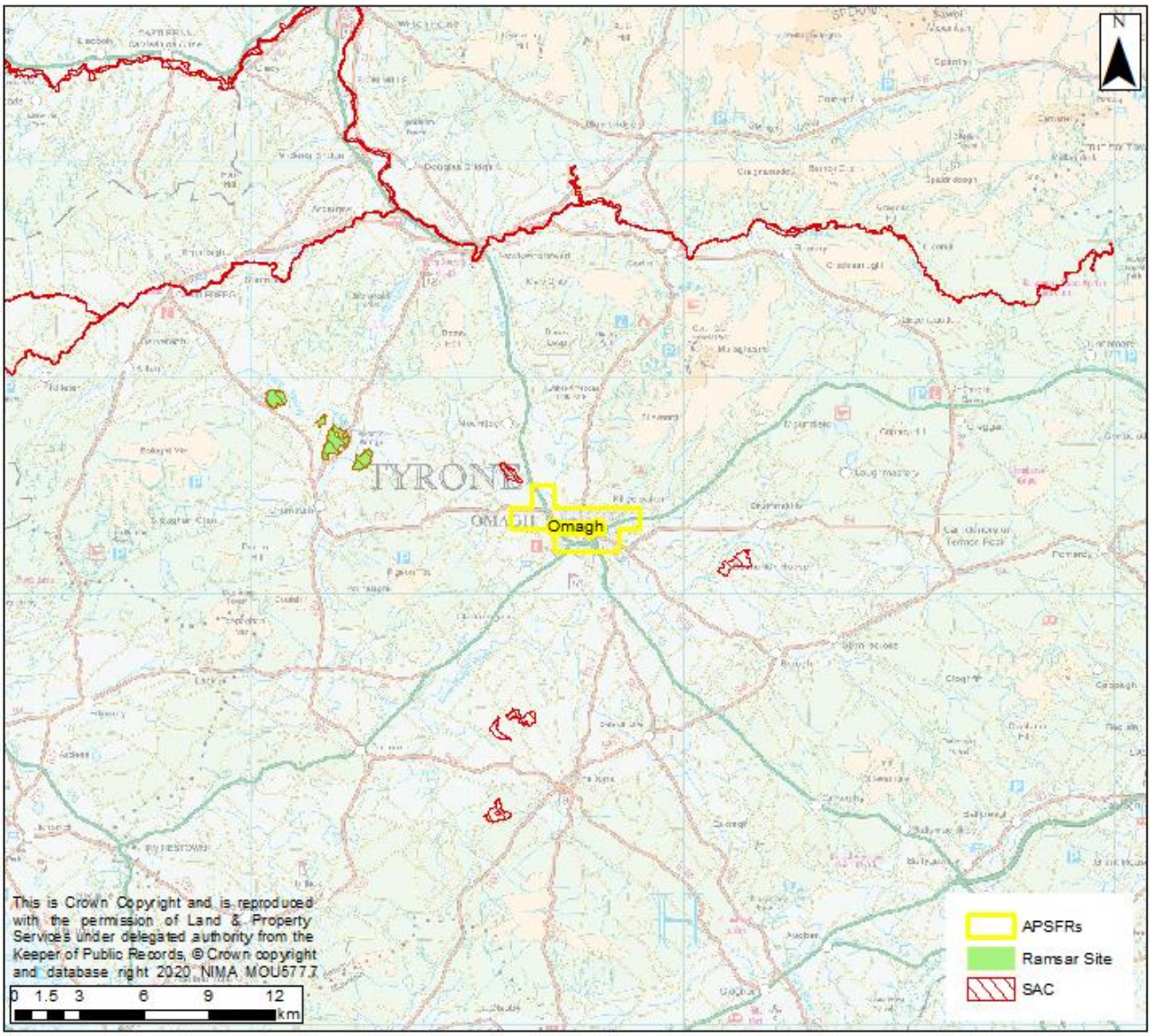

Figure B-7: European sites for which a LSE may arise from flood protection measures at Omagh APSFR.

Table B.14: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Omagh APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		River Foyle and Tributaries SAC	
New flood alleviation and drainage schemes		River Foyle and Tributaries SAC	
Catchment based management	Tully Bog SAC Fairy Water Bogs SAC Deroran Bog SAC	River Foyle and Tributaries SAC	

Ballymena APSFR

The possible plan approaches for Ballymena APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes proposals for Flood Alleviation Schemes for the Ballee Burn, Lower Mill Layde and Braid River. These proposed schemes require further feasibility work; should they identify viable schemes, detailed design and construction will follow. At this stage, there is no certainty as to the location of these schemes, and whether any further flood protection approaches will be necessary to mitigate flooding within Ballymena APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Ballymena APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Ballymena APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

Ballymena APSFR is located within 15km of three SACs, two SPAs and two Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Ballymena APSFR are given in **Table B.15**. Further details of these sites, including Conservation Objectives, are provided in **Appendix A**.

Table B.15: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Ballymena APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
Garron Plateau SAC [UK0016606]	8.5	S1528 Saxifraga hirculus, H7130 Blanket bogs, H7230 Alkaline fens, H3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto- Nanojuncetea, H4010 Northern Atlantic wet heaths with Erica tetralix, H3160 Natural dystrophic lakes and ponds, H7140 Transition mires and quaking bogs
Main Valley Bogs SAC [UK0030199]	9.7	H7710 Active Raised Bogs
Rea's Wood and Farr's Bog SAC	13.6	H91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior

[UK0030244]		(Alno- Padion, Alnion incanae, Salicion albae)
Antrim Hills SPA [UK902301]	8.2	Hen Harrier, Merlin
Lough Neagh and Lough Beg SPA [UK9020091]	11.6	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan
Lough Neagh and Lough Beg Ramsar Site [UK12016]	11.3	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan
Garron Plateau Ramsar Site [7UK129]	8.6	S1528 Saxifraga hirculus, H7130 Blanket bogs, H7230 Alkaline fens, H3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto- Nanojuncetea, H4010 Northern Atlantic wet heaths with Erica tetralix, H3160 Natural dystrophic lakes and ponds, H7140 Transition mires and quaking bogs

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Ballymena APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Ballymena APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. Garron Plateau SAC, Antrim Hills SPA, and Antrim Hills Ramsar Site are hydrologically linked to Ballymena APSFR in an upstream direction via the Braid River; should any flood protection scheme involving upper catchment works on this system be proposed for Ballymena APSFR, the potential for LSEs on the Qualifying Interests of these sites cannot be excluded.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on Lough Neagh and Lough Beg SPA and Ramsar Site, situated downstream of Ballymena APSFR via the Braid and Maine Rivers cannot be excluded, from the implementation of flood protection measures for Ballymena APSFR.

Disturbance and Displacement

Owing to the distance of >10km downstream from Ballymena APSFR to Lough Neagh and Lough Beg SPA and Ramsar Site, there is not considered to be any potential for disturbance and displacement impacts on the designated SCI bird species of this site from any flood protection scheme proposed for Ballymena APSFR or from the maintenance of existing flood defence and drainage networks. However, should any upper catchment works be proposed for Ballymena APSFR in the Antrim Hills, there is potential for disturbance and displacement impacts on the designated birds of Antrim Hills SPA.

Summary of the screening stage

Figure B-8 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.16** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

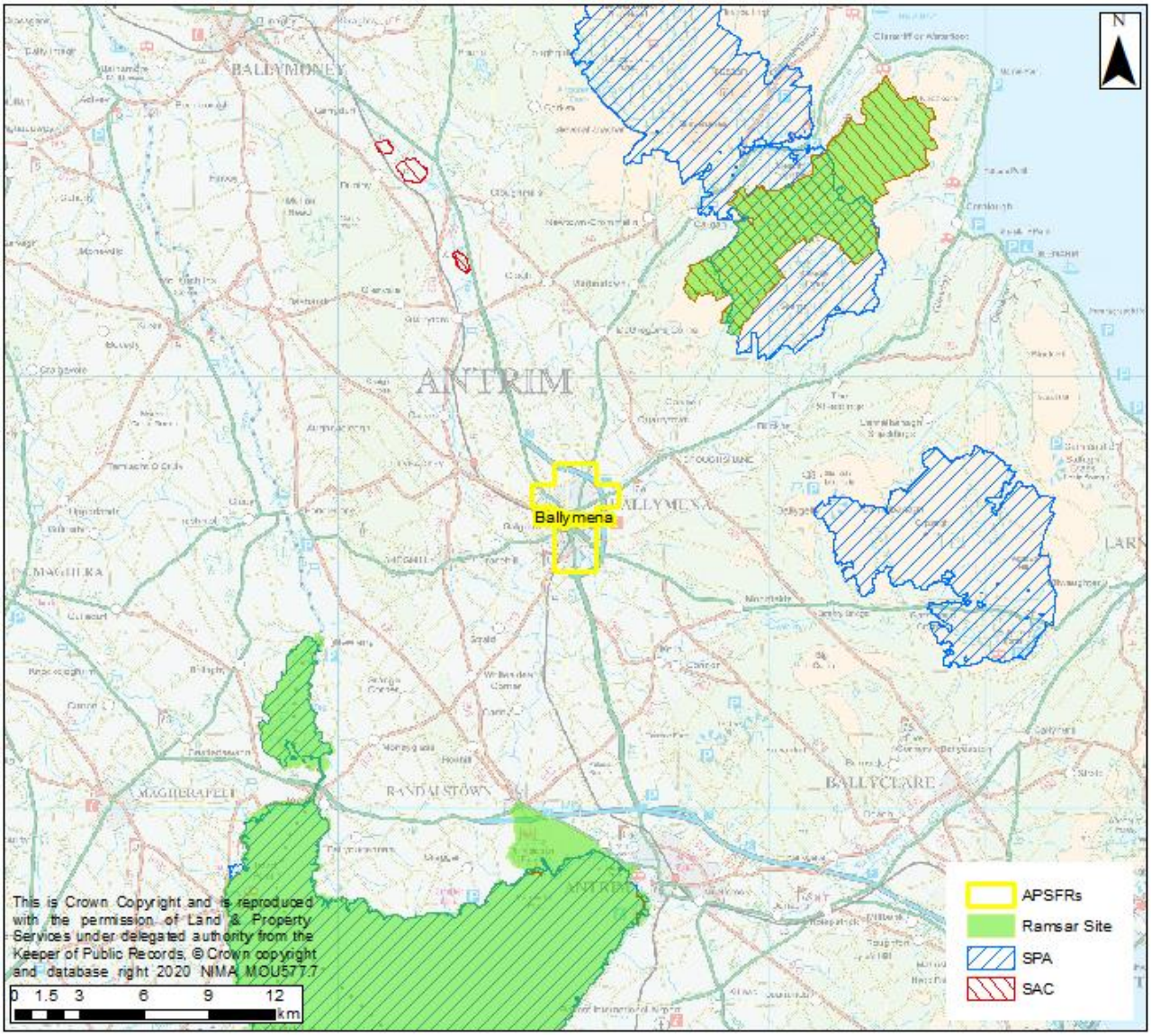

Figure B-8: European sites for which a LSE may arise from flood protection measures at Ballymena APSFR.

Table B.16: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Ballymena APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	

New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Catchment based management	Garron Plateau SAC Antrim Hills SPA Garron Platea Ramsar	Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	Antrim Hills SPA Garron Platea Ramsar

Glengormley & Mallusk APSFR

The possible plan approaches for Glengormley & Mallusk APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes proposals for Flood Alleviation Schemes for the Ballymartin River and tributaries. This proposed scheme requires further feasibility work; should this identify a viable scheme, detailed design and construction will follow. At this stage, there is no certainty as to the location of this schemes, and whether any further flood protection approaches will be necessary to mitigate flooding within Glengormley & Mallusk APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Glengormley & Mallusk APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Glengormley & Mallusk APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR;

In addition, consideration has been given to sites designated for mobile marine species such as porpoises and seals that may be impacted by the proposed measures.

Glengormley & Mallusk APSFR is located within 15km of two SACs, five SPAs and three Ramsar European sites. Qualifying Interests/Special Conservation Interests and approximate distances from Glengormley & Mallusk APSFR are given in **Table B.17**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.17: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Glengormley & Mallusk APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests

North Channel SAC [UK0030399]	16.4	Harbour porpoise (*Phocoena phocoena*)
Rea's Wood and Farr's Bog SAC [UK0030244]	14.9	H91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno- Padion, Alnion incanae, Salicion albae)
Lough Neagh and Lough Beg SPA [UK9020091]	14.9	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan
Belfast Lough SPA [UK9020101]	2.5	Redshank
Belfast Lough Open Water SPA [UK9020090]	2.5	Great Crested Grebe
East Coast Marine (NI) pSPA [UK9020320]	2.6	Great Crested Grebe, Red-throated Diver, Sandwich Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider Duck
Outer Ards SPA [UK9020271]	12.8	Arctic tern, Ringer Plover, Golden Plover, Light bellied Brent Goose, Turnstone
Belfast Lough Ramsar Site [7UK117]	2.6	Redshank
Outer Ards Ramsar Site [UK12018]	12.8	Arctic Term, Manx shearwater, Light-bellied Brent Goose, Golden Plover, Turnstone
Lough Neagh and Lough Beg Ramsar Site [UK12016]	14.6	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Glengormley & Mallusk APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Glengormley & Mallusk APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. There are no European sites hydrologically linked to Glengormley & Mallusk APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on the downstream European sites within Belfast Lough cannot be excluded, from the implementation of flood protection measures for Glengormley & Mallusk APSFR.

Disturbance and Displacement

Owing to the distance of >2.5km downstream from Glengormley & Mallusk APSFR to European sites in Belfast Lough, there is not considered to be any potential for disturbance and displacement impacts on the designated SCI bird species of these sites from any flood protection scheme proposed for Glengormley & Mallusk APSFR or from the maintenance of existing flood defence and drainage networks.

Summary of the screening stage

Figure B-9 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.18** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

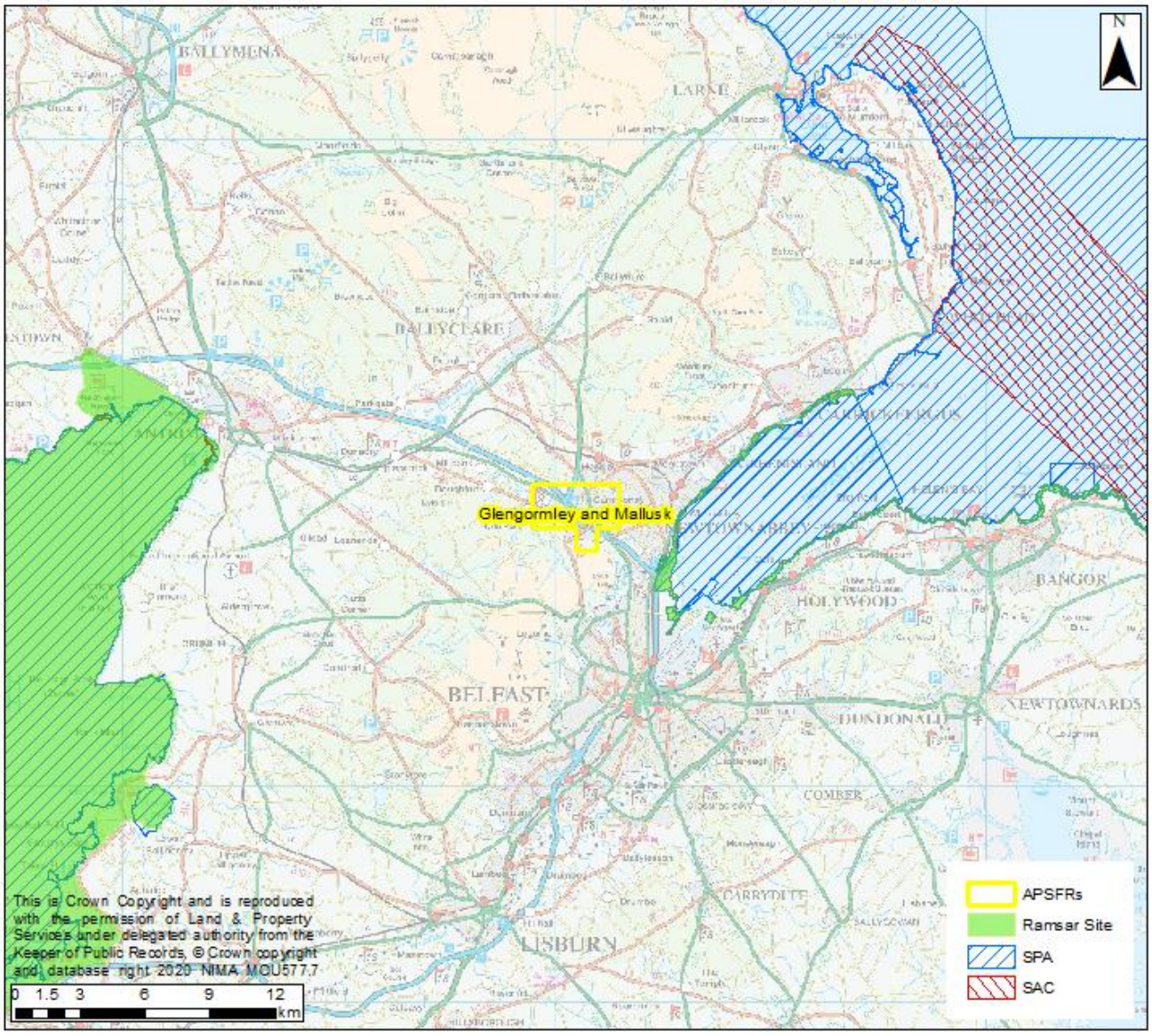

Figure B-9: European sites for which a LSE may arise from flood protection measures at Glengormley & Mallusk APSFR.

Table B.18: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Glengormley & Mallusk APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
New flood alleviation and drainage schemes		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	
Catchment based management		Belfast Lough SPA Belfast Lough Ramsar Site Belfast Lough Open Water SPA East Coast Marine (NI) pSPA North Channel SAC Outer Ards SPA Outer Ards Ramsar Site	

Lurgan APSFR

The possible plan approaches for Lurgan APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes a proposal for a Flood Alleviation Scheme for the Clanrolla River. This proposed scheme requires further detailed design before any construction works take place. At this stage, there is no certainty as to the location of this scheme, and whether any further flood protection approaches will be necessary to mitigate flooding within Lurgan APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Lurgan APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Lurgan APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

Lurgan APSFR is located within 15km of two SACs, one SPA and one Ramsar European site. Qualifying Interests/Special Conservation Interests and approximate distances from Lurgan APSFR are given in**Table B.19**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.19: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Lurgan APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
Montiagh Moss SAC [UK0030214]	3.7	S1065 Euphydryas (Eurodryas, Hypodryas) aurinia
Peatlands Park SAC [UK0030236]	13	H91D0 Bog woodland
Lough Neagh and Lough Beg SPA [UK9020091]	0.6	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan
Lough Neagh and Lough Beg Ramsar Site [UK12016]	0	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Lurgan APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Lurgan APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. There are no European sites hydrologically linked to Lurgan APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on the downstream Lough Neagh and Lough Beg SPA and Lough Neagh and Lough Beg Ramsar Site cannot be excluded, from the implementation of flood protection measures for Lurgan APSFR.

Disturbance and Displacement

Owing to the proximity of Lough Neagh and Lough Beg Ramsar Site, and Lough Neagh and Lough Beg SPA, situated immediately adjacent to, and <500m from the boundaries of Lurgan APSFR, respectively, there is potential for disturbance and displacement impacts on the designated bird species at these sites from any flood protection scheme proposed for Lurgan APSFR or from the maintenance of existing flood defence and drainage networks.

Summary of the screening stage

Figure B-10 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.20** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

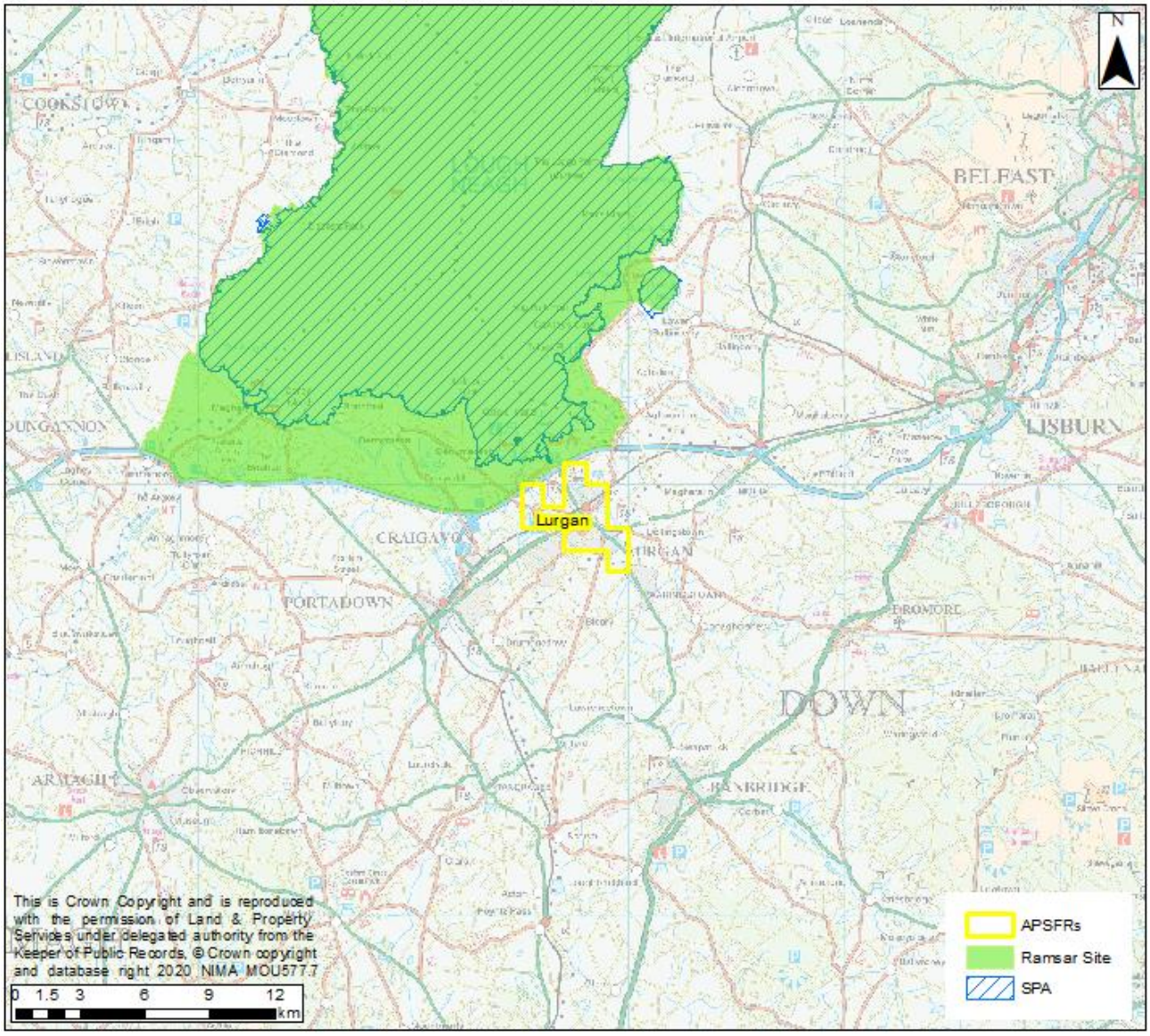

Figure B-10: European sites for which a LSE may arise from flood protection measures at Lurgan APSFR.

Table B.20: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Lurgan APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar
Catchment based management		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg	

Ramsar

Portadown & Craigavon APSFR

The possible plan approaches for Portadown and Craigavon APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes proposals for Flood Alleviation Schemes for the Upper Bann River / Annagh River, Upper Bann River / Ballybay River, and Upper Bann River / Ballynagowan River. These proposed flood protection measures are currently at various stages of progression; those for the Ballybay River and Annagh River are at the detailed design stage. At this stage, there is no certainty as to the location of any scheme for the Ballynagowan River, and whether any further flood protection approaches will be necessary to mitigate flooding within Portadown & Craigavon APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Portadown & Craigavon APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Portadown and Craigavon APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

Portadown and Craigavon APSFR is located within 15km of two SACs, one SPA and one Ramsar European site. Qualifying Interests/Special Conservation Interests and approximate distances from Portadown and Craigavon APSFR are given in **Table B.21**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.21: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Portadown and Craigavon APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
Montiagh Moss SAC [UK0030214]	8.5	S1065 Euphydryas (Eurodryas, Hypodryas) aurinia
Peatlands Park SAC [UK0030236]	9	H91D0 Bog woodland
Lough Neagh and Lough Beg SPA [UK9020091]	3.9	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan

Lough Neagh and Lough Beg Ramsar Site [UK12016]	1.6	Common Tern, Golden Plover, Goldeneye, Great Crested Grebe (wintering, breeding and passage), Pochard, Scaup, Tufted Duck, Waterbird Assemblage, Bewick's Swan, Whooper Swan

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Portadown and Craigavon APSFR is at risk of flooding from fluvial and pluvial sources. There are no European sites within Portadown and Craigavon APSFR that could be directly affected by any fluvial or pluvial flood protection scheme, or through maintenance of the existing flood defence and drainage networks. There are no European sites hydrologically linked to Portadown and Craigavon APSFR in an upstream direction that could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on the downstream Lough Neagh and Lough Beg SPA and Lough Neagh and Lough Beg Ramsar Site cannot be excluded, from the implementation of flood protection measures for Portadown and Craigavon APSFR.

Disturbance and Displacement

Owing to the distance of >1.5km and >3.5km downstream to Lough Neagh and Lough Beg Ramsar Site, and Lough Neagh and Lough Beg SPA, respectively from Portadown and Craigavon APSFR, there is not considered to be any potential for disturbance and displacement impacts on the designated SCI bird species of these sites from any flood protection scheme proposed for Portadown and Craigavon APSFR, or from the maintenance of existing flood defence and drainage networks.

Summary of the screening stage

Figure B-11 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.22** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

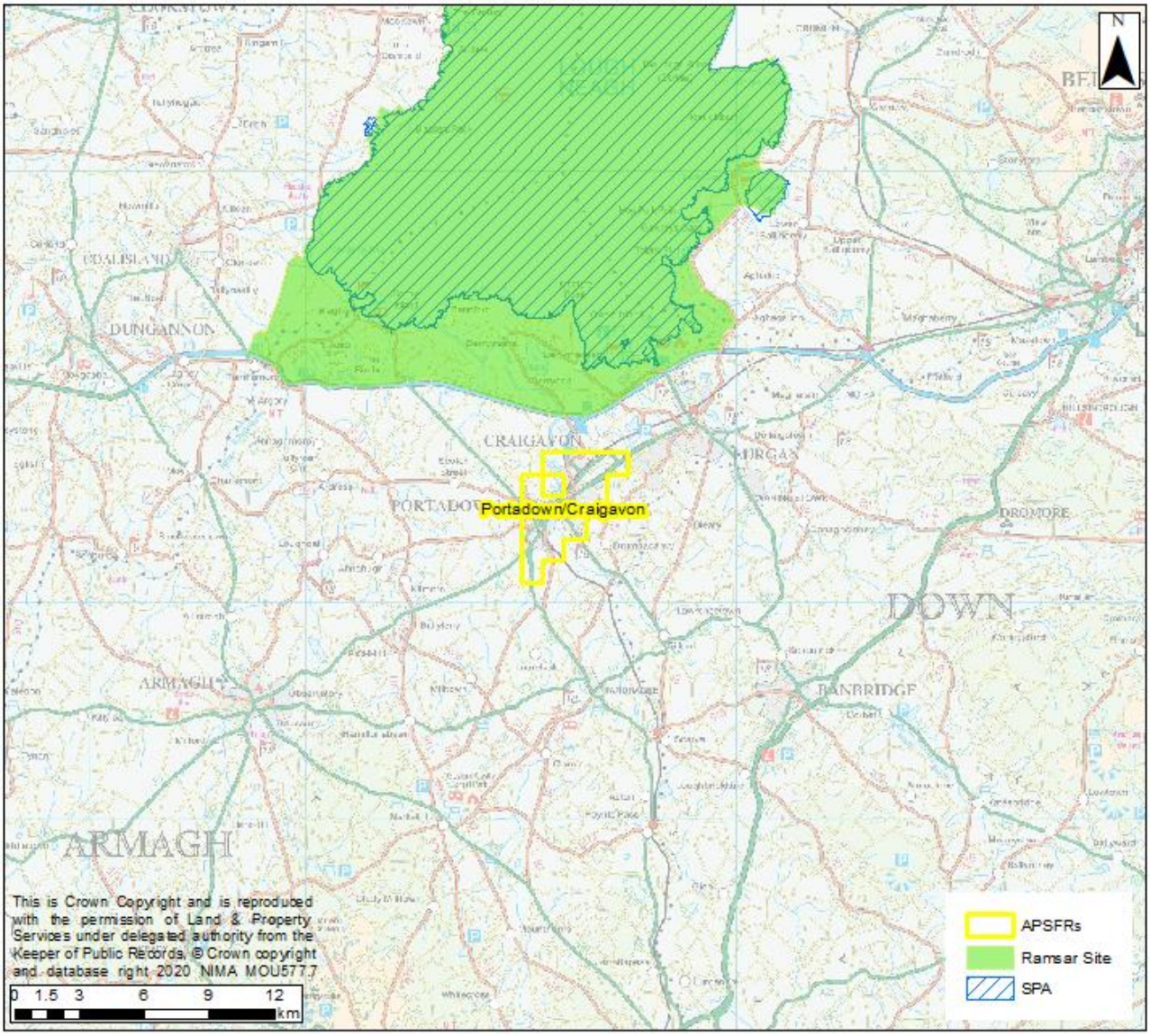

Figure B-11: European sites for which a LSE may arise from flood protection measures at Portadown and Craigavon APSFR.

Table B.22: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Portadown and Craigavon APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
New flood alleviation and drainage schemes		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	
Catchment based management		Lough Neagh and Lough Beg SPA Lough Neagh and Lough Beg Ramsar	

Newry APSFR

The possible plan approaches for Newry APSFR include flood '**Prevention**', flood '**Protection**', and flood '**Preparedness**' measures.

The Prevention measure and its approaches have been identified as having potential for implementation anywhere within Northern Ireland. Although the Preparedness approaches are likely to be targeted at the 12 APSFR, they have the potential for use across Northern Ireland, and have been assessed against all European sites generically. The HRA has assessed that Prevention and Preparedness measures will not have a significant effect on the integrity of any European site within Northern Ireland (see Section 4.2).

Flood protection measures include maintenance of the existing flood defence and drainage networks, new flood alleviation and drainage schemes and catchment based management. The maintenance of existing drainage and flood defence networks is a continuation of the current maintenance carried out on a cyclical basis by DfI Rivers, DfI Roads and NI Water on their infrastructure. The Plan includes a proposal for a Flood Alleviation Scheme for the Newry River. The Stage 1 FAS for the Newry River is at the detailed design stage, following which construction works will take place. At this stage, there is no certainty as to whether any further flood protection approaches will be necessary to mitigate flooding within Newry APSFR within the lifetime of the FRMP. Therefore the assessment approach is based on the potential for LSEs on European sites that could arise from ***any*** flood protection approaches for Newry APSFR.

A GIS scoping exercise has been undertaken to identify any and all European sites which have the potential to be affected by the proposed measure types. For consistency with the HRA for the 1st cycle FRMPs 2015-2021, the following criteria have been used to select the relevant European sites within the Zone of Influence of Newry APSFR:

- Those sites within 15km of the APSFR (recommended by Joint Nature Conservation Committee); and
- Any site situated downstream within the same catchment as the APSFR.

Newry APSFR is located within 15km of two SACs, one SPA and one Ramsar European site. Qualifying Interests/Special Conservation Interests and approximate distances from Newry APSFR are given in **Table B.23**. Further details of these sites, including Conservation Objectives, are provided in Appendix A.

Table B.23: European Sites and their Qualifying Interests/Special Conservation Interests within the Zone of Influence of Newry APSFR.

Site Name/ Code	Approx. distance from APSFR (Km)	Qualifying Interests/ Special conservation Interests
Slieve Gullion SAC [UK0030277]	3.7	H4030 European dry heaths
Derryleckagh SAC [UK0016620]	1.4	H7140 Transition mires and quaking bogs, H91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles
Carlingford Shore SAC [IE0002306]	5.1	1210 Annual vegetation of drift lines, 1220 Perennial vegetation of stony banks
Carlingford Lough SPA [UK9020161]	12.5	Common Tern, Light-bellied Brent Goose, Sandwich Tern
Carlingford Lough SPA [IE004078]	14.9	Light-bellied Brent Goose, Wetland and Waterbirds
Carlingford Lough Ramsar Site [UK12004]	12.5	Sandwich Tern, Light-bellied brent goose

Habitat Loss

Loss or reduction in habitat area may occur where construction of flood protection structures, such as fluvial flood walls or embankments, or coastal flood walls, are built within or close to the boundaries of a European site. The NIFRA 2018 indicates that Newry APSFR is at risk of flooding from fluvial, pluvial and coastal sources. There are no European sites within Newry APSFR that could be directly affected by any fluvial, pluvial or coastal flood protection scheme, or through maintenance of the existing flood defence and drainage networks. Derryleckagh SAC is hydrologically linked to Newry APSFR in an upstream direction via the Clanrye / Newry Rivers, and could be adversely impacted by any flood protection scheme involving upstream storage or upstream catchment works.

Water Quality and Habitat Deterioration

Flood management approaches have the potential to result in a degradation of water quality of downstream surface waters, which can lead to deterioration of downstream wetland and coastal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls/embankments, maintenance of channels and maintenance of material assets such as culverts and existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas. At the Plan level, the potential for LSEs on the downstream sites in Carlingford Lough cannot be excluded, from the implementation of flood protection measures for Newry APSFR. This includes the potential for adverse effects on sites within Carlingford Lough from the Stage 1 Newry River FAS, currently at the detailed design stage.

Disturbance and Displacement

Owing to the distance of >12km downstream to Carlingford Lough SPAs and Ramsar Site from Newry APSFR, there is not considered to be any potential for disturbance and displacement impacts on the designated SCI bird species of these sites from any flood protection scheme proposed for Newry APSFR, or from the maintenance of existing flood defence and drainage networks.

Summary of the screening stage

Figure B-12 shows the location of sites that cannot be excluded at screening stage for LSEs. **Table B.24** summarises these potential approaches for which an impact pathway could be anticipated, and links these to European sites for which a LSE might arise as a result of the impact pathway.

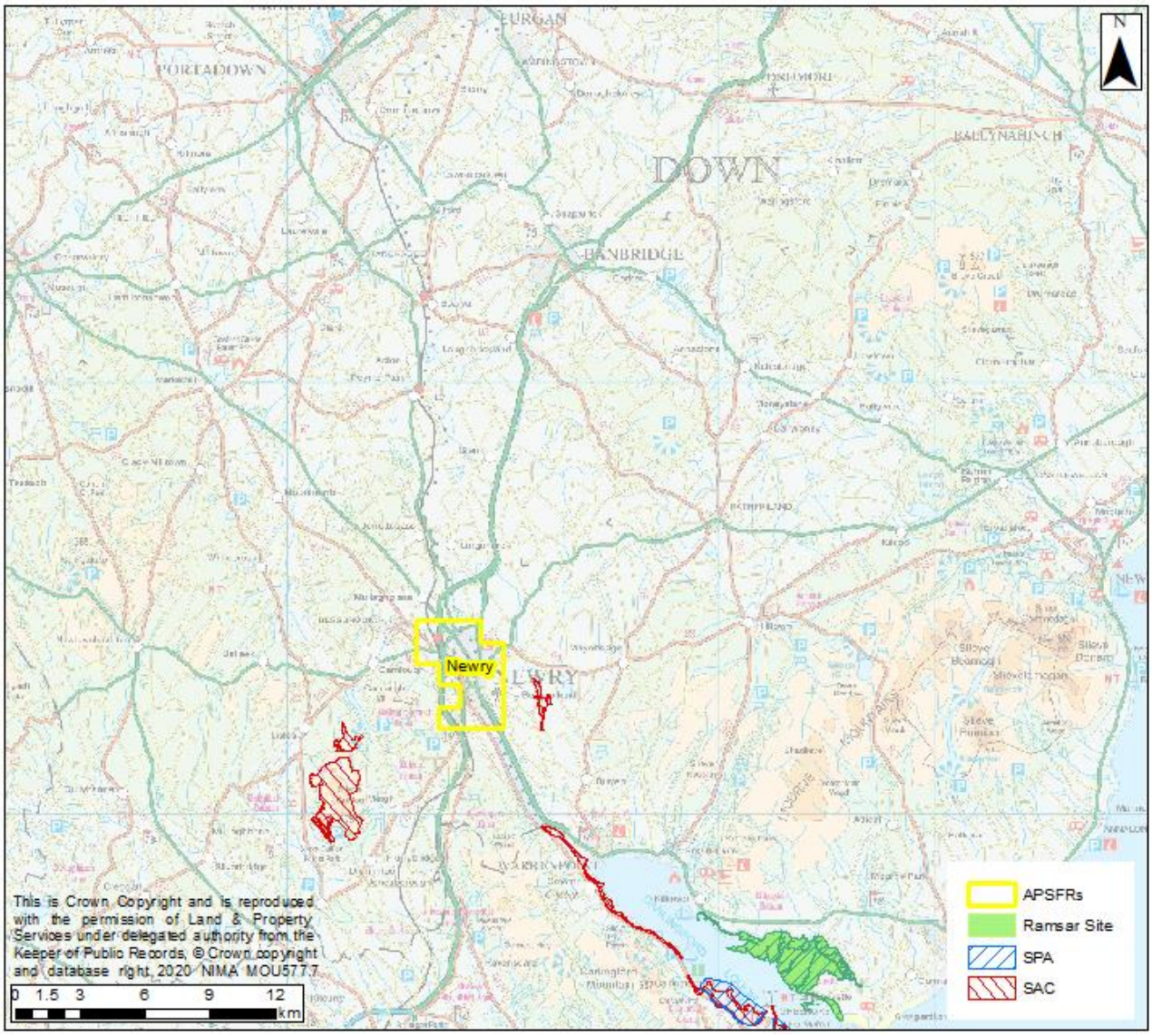

Figure B-12: European sites for which a LSE may arise from flood protection measures at Newry APSFR.

Table B.24: European Sites that could have LSEs as a result of the implementation of projects arising from the flood protection approaches at Newry APSFR

Flood Protection Measure	European Sites that could experience a LSE		
	Habitat loss	*Water quality and habitat deterioration*	*Disturbance and displacement*
Maintenance of the existing flood defence and drainage networks		Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	
New flood alleviation and drainage schemes		Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	
Catchment based management	Derryleckagh SAC	Carlingford Shore SAC Carlingford Lough SPA (UK) Carlingford Lough SPA (IE) Carlingford Lough Ramsar	

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