

# Sustainable Water Network (SWAN)

Response to the Draft Flood Risk Management  
Plan for UoM 6 Neagh Bann



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Sustainable Water Network (SWAN)  
9 Upper Mount Street  
Dublin 2  
[info@swanireland.ie](mailto:info@swanireland.ie)  
(01) 642 55 83

## Contents

1	Introduction to SWAN.....	4
2	Interaction of the Floods Directive and the Water Framework Directive .....	4
2.1	Overview of the EU Water Framework Directive (2000/60/EC).....	4
2.1.1	Directive Scope .....	4
2.1.3	WFD Objectives .....	5
2.1.4	WFD Requirements .....	5
2.1.5	Establishment of Water Body Status .....	6
2.1.6	Heavily Modified Water Bodies.....	7
2.1.7	Exemptions to Meeting WFD Objectives.....	8
2.2	Impacts of Flood Works on WFD Objectives.....	10
3	Coordination of the Floods Directive with the WFD.....	14
3.1	Reasons and Benefits .....	14
3.2	Coordination of Administration Arrangements of the WFD .....	16
3.3	Coordination of the FRMP and RBMP .....	17
4	Proposed Measures .....	19
4.1	AFA Scale Options .....	19
4.2	Unit of Management Measures.....	23
4.2.1	Application of the Guidelines on the Planning System and Flood Risk Management.....	23
4.2.2	Sustainable Urban Drainage Systems.....	25
4.2.3	Ongoing Maintenance of Arterial Drainage Schemes.....	26
4.2.4	Enhance Existing Protection Works.....	27
4.2.5	Land-Use Management and Natural Water-Retention Measures .....	27
5	Natura Sites .....	28
5.1	Impacts on Natura Sites.....	28
5.2	Mitigation.....	<b>Error! Bookmark not defined.</b>
5.2.1	Mitigation Specific to UoM 25/26.....	<b>Error! Bookmark not defined.</b>
5.3	Recommendations.....	<b>Error! Bookmark not defined.</b>
6	Integrated Flood-Risk Management.....	43
6.1	Catchment-Based Approach .....	44
6.2	Natural Water-Retention Measures .....	45
6.3	Integrated Governance .....	47

7	Public Participation and Active Involvement.....	49
7.1	Public Participation - Requirements of the Floods Directive .....	49
7.2	Effective Public Participation and Active Involvement .....	49
7.3	Assessment of Provisions for Public Participation/Active Involvement in the Development of the FRM Plan.....	51
7.4	Conclusion .....	52
	Appendix I: SWAN Member Organisations & Board of Directors.....	i

# 1 Introduction to SWAN

The Sustainable Water Network (SWAN) is an umbrella network of 26 of Ireland's leading environmental NGOs, national and regional, working together to protect and enhance Ireland's aquatic resources through coordinated participation in the implementation of the Water Framework Directive (WFD), the Marine Strategy Framework Directive (MSFD) and other water-related policy and legislation. SWAN member groups are listed in Appendix 1. SWAN has been actively engaged in Water Framework Directive (WFD) and other water policy implementation at both national and River Basin District (RBD) level since 2004, representing the environmental sector on WFD River Basin District (RBD) Advisory Councils, the South Eastern RBD Management Group, The Irish Water Stakeholder Forum and other water policy-related fora.

## 2 Interaction of the Floods Directive and the Water Framework Directive

### 2.1 Overview of the EU Water Framework Directive (2000/60/EC)

#### 2.1.1 Directive Scope

The EU Water Framework Directive (2000/60/EC) is a progressive and ambitious piece of legislation which aims to realise the effective co-ordination of water policy and regulation to provide the framework for the protection of all waters (rivers, lakes, canals, reservoirs, estuaries, coastal waters, groundwaters, wetlands) and other water-dependent ecosystems and associated wildlife and habitats. The Directive adopts a holistic approach to surface water and groundwater management by introducing broad ecological objectives for the protection and restoration of aquatic ecological health. Additional core objectives are sustainable water management, elimination of pollutant sources and mitigation of the effects of flood and drought. Member States must ensure that all EU ground and surface waters (rivers, lakes, transitional waters and coastal waters) achieve 'good status' by 2015 (or 2021, 2027, with certain exemptions). Artificial water bodies are required to meet 'good ecological potential'. 'Good status' means both 'good ecological status' and 'good chemical status'. The WFD has five status classes: high, good, moderate, poor and bad. Sites at the top end of the high status scale are benchmark or reference condition sites; the achievement of 'good status' indicates only slight deviation from this reference condition. The WFD also clearly identifies the protection of the water needs of wetlands depending directly on aquatic ecosystems as part of its purpose in Article 1 (a), although this protection is afforded indirectly via associated groundwaters and surface waters.

### 2.1.3 WFD Objectives

The main objectives of the WFD are:

- To protect and, where necessary, to improve the quality of all our inland and coastal waters, groundwaters and associated wetlands, and to prevent their further deterioration;
- To achieve 'good status' for all these waters by 2015;
- To promote the sustainable use of water;
- To reduce the pollution of water by particularly hazardous 'priority' substances; and
- To lessen the effects of flooding and drought.

### 2.1.4 WFD Requirements

The key requirements of the Directive are:

#### **Water quality based around the concept of ecological quality**

The Directive requires the quality 'status' of water bodies to be measured using ecological rather than just traditional physical and chemical parameters, with more emphasis on the quality of the biological communities of a water body.

#### **Water management at the level of river catchments**

The WFD functional unit is based on river catchments or collections of river catchments (River Basin Districts), rather than along traditional political divisions (County Councils in Ireland). 'River basins' or 'catchments' are made up of lakes, rivers, streams, groundwater and estuaries, as well as the land that surrounds these, and drains into them. In this way the Water Framework Directive promotes the very necessary integrated approach to water management.

#### **Active involvement of the public**

The WFD emphasises consultation, public involvement and access to information more than any previous EU Directive. Article 14 of the WFD requires that '*the active involvement of all interested parties*' must be encouraged by every Member State. In this way, the WFD presented a new and exciting opportunity for communities and interest groups to get involved in the management of water resources at local and regional (RBD) level.

#### **Development of River Basin Management Plans**

River Basin Management Plans (RBMPs) are essentially a RBD management tool. The plans must include objectives for each water body; reasons for achieving WFD objectives and a programme of measures (POMS) to facilitate the achievement of WFD objectives.

The WFD specifies two types of measures (basic and supplementary) for achieving water protection objectives. Basic measures are legally required within every water body and include eleven European Directives and eleven other basic measures. Member States have more flexibility in how they implement the eleven other basic measures. Supplementary measures are required in cases where basic measures are deemed to be inadequate to facilitate the achievement of 'good' status and other WFD objectives.

### 2.1.5 Establishment of Water Body Status

The status of a surface water body (described above in Section 2.1.1), is determined by assessing both ecological and chemical quality elements. Ecological status for rivers is assessed using four quality elements describing biological quality, physicochemical components, pollutants and hydromorphology, outlined in Table 2.1.

**Table 2.1** Quality elements for the classification of ecological status for rivers<sup>1</sup>

Biological elements		<ul style="list-style-type: none"> <li>• Composition and abundance of aquatic flora</li> <li>• Composition and abundance of benthic invertebrate fauna</li> <li>• Composition, abundance and age structure of fish fauna</li> </ul>
Hydromorphological elements supporting the biological elements		<ul style="list-style-type: none"> <li>• Hydrological regime               <ul style="list-style-type: none"> <li>- Quantity and dynamics of water flow</li> <li>- Connection to groundwater bodies</li> </ul> </li> <li>• River continuity</li> <li>• Morphological conditions               <ul style="list-style-type: none"> <li>- River depth and width variation</li> <li>- Structure and substrate of the river bed</li> <li>- Structure of the riparian zone</li> </ul> </li> </ul>
Chemical and physicochemical elements supporting the biological elements		<ul style="list-style-type: none"> <li>• General               <ul style="list-style-type: none"> <li>- Thermal conditions</li> <li>- Oxygenation conditions</li> <li>- Salinity</li> <li>- Acidification status</li> <li>- Nutrient conditions</li> </ul> </li> <li>• Specific pollutants               <ul style="list-style-type: none"> <li>- Pollution by all priority substances identified as being discharged into the body of water</li> <li>- Pollution by other substances identified as being discharged into the body of water</li> </ul> </li> </ul>

The WFD further sets out the conditions for each element that is required for assigning status. Since flood-protection works typically involve physical modifications to rivers, the hydromorphological elements for high status are presented in Table 2.2. For the other status categories, good and moderate status, the hydromorphological requirement is '*Conditions*

<sup>1</sup> WFD Annex V.

consistent with the achievement of the values specified for the biological quality elements'. This is based on the assumption that if a river is at 'good status', then the hydromorphological elements must be at 'good' status as well, since the hydromorphological elements support the biological elements.

**Table 2.2** River hydromorphological quality elements for high status

Element	High status
Hydrological regime	The quantity and dynamics of flow, and the resultant connection to groundwaters, reflect totally, or nearly totally, undisturbed conditions.
River continuity	The continuity of the river is not disturbed by anthropogenic activities and allows undisturbed migration of aquatic organisms and sediment transport
Morphological conditions	Channel patterns, width and depth variations, flow velocities, substrate conditions and both the structure and condition of the riparian zones correspond totally or nearly totally to undisturbed conditions.

Annex V of the WFD also sets out the quality elements for the classification of ecological status of lakes, transitional waters, coastal waters and artificial and heavily modified surface water bodies.

### 2.1.6 Heavily Modified Water Bodies

If a water body has been designated as 'artificial' or 'heavily modified', then it does not have to reach 'good ecological status' but rather 'good ecological potential'. Under the WFD, an 'artificial water body' is defined as '*a body of surface water created by human activity*', while a heavily modified water body (HMWB) is defined as:

*'a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of Annex II'.<sup>2</sup>*

A surface water body can only be designated as artificial or heavily modified if the hydromorphological changes required to achieve good status would have significant adverse effects on a number of beneficial objectives, one of which is flood protection. Therefore, if a water body has existing flood defence structures in place that will prevent that water body from achieving good status but the removal of the structures would have significant adverse effects on flooding, then that water body could be designated as an HMWB. The full list of beneficial objectives that qualify as having '*significant adverse effects*' are as follows:<sup>3</sup>

- (i) *'The wider environment;*
- (ii) *Navigation, including port facilities, or recreation;*
- (iii) *Activities for the purposes of which water is stored, such as drinking water supply, power generation or irrigation; and*

<sup>2</sup> WFD Article 2 (8 and 9).

<sup>3</sup> WFD Article 4 (3)(a).

- (iv) *Water regulation, flood protection, land drainage, or*
- (v) *Other equally important sustainable human development activities*'.

Another condition that must be satisfied in order for a water body to be designated as artificial or an HMWB is that the beneficial objectives, for technical or financial reasons, cannot be achieved by better environmental options.<sup>4</sup> Therefore, for example, environmentally better alternatives to achieve flood protection must be considered. However, if the water body is to be designated as an HMWB, then the reasons for this must be included in the RBMPs.<sup>5</sup> It is also important to note that it is the Commission's view that:

*'Maintenance or rebuilding of existing infrastructure is only possible if there are no better environmental options which maintain the flood protection levels'*.<sup>6</sup>

Member States are still required to protect and enhance artificial and heavily modified water bodies, but not to restore them. However, they are required to achieve good ecological potential and good surface water chemical status.<sup>7</sup>

### 2.1.7 Exemptions to Meeting WFD Objectives

Under Article 4 of the Directive, Member States are required to implement the necessary measures to achieve the above objectives, primarily to ensure all bodies of surface water and groundwater achieve good status (or good potential for HMWBs); to prevent deterioration of the status of all bodies of surface water and groundwater, and to prevent or limit the input of pollutants into groundwater. Exemptions to achieving these objectives are however permitted under strict conditions and these are also set out in Article 4 of the Directive, with Articles 4.4 4.5, 4.6 and 4.7 describing the conditions under which exemptions to these objectives can be applied.

Firstly, Member States can extend the deadline (Article 4 (4)) by which good status is to be reached to 2021 or 2027 provided that no further deterioration occurs in the status of the affected body of water and a number of other conditions are met.<sup>8</sup>

Secondly, they can achieve less stringent objectives under certain conditions (Article 4 (5)):

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<sup>4</sup> WFD Article 4 (3)(b).

<sup>5</sup> WFD Article 13.

<sup>6</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.

<sup>7</sup> WFD Article 4 (1)(a)(iii).

<sup>8</sup> 1.) Necessary improvements cannot be achieved within the timescale due to reasons of technical feasibility, disproportionate expense or prohibitive natural conditions and 2.) the deadline extension; reasons for this and a summary of the measures necessary to bring the bodies of water progressively to the required status are set out in the RBMP.



- When a body of water is affected by a human activity and the environmental and socioeconomic needs of the activity cannot be achieved by other means, which are a significantly better environmental option, not entailing disproportionate costs;
- No further deterioration occurs;
- The highest ecological and chemical status possible is achieved for surface waters and the least possible changes to good groundwater status are caused, given impacts that could not reasonably have been avoided due to the nature of the human activity; and
- The reasons are specified in the River Basin Management Plan.

Thirdly, Member States can have a temporary deterioration in status arising from natural causes or "force majeure" (Article 4.6). These include droughts, floods, earthquakes, etc.

Finally, under Article 4.7, Member States are not in breach of the Directive when:

- *"Failure to achieve good groundwater status, good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of a body of surface water or groundwater is the result of **new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater**; or*
- *Failure to prevent deterioration from high status to good status of a body of surface water is the result of **new sustainable human development activities**" (authors' emphasis).*

And ALL the following conditions are met:

- The reasons for the modifications or alterations are of **overriding public interest** and/or the **benefits to the environment** and to society of achieving the environmental objectives are **outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development**;
- The benefits served by the modifications or alterations cannot for reasons of **technical feasibility** or **disproportionate cost** be achieved by other means, which are a significantly **better environmental option**;
- All practical steps are taken to mitigate the adverse impacts; and
- The reasons for those modifications or alterations are set out and explained in the River Basin Management Plan.

In summary, under Article 4.7, exemptions can be applied to a development that has the potential to prevent the achievement of WFD objectives, if it entails new physical modifications or 'sustainable human development activities' (the latter applies to deterioration from high to good status only) and fulfils the requirements above. Flood protection works potentially fall under both of these. We will return to this in the next Section.

## 2.2 Impacts of Flood Works on WFD Objectives

As part of the second cycle of review and development WFD River Basin Management Plans (RBMPs), Member States are required to identify significant pressures and impacts of human activity. '*Floods and water*' and '*Physical Changes*' have been identified as Significant Water Management Issues (SWMI) in Ireland by the Department of the Environment, Community and Local Government (DECLG).<sup>9</sup> Flood defence works involve many types of physical modifications which can deteriorate and impair the hydromorphological conditions of water bodies as outlined in Table 2.3, including structure of the river bed and of the riparian zone. Hydromorphological elements support the biological elements, and both are quality elements for the classification of ecological status as described above. These physical modifications can result in changes to water flow and morphology and impair sediment dynamics, which in turn has many negative ecological impacts, as outlined in Table 2.4.<sup>10</sup>

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<sup>9</sup> DECLG (2015) [Significant Water Management Issues in Ireland](#). Public Consultation Document. DECLG.

<sup>10</sup> EC (2006) *WFD and Hydromorphological Pressures*. Technical report.

**Table 2.3** Impact of flood works on river hydromorphology (Source EC<sup>11</sup>, 2006)

<b>Impacts on hydromorphology: deteriorations, impairments of hydromorphological conditions</b>	<b>Physical modification</b>				
	Cross profile construction (dams, weirs, locks, impoundments)	Longitudinal profile construction	Channelisation, straightening	Bank reinforcement, bank fixation, embankments	Deepening (channel maintenance, dredging, removal or replacement of material)
Disruption in river or estuary continuum & sediment profile	x		x	x	x
Change in hydrological regime: low/reduced or increased flow, artificial discharge and level regime	x	x	x	x	x
Change in (soil) erosion/sediment transport/silting	x		x	x	x
Change in river profile (length and transverse profile)	x	x	x	x	x
Disruption in lateral connectivity, detachment of oxbow lakes/wetlands	x	x	x	x	
Restriction/loss of flood plains or intertidal area	x	x	x		
Change in connection with groundwater, alteration of ground-water level	x	x	x		x

<sup>11</sup> EC (2006) *WFD and Hydromorphological Pressures*. Technical report.

**Table 2.4** Ecological impacts due to change in water flow, sediment dynamic impairment and morphological changes (Source EC, 2006<sup>12</sup>)

<p>Change in water flow</p>	<ul style="list-style-type: none"> <li>• Change and loss of habitats diversity and quality (due to the modifications of hydraulic conditions and sediments transport, and to the building of structures)</li> <li>• Change in oxygen rate, temperature (increased temperature in zones of low flow), sediments and nutrients loading (accumulation linked with decreased self-purification)</li> <li>• Change in biological communities: decrease of richness and diversity of fish, benthic invertebrates, macrophyte populations; structuration toward lentic communities if long water storage; development of phytoplankton</li> <li>• Disruption of species migration and development</li> </ul>
<p>Sediment dynamics impairment</p>	<ul style="list-style-type: none"> <li>• Change and loss of habitats diversity and quality (due to the removal of bed and banks material and vegetation, and to interrupted sediments transport)</li> <li>• Altered species development and change in biological communities (macrophytes, benthic invertebrates, fish) linked to the alterations of habitats</li> <li>• Ecological impacts of altered dredging regime associated with changes in accretion/erosion</li> </ul>
<p>Morphological changes</p>	<ul style="list-style-type: none"> <li>• Change and loss of habitats diversity and quality (due to the modifications of hydraulic conditions and sediments transport and to the building of structures)</li> <li>• Change in oxygen rate, temperature (increased temperature in zones of low flow), sediments and nutrients loading (accumulation linked with decreased self-purification)</li> <li>• Change in biological communities: decrease of richness and diversity of fish, benthic invertebrates, macrophyte populations; structuration toward lentic communities if long water storage; development of phytoplankton</li> <li>• Disruption of species migration and development</li> </ul>

Therefore, flood defence measures involving physical modifications can create significant adverse impacts on aquatic ecosystems, as has been recognised in the DECLG's SWMI document.<sup>13</sup> For example:

*'Impoundments and flow regulation change natural flow and sediment conditions that can alter the ecosystem structure and may reduce habitat diversity ... Channelisation and in-stream dredging can lead to significant physical changes and reduce biodiversity and damage habitats. They alter natural river flow and can give rise to the accumulation of sediment due to channel widening or erosion of the bed and banks as a result of channel deepening.*

<sup>12</sup> EC (2006) *WFD and Hydromorphological Pressures*. Technical report.

<sup>13</sup> DECLG (2015) [Significant Water Management Issues in Ireland](#). Public consultation document. DECLG.

*Shoreline reinforcements and sea defences may also prevent the natural migration of the shoreline and result in habitat loss.'*

It is important that these '*significant physical changes*' are considered in both the FRMPs and the RBMPs, since they potentially impact both hydromorphological and biological conditions of affected waterbodies and hence their WFD ecological status. It is important to emphasise that any activity that will negatively impact the WFD status of a water body is only permitted under the WFD if the strict conditions, set out in Article 4 and described in the previous section are met:

- (a) *'All practicable steps are taken to mitigate the adverse impact on the status of the body of water;*
- (b) *The reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;*
- (c) *The reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development; and*
- (d) *The beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.'*

The Commission has produced a guidance document<sup>14</sup> on the use of WFD exemptions and has also stressed and discussed the importance of the use of '*better environmental options*':

*'When managing rivers, lakes and coastal areas, the best environmental options need to be identified, especially **when new flood defence structures** are considered that could lead to a degradation of water resources.'*<sup>15</sup>

It is important to note that the reasons for any exemptions must be set out in the RBMPs.

It is unclear as to whether there has been any legal analysis on the potential application of WFD exemptions to flood protection developments. However, the EU Guidance Documents offer some assistance. The '*Guidance document on exemptions to the environmental objectives*'<sup>16</sup> defines "*new modifications*" as "*modifications to the hydro-morphological characteristics of the water body*". Since flood management measures may alter hydro-morphological characteristics of water bodies, it

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<sup>14</sup> EC (2009) *Guidance Document on Exemptions to the Environmental Objectives*. CIS WFD Guidance document no. 20. European Communities, Luxembourg.

<sup>15</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. European Commission DG Environment, Brussels, Belgium.

<sup>16</sup> European Commission, Directorate-General for the Environment, (2009) *Guidance document on exemptions to the environmental objectives*. No 20. Publications Office, Luxembourg.

should follow therefore that they should be considered new modifications therefore qualify under the Art 4.7 exemption. However, the definition of 'sustainable human development activities' is vaguer, with the guidance document stating:

*'The exact definition for an activity falling under sustainable development will ... depend on the time, scale, involved stakeholders and information available.'*<sup>17</sup>

The Guidance document also emphasizes the importance of two final provisions in Article 4:

*'Like all WFD exemptions, article 4.7 does not apply when the provisions of articles 4.8 and 4.9 are not fulfilled. In other words, use of the exemptions is allowed when they guarantee at least the same level of protection as existing Community legislation and provided that they do not permanently exclude or compromise the achievement of the wider objectives of the WFD in other bodies of water within the same river basin district.'*

While there is to date no case law in relation to the WFD in Ireland to assist in examining the potential implications for flood management activities, the recent ECJ ruling on Case C-461/13<sup>18</sup> on the dredging for navigation of the river Weser in Germany is extremely relevant. It found that:

*'Article 4 (1)(a)(i) to (iii) of [the WFD] must be interpreted as meaning that the Member States are required — unless a derogation is granted — to refuse authorisation for an individual project where it may cause a deterioration of the status of a body of surface water or where it jeopardises the attainment of good surface water status or of good ecological potential and good surface water chemical status by the date laid down by the Directive.'*

Although it is not yet clear how this will translate into project-level consents, there is a strong argument, which has been articulated by the EU Commission Water Unit that this should lead to ex-ante WFD-specific assessments for individual projects, including developments associated with flood protection.

## 3 Coordination of the Floods Directive with the WFD

### 3.1 Reasons and Benefits

There are a range of compelling reasons for close coordination between implementation of the Floods Directive (FD) and WFD. According to the Commission<sup>19</sup> such coordination '*... offers the opportunity to adopt a new approach to optimize the mutual synergies and minimise conflicts between them.*' It describes the reasons for this as follows:

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<sup>17</sup> European Commission, Directorate-General for the Environment, (2009) Guidance document on exemptions to the environmental objectives. No 20. Publications Office, Luxembourg

<sup>18</sup> Case C-461/13 *Bund für Umwelt und Naturschutz Deutschland* <http://curia.europa.eu/juris/documents.jsf?num=C-461/13>

<sup>19</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.

- *'The overlap of legal and planning instruments in many Member States;*
- *Planning and management under both Directives generally use the same geographical unit, i.e. the river basin, which acts as a natural 'reference area' for both water quality and flood risk management;*
- *Aiding the efficiency of the implementation of measures and increasing the efficient use of resources. Measures taken under one Directive may have an influence on the objectives under the other. Coordination provides an opportunity to maximise synergies by identifying cost measures which serve multiple purposes and can result in "win-win" measures being implemented; and*
- *An expectation from many stakeholders that an integrated approach will be taken.'*

The Commission has identified the many benefits of coordinating the FD with the WFD, and these are summarised in Table 3.1. There are also many flood risk management measures that have multiple benefits for water quality. In particular, the Commission has identified river and floodplain restoration as providing a *'significant contribution to both FD and WFD objectives'* as floodplains can play an important role in flood risk management and are vital to WFD quality indicators such as fish and invertebrates which are highly dependent on these habitats.<sup>20</sup>

**Table 3.1** Summary of the benefits of coordinating the FD with the WFD (Source EC, 2014)

<b>Benefits of coordinating the FD with the WFD</b>	
<b>Improving efficiency via:</b>	<ul style="list-style-type: none"> <li>• Presenting information to the public in one place</li> <li>• Cross referencing of objectives to ensure mutual benefits realised</li> <li>• Coordinating consultations on FRMPs and RBMPs increases the opportunities for synergies to be recognised</li> </ul>
<b>Information exchange via:</b>	<ul style="list-style-type: none"> <li>• Collecting data once and using it many times</li> <li>• Integration of data, which allows for easier identification of pressures on the water environment</li> <li>• Sharing data assists better understanding of the issues and potential solutions to identify reductions in flood risk and improving the environment</li> </ul>

<sup>20</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.

<p><b>Achieving common synergies and benefits having regard to the environmental objectives laid down in Article 4 of the WFD including:</b></p>	<ul style="list-style-type: none"> <li>• Improved integrated river basin management</li> <li>• Identify areas where measures can meet both FD and WFD aims, e.g. river and floodplain restoration, use of Sustainable Drainage Systems (SuDS), changes in land management and creation of multifunctional wetlands</li> </ul>
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Article 9 of the Floods Directive (FD) explicitly requires that Member States coordinate the FD with the WFD:

*'Member States shall take appropriate steps to coordinate the application of this Directive and that of Directive 2000/60/EC focusing on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits having regard to the environmental objectives laid down in Article 4 of Directive 2000/60/EC.'*

Ultimately coordination is vital so as to ensure that all pressures and potential impacts of proposed measures included in these FRMPs are included in the characterisation process for the WFD and thus in the river basin management planning process, with strict application of exemption criteria where proposed measures will compromise WFD mandatory requirements.

### 3.2 Coordination of Administration Arrangements of the WFD

Article 3 of the FD requires Member States to make use of the administration arrangements within river basin districts of Article 3 (1), (2), (3), (5) and (6) of the WFD.<sup>21</sup> To coordinate the administrative arrangements of the WFD and the FD, most Member States have assigned the same competent authority for both Directives. Ireland has assigned different competent authorities for each Directive. This can pose difficulties in coordinating the two Directives; the FD requires a description of the coordination process with the WFD in the Flood Risk Management Plans (FRMPs).<sup>22</sup> The Commission states that:

*'It is recognised that even with consultation and coordination systems in place, effective coordination can still be difficult owing to differences between CAs such as: funding mechanisms, differing objectives, corporate structures and language. Effective coordination can be achieved by ensuring adequate communication throughout the process to ensure mutual awareness of objectives, direction, progress and decisions. This may involve cross-representation of CAs in the management structures for both Directives, both at national and RBD level in addition to close communication (e.g. via workshops, meetings) particularly at critical stages (e.g. development of measures).'*<sup>23</sup>

<sup>21</sup> See section 2.2.

<sup>22</sup> Annex A II (3).

<sup>23</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.



The draft FRMP (pg. 37) describes this coordination as occurring via bilateral meetings, cross-representation on management groups, exchange of information and coordination on measures. The information provided on these in the draft FRMP is vague in that it just outlines the process but not how/if effective coordination of implementation is being achieved. Further detail is required regarding the ongoing collaborative decision-making process for dovetailing implementation of these directives. It would appear to SWAN that operational coordination is minimal since the measures proposed in the draft FRMPs have, to our knowledge, not thus far been included in the WFD characterization process, despite the significant hydromorphological, and ecological impacts these may have on affected water bodies. Nor, is there any indication in the FRMPs, or in the public domain, of ongoing regular operational collaboration between scientists working on implementation of the FD with those working on the WFD. Indeed, on reading the FRMP, one would be forgiven for thinking they were developed in almost complete isolation from the dedicated WFD Catchment Management team in the EPA who are leading work on WFD implementation.

### 3.3 Coordination of the FRMP and RBMP

In line with what the Commission has highlighted, because Ireland has different competent authorities for the FD and WFD, it is vital that there be effective coordination at the critical stage of developing the flood risk management measures. From the draft FRMP, it is evident that this coordination has been very limited, calling into question how effective these measures will prove.

Article 7 (2) of the FD states that:

*'Member States shall establish appropriate objectives for the management of flood risks ... focusing on the reduction of potential adverse consequences of flooding for ... the environment ...'*

Article 7 (3) also requires that the plans must include measures that achieve the environmental objectives in accordance with Article 7 (2) and flood-related measures taken under the WFD. Article 7 (3) states that:

*'**Flood risk management plans shall take into account** relevant aspects such as costs and benefits, flood extent and flood conveyance routes and areas which have the potential to retain flood water, such as natural floodplains, **the environmental objectives of Article 4 of Directive 2000/60/EC**, soil and water management, spatial planning, land use, nature conservation, navigation and port infrastructure'. (SWAN's emphasis)*

In ostensibly reflecting this, one of the environmental objectives in the draft FRMP (pg. 51) is to 'Support the objectives of the WFD', with the sub-objective that the measures 'Provide no impediment to the achievement of water body objectives and, if possible, contribute to the achievement of water body objectives'.

The FRMP (pg. 41) also states that:

*'The process for the development and appraisal of possible flood risk management methods includes an assessment against the objectives and requirements of the WFD (see Objective 3.a, Table 6.1). In this way, the potential contribution of flood risk management measures towards, or potential impacts on, the objectives of the WFD are embedded into the process for the identification of preferred measures.'*

Although the objectives of the WFD may have been 'embedded' into the process, this demonstrably does not ensure that the management measures proposed will not have significant negative impacts on the achievement of WFD objectives, as is evidenced by the FRMP Strategic Environmental Assessment (SEA) which will be discussed in Section 4.

The draft FRMP (pg. 38) has provided brief examples of what is/will be done with regards to coordination between the competent authorities to take into account the potential impact of WFD measures on flood risk, to identify measures that contribute to achieving the objectives of both directives and to address conflicting measures as follows:

*'The OPW is liaising with the EPA on the potential impact of WFD measures on flood risk, which are typically neutral (no impact), or may have some benefit in reducing runoff rates and volumes (e.g., through agricultural measures such as minimising soil compaction, contour farming or planting, or the installation of field drain interception ponds).*

*The OPW will continue to work with the EPA and other agencies implementing the WFD to identify, where possible, measures that will have benefits for both WFD and flood risk management objectives, such as natural water retention measures. It is anticipated that this is most likely to be achieved in areas where phosphorous loading is a pressure on ecological status in a sub-catchment where there is also an identified potentially significant flood risk (i.e., an AFA). This coordination will also address measures that may otherwise cause conflict between the objectives of the two Directives.*

*In order to identify opportunities to develop "win-win" Water Framework Directive (WFD) and Floods Directive measures, the WFD Local Authority Water and Communities Officer is represented on the NWNB CFRAM Study progress and steering groups with a view to informing the measures proposed in this draft plan.'*

SWAN welcomes the fact that the OPW has been liaising with the EPA and LAWCO on 'win-win' measures however it is difficult to ascertain the effectiveness of this as given that there are few measures proposed in the FRMP that would have such benefits in particular natural water retention measures which will be further described in Section 6.

Apart from recommending mitigation measures in the SEA there is no explanation in the FRMP as to how *'measures that may otherwise cause conflict between the objectives of the two directives'* are being addressed, given that the FRMP SEA has identified many significant negative impacts on water quality and the aquatic environment which would result from the physical modifications that are being proposed as part of the flood risk management measures.

Article 7 (3) of the FD requires that the FRMPs take the characteristics of the river basins into account and also to promote sustainable land-use practices and the improvement of water retention. Thus the FRM plans, along with the WFD RBM plans, should be based around integrated river basin management and so benefit greatly from being developed in coordination with the RBM Plans. Indeed, the development of the FRMPs are required to be coordinated with the reviews of the WFD River Basin Management Plans, under Article 9 (2) of the FD which states that:

*'... the development of the first FRMPs and their subsequent reviews as referred to in Articles 7 and 14 of this Directive shall be carried out in coordination with, and may be integrated into, the reviews of the RBMPs provided for in Article 13 (7) of the WFD'.*

SWAN understands that for various political and other reasons, the development of both these plans is happening over different timescales. It is our position that this, along with having separate Competent Authorities, has resulted in a serious lack of coordination in the implementation of the two Directives, as is evidenced in the plans by the reliance on structural measures for flood risk management, which will have negative impacts on WFD objectives.

## 4 Proposed Measures

### 4.1 AFA Scale Options

The FRMP SEA (pg. 42-43) states that only 24 out of 96 rivers in this UoM have reached good status, only 2 out of 17 lakes, none of the 9 transitional water bodies and only 1 out of 4 coastal water bodies. The SEA states that

*'the status of waterbodies in UoM06 varies, with Poor being the most prevalent waterbody status. Flood risk management activities in the UoM have the potential to impact water quality or quantity and therefore must be sustainably managed.'*

Therefore it is important that, as the FRMP objective states, any proposed measures *'provide no impediment'* to achieving good status, as the water bodies in this UoM are already at risk of not meeting WFD objectives and any additional pressure would further exacerbate this risk. There are 8 AFAs for this Unit of Management, 7 of which have proposed options in the FRMP, all of which include structural measures. The FRMP SEA found that, of the 7 options which were assessed all would have negative impacts on water quality. The proposed options for these AFAs which would impact water quality are:

- New coastal defence walls
- New coastal embankments
- Upgrading coastal embankments
- New coastal rock armour
- New river walls
- New river embankments
- Upgrading existing culverts
- Increased conveyance
- New culvert
- New sluice gate
- New weir
- Road raising
- Dredging
- In stream works
- On bank works

The impacts of these physical modifications have been set out above in Section 2.2, but of particular concern is the proposed preferred option for Dundalk and Blackrock South as follows:

*'In the short term, there is the potential for highly significant negative impacts. There is the potential for direct impacts to Dundalk Bay SAC, SPA, pNHA, Ramsar site, and OSPAR Marine Protected Area from construction and restoration of embankments, in particular in Ballymascanlan / Racecourse area where defences may bisect designated areas. There is also the potential for indirect downstream impacts during construction of all walls and embankments and from dredging / culvert works at Blackrock River. Direct loss of natural and semi natural habitats in the footprint of works. However it is possible for defences to be set further back from designated sites. As a result of a possible direct loss of habitats and potential recurring dredging impacts, there may be moderately negative impacts of this option in the medium and long term.'*

*'.....it has been concluded that, following the avoidance and mitigation measures suggested, the FRM measures at Dundalk and Blackrock South may have residual impacts on Dundalk Bay SAC and SPA. For option 2, this relates to the extent and location of coastal hard defences, and the impact of these on wetland habitats, either directly in the footprint of the FRM work or indirectly through sedimentation. There is also potential for intermittent residual sedimentation impacts during flood events or maintenance following dredging of the Blackrock River. Option 4 also has potential for intermittent residual impacts following improvement of channel conveyance in the Blackrock River and potential for medium- to long-term damage to wetland habitats, with works footprints still in the designated areas,..'*

*'This option will involve the excavation and restoration of banks adjacent to and set back from sensitive waterbodies. In the short term, there is the potential for highly significant negative impacts as a result of in-stream and on-bank construction impacts. Online storage on an undesignated tributary of the Castletown River will be created, which would be operational during flood events; however this requires a culvert and weir. Improvement of channel conveyance in Blackrock and Blackwater Rivers will be undertaken which will also*

*result in negative construction phase impacts of culvert replacements and construction phase dredging / lowering. Receiving waterbodies are listed in WFD Register of Protected Areas.'*

*'In the short term there is the potential for significant negative impacts generally due to direct construction phase impacts from excavation and restoration of banks, and rehabilitation of existing instream and on-bank defences, in and adjacent to sensitive waterbodies. There is the potential for indirect downstream impacts to sensitive waterbodies (salmon and shellfish) during construction of defences and dredging works.'*

As pointed out in the SEA mitigation will not fully offset these impacts and an alternative better environmental option must be put forward as the preferred option instead. The draft FRMP (pg. 54) states that:

*'The Environmental Report identifies, evaluates and describes the likely significant effects on the environment of implementing the potential measures set out in the Draft FRMP, with a view to avoiding adverse effects, and also, where appropriate, to set out recommendations as to how any identified adverse effects can be mitigated, communicated and monitored.'*

*'An alternative, more environmentally sustainable option to this is Option 4, which would involve the retreat of defences at Marsh North / Ballymascanlan so they are not bisecting the designated areas, although there still may be works footprints within designated areas. This Option 4 may however be a viable alternative to Option 2 if the impacts on the European sites are deemed to be unacceptable.'*

Although the impacts on water status of implementing the proposed measures and the mitigation measures are outlined in the SEA the FRMP itself should have at least included this information. What the SEA does show is that even when mitigation is applied it does not fully offset or remove the negative impacts on the aquatic environment for example for the Dundalk and Blackrock option as described above.

Even if it is recommended to apply avoidance and mitigation measures in these water bodies mostly there is no follow up to assess the effectiveness of mitigation or even if it has been implemented and this is unacceptable.

The SEA (p. 113) states that

*'The principal mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. visual appearance, alignment of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors. Further environmental studies based on the detailed design and construction methodology should be undertaken as appropriate. These studies **may involve**, but are not limited to, aquatic and terrestrial ecology surveys, ornithological and bat surveys, fish surveys, landscape and visual assessments, **WFD assessments**, geotechnical investigations and heritage surveys.'*

SWAN welcomes the mention of WFD assessments at the next stage of option development however 'may involve' is not adequate and it is vital that WFD assessments **must** be included if compliance with WFD objectives is to be achieved.

The projects will be subject to the applicable planning and/or consent processes, however there are no regulatory controls on physical modifications to water bodies. This is in spite of the WFD Article 11, which requires 'measures to ensure that the hydromorphological conditions of the bodies of water are consistent with the achievement of the required ecological status' for water bodies. The 2010 Shannon RBM Plans<sup>24</sup> recognised that physical modifications of water bodies '... can reduce the diversity of plant and animal communities either directly by affecting habitats or indirectly by changing natural processes.' It is extremely worrying that the required regulatory system for their control has not been introduced. The RBM Plans further state that '... proposed authorisation regulations for ... physical modifications ... are under preparation' and that a 'formal legal mechanism' to address morphological pressures on the coastal environment including 'coastal defence, built structures (urbanisation and ports and harbours) and dredging' will be provided by a 'proposed amendment to the legislative framework, to regulate physical modifications having an adverse impact on the water environment.' However, these regulations have yet to be introduced six years later, as highlighted in the DECLG's recent SWMI document:<sup>25</sup>

*'Several Irish studies commissioned to support implementation of the WFD have highlighted the need to introduce an authorisation system to control activities involving physical modifications to surface waters (e.g. flood defences, port development, hydropower development, arterial drainage). It is intended to address this deficiency through the establishment, via legislation, of a new single comprehensive regulatory framework.'*

The DECLG attributed the delay of this legislation to the 'current poor understanding of the relationship between morphological alterations to surface waters and the ecological impacts' and that 'Work is on-going to improve our understanding of these complex environmental pressures.' It is extremely worrying that we will not have these regulations for some time.

It is furthermore of extreme concern that significant structural options are being proposed in the FRMPs despite this acknowledged 'current poor understanding of the relationship between morphological alterations to surface waters and the ecological impacts'. It is difficult to understand how an adequate Environment Impact Assessment of such projects can be conducted, especially in terms of the impacts on the aquatic ecology, given this poor understanding. The lack of both regulatory controls and understanding of ecological impacts is even more reason to apply the precautionary principle when it comes to mitigation.

Also, as the Local Authorities will be responsible for implementing the proposed options, SWAN members have raised doubts about the decisions that LAs have made in the past in not proceeding

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<sup>24</sup> Shannon River Basin District (2010) *River Basin District Management Plan for the Shannon*. Limerick County Council, Limerick.

<sup>25</sup> DECLG (2015) [Significant Water Management Issues in Ireland](#). Public consultation document. DECLG.

with EIA and AA screening when required in the case of physical modifications to rivers, and also that there is no follow up assessment/monitoring of projects to ensure that mitigation has been implemented.

The current planning and consent process in relation to flood relief schemes, arterial drainage schemes and the proposed measures in the FRMPs is unclear. There are a number of issues which need to be clarified. Will the proposed measures be subject to WFD and EIA assessment, who decides this, who conducts the screening, who would conduct the assessment? Who authorises the project based on the results of the assessment? How are current flood relief schemes and minor works assessed in relation to WFD, EIA and AA? Who decides this on screening? Who would conduct the assessment? Who authorises the project based on the results of the assessment? The planning and consent process needs to be set out clearly including what/how projects are exempt from any of the Environmental Assessments.

## 4.2 Unit of Management Measures

These are some of the measures which are to be applied across the entire UoM including the AFAs.

### 4.2.1 Application of the Guidelines on the Planning System and Flood Risk Management

This measure on the application of the Guidelines on the Planning System and Flood Risk Management is as follows:

*'The Planning Authorities will ensure proper application of the Guidelines on the Planning System and Flood Risk Management (DECLG/OPW, 2009) in all planning and development management processes and decisions in order to support sustainable development.'*

SWAN welcomes the inclusion of this measure, however enforcement of the guidelines is needed to ensure their proper application. Currently it is unclear which body can provide such enforcement. To regain public confidence in the planning system following the findings of the Mahon Tribunal, SWAN has recommended that a separate independent oversight authority be established to ensure that national planning policy is correctly implemented and to oversee complaints against planning authorities. In the absence of such an authority, many SWAN members are extremely sceptical about the full and effective application of these Guidelines especially as the current need for housing increases the risk of inappropriate development including on land that is at risk from flooding.

In this context, it is of the utmost concern to SWAN that the draft FRMP (pg. 61) states that:

*'In flood-prone areas where development can be justified (i.e., re-development, infill development or new development that has passed the Justification Test), the planning authorities can manage the risk by setting suitable objectives or conditions, such as minimum floor levels or flood resistant or resilient building methods'.*

SWAN members strongly disagree with this proposal and recommend that there be no further development in any flood-prone areas, notwithstanding the 'Justification Test'.

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

The EIA (Agriculture) Regulations are administered by the Department of Agriculture and govern drainage works on lands used for agriculture (excluding the drainage and reclamation of wetlands). The threshold for required screening is above 15 hectares. If the proposed area for agricultural drainage (not wetland drainage) is above 15 hectares, an application for screening must be submitted to the Minister for Agriculture, who considers whether the proposed activity is likely to *inter alia* have significant effects on the environment or on a European site. Where s/he considers that the proposed activity is likely to have a significant effect on the environment, or on a Natura 2000 site, the activity may not proceed "*without a consent given consequent to an application for consent accompanied by an environmental impact statement, or a Natura impact statement, as the case may be*".<sup>26</sup>

However, the system is fragmented and confusing for landowners, planning officials and other stakeholders; for this and other reasons it is ultimately ineffectual.

Secondly, wetland drainage, apart from habitat and biodiversity loss, also results in a loss of water storage and would contribute to flood flow volume. The Planning & Development (Amendment) (No. 2) Regulations control the drainage and reclamation of wetlands (including estuarine marshes or callows), which is the only element of the activities covered by the European Court of Justice judgment in Case C-66/06 remaining within the planning system. The threshold above which a landowner must conduct a mandatory environmental impact assessment (EIA) is 2 hectares, and the threshold above which they must apply for planning permission (and screening for EIA) is 0.1 hectares.

There is much confusion and a lack of enforcement in this regime. The system has a built-in temptation for landowners carrying out drainage works in wetland areas above 0.1 hectares to deem the land 'used for agriculture' and not an actual wetland. This then leads to confusion regarding the definition of a wetland. While wetlands are defined in the regulations and guidelines, this is a

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<sup>26</sup> Department of the Environment (2011) *Guidance for Planning Authorities on Drainage and Reclamation of Wetlands*. Consultation draft. September 2011.



sufficiently ambiguous area to have facilitated many incidences of unregulated wetland drainage (i.e. without planning consent) of which SWAN members are aware.

The separation of responsibilities between the DAFM and DECLG also leads to fragmentation in the system. Under the current system, wetlands are at risk from cumulative effects, as there is no centrally administered system in place for cross-reporting, and no integrated assessment of proposed drainage works on agricultural lands and within wetlands. In the absence of a clear strategy for cross-reporting, permission may be simultaneously granted for drainage both within a wetland and on adjacent agricultural land, the combined effects of which may seriously damage the site.

SWAN members still regularly encounter unregulated wetland drainage for agricultural purposes (riparian and other) both below and above these thresholds. For example, SWAN members An Taisce and Coastwatch were involved in a case of infilling/reclamation of large areas of wetland in 2014 and 2015 adjacent to the R478 between Lahinch and Liscannor, Co. Clare, adjacent to the Inagh River Estuary SAC site code 000036). The An Bord Pleanála decision was that drainage/infilling of a wetland had been carried out, and thus that the works were not exempted development and should not have been carried out without planning consent and the appropriate environmental assessment.

Therefore proper enforcement of these regulations could contribute to both FD and WFD objectives.

#### 4.2.2 Sustainable Urban Drainage Systems

The draft FRMP (pg. 61) states that:

*'Sustainable Drainage Systems (SUDS) can play a role in reducing and managing run-off to surface water drainage systems as well as improving water quality and contributing to local amenity. SUDS comprise a wide range of techniques, including swales, basins, ponds and infiltration systems. In accordance with the Guidelines (see Section 8.2.1.1), planning authorities should seek to reduce the extent of hard surfacing and paving and require the use of sustainable drainage techniques to reduce the potential impact of development on flood risk downstream.'*

SWAN welcomes the inclusion of the SuDs measure, however in relation to new housing developments the Guidelines<sup>27</sup> referred to above, stated that:

*'The Department is currently reviewing its document "Recommendations for Site Development Works for Housing Areas" which traditionally was used to provide guidance on design standards for smaller drainage systems. The aim of this review is to set out best*

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<sup>27</sup> DECLG (2009) [The Planning System and Flood Risk Management](#). Guidelines for planning authorities. DECLG and the OPW.

*practice in regard to the use of Sustainable Drainage Systems in respect of surface water drainage.'*

However, the review of this document<sup>28</sup> has still not been published. This review is urgently required in particular due to the increase in proposed housing developments. The Guidelines also state that:

*'With regard to the increasingly frequent trend of paving over entire residential garden areas to provide off street car parking or hard landscaping under the exempted development provisions of planning legislation, the Department intends to review such provisions to ensure that only those complying with sustainable drainage principles will be exempted thus limiting the run-off which would otherwise contribute to overwhelming the drainage systems'.*

These provisions have yet to be reviewed and hard paving of garden areas is still exempted from planning legislation. This poses a significant pressure in terms of increased urban run-off and renders the recommendation in the draft FRMP that *'planning authorities should seek to reduce the extent of hard surfacing and paving'* "In accordance with the Guidelines" in order to *'reduce the potential impact of development on flood risk downstream'* somewhat redundant. It is an oversight that this lacuna is not identified in the draft FRM Plan and SWAN recommends that this is rectified, with a recommendation in the final Plan to address the lacuna.

#### 4.2.3 Ongoing Maintenance of Arterial Drainage Schemes

There is little information on the existing Arterial Drainage Schemes in place in these UoMs, other than a list of the schemes and that these will be maintained as part of the UoM measures as mentioned in the FRMP and SEA.

Arterial Drainage Schemes typically involve increasing the conveyance capacity (e.g. dredging), which can impact on aquatic ecology of the watercourse. The impact of these schemes on water bodies as a whole (including those outside of Natura sites) also needs to be taken into account. Although the schemes are not a part of the CFRAM study, they are provided as a measure in the FRMP and therefore need to be assessed for their impact on the WFD status of affected waterbodies along with all other proposed measures. It is not clear if these were taken into account in the MCA analysis or SEA for the FRMP WFD objective. A brief look through the SEA for the Arterial Drainage Scheme 2016-2021<sup>29</sup> highlights a number of negative impacts on WFD objectives that these schemes would have. The environmental assessments relating to arterial drainage schemes are available on the OPW website,<sup>30</sup> and given the significance of these schemes in terms of physical modifications of the affected watercourses, this should have been mentioned in the FRMP. SWAN does not have the capacity to separately review these assessments in the given

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<sup>28</sup> DELG (2008) [Recommendations for Site Development Works for Housing Areas](#). DELG, Government publication, Dublin.

<sup>29</sup> <http://www.opw.ie/en/media/2016-2021arterial-drainage-maintenance-sea-scoping-report-activities.pdf>

<sup>30</sup> <http://www.opw.ie/en/floodriskmanagement/operations/environmentalactivities/>

consultation timeframe, and as a minimum a summary of these reports should have been included in the FRMPs.

#### 4.2.4 Enhance Existing Protection Works

The FRMPs (pg. 63) state that:

*'Some natural features can provide defences against floods, or form part of a defence in depth. For example, sand dunes and flood marshes often form effective barriers against flooding in coastal areas. These features may be vulnerable to rapid erosion and some enhancement may be useful to retain their effectiveness.'*

SWAN appreciates the recognition of the role that natural features play in flood defence but would like to know how these features will be protected and what enhancement is being proposed. It is important that any enhancement of existing structural features must be WFD compliant.

#### 4.2.5 Land-Use Management and Natural Water-Retention Measures

The Floods Directive requires that:

*'Flood risk management plans shall take into account ... areas which have the potential to retain flood water, such as natural floodplains, the environmental objectives of Article 4 of Directive 2000/60/EC, soil and water management, spatial planning, land use, nature conservation ...'*

Land-use management and natural water retention measures (NWRMs) are described earlier in the FRMP (pg. 65) as follows:

*'Flood flows depend on how much rain falls in the catchment and the pattern of rainfall, and also on how much and how rapidly the rain runs off the land into the river. The volume and rate of runoff can be reduced by changing land use practices, such as by reducing stocking rates, changing the way ploughing is undertaken (e.g., along contours rather than perpendicular to contours), rewetting cutaway bogland and by planting hedgerows across hillsides. Similarly, excess runoff can be stored in wetlands, micro-detention basins, or be attenuated in small streams and channels through the use of obstructions to flow, such as large woody-debris dams. [...] These types of measures have the potential to help to achieve the goals in a range of areas, including water quality, nature conservation/biodiversity, agriculture and forestry, green growth and climate change mitigation and adaptation (EU, 2014), and as such would be best addressed on a multi-sectoral level to promote integrated catchment management.'*

It is to be welcomed that the plan recognises that land use can be managed so as to reduce runoff and also that it recognises the benefits that NWRMs can bring to other areas, including water

quality and integrated catchment management. It is therefore disappointing that this broad recognition is not then reflected in any proposed measures. The related measure in the FRMP merely entitled an 'Assessment of Land Use Management and Natural Water Retention Measures', described as follows:

*'The OPW will continue to work with the EPA and other agencies implementing the WFD to identify, where possible, measures that will have benefits for both WFD and flood risk management objectives, such as natural water retention measures'.*

SWAN welcomes the fact that the OPW is liaising with the EPA 'to identify, where possible...' NWRMs, which would have benefits for both flood risk management and WFD objectives. However, the assessment of these measures should be well progress by this stage, with at least some initial specific measures presented in the FRMP. It is disappointing that, to SWAN's knowledge work with the EPA on these measures has not yet started, or at best is in its infancy, with the result that no natural water retention measures have either been identified or put forth in this FRMP. Were that the case, they would have contributed meaningfully to the implementation of integrated catchment management. Well-documented examples of land-use management and NWRMs have been identified and promoted by the Commission, which has also highlighted benefits to both the FD and WFD, a summary of which will be presented in the following Section 6.

## 5 Natura Sites

### 5.1 Impacts on Natura Sites

There are 10 European sites forming part of the Natura 2000 Network within UoM06, five SACs and five SPAs. Of these 7 were assessed as having the potential to experience an impact from Flood Relief Measures (FRM):

- Boyne Coast and Estuary SAC
- Boyne Estuary SPA
- Carlingford Shore SAC
- Carlingford Lough SPA
- Dundalk Bay SAC
- Dundalk Bay SPA
- Strabannan-Braganstown SPA

The appropriate assessment for UoM06 concluded that even with the inclusion of the avoidance and mitigation measures, the FRMs at Dundalk and Blackrock AFA still have the potential for adverse residual impacts on Dundalk Bay SPA and SAC and these residual impacts may be significant. At Termonfeckin AFA some residual intermittent sedimentation impacts are possible to Boyne Coast and Estuary SAC even with the inclusion of the avoidance and mitigation measures.

All together FRMs at 4 AFAs were assessed as having the potential to impact on Dundalk Bay SPA and SAC. There is therefore the potential for cumulative impacts from FRMs on these Natura 2000 Sites.

**Table 5.1:** Assessment of likely impacts of proposed Flood Risk Management Options (FRMO) on NATURA 2000 sites within UoM 6 from Appropriate Assessment (AA) and Sustainable Water Network review (SWAN).

AFA	Proposed FRMO	AA impacts	SWAN impact assessment
Annagassan	<p>Hard defences</p> <ul style="list-style-type: none"> <li>• flood embankments</li> <li>• walls</li> </ul>	<p><b>Dundalk Bay SAC (adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>• Release of suspended sediments and associated nutrients or pollution incidents from machinery could lead to a reduction in water quality, affecting the extent or composition of wetland habitats.</li> <li>• Change in hydrological regimes, impacting upon the conservation objectives of wetland habitats</li> <li>• Additional sections or changes to current coastal hard defences may cause changes to the natural circulation of sediment and organic matter and lead to increased rates of erosion affecting <i>Salicornia</i> and other annuals colonizing mud and sand</li> <li>• Physical disturbance by machinery and workers could lead to a loss of habitat adjacent the hard defences and along access routes.</li> </ul> <p><b>Dundalk Bay SPA (adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>• The potential impacts to wetlands from sediment, pollution, physical disturbance, changes to hydrology and natural circulation of sediment and organic matter will also affect protected bird species by reducing the available habitat and/or altering or reducing food resources.</li> <li>• Noise and visual disturbance causing displacement of birds</li> </ul> <p><b>Strabannan-Braganstown SPA (5 linear km downstream)</b></p> <ul style="list-style-type: none"> <li>• Physical habitat disturbance</li> </ul>	<p>Due to location of AFA there is likely to significant impacts on Dundalk Bay SAC and SPA</p> <p>In addition to AA impacts</p> <ul style="list-style-type: none"> <li>• There is significant potential for the spread of invasive species due to works.</li> </ul>

		<ul style="list-style-type: none"> <li>Noise and visual disturbance causing displacement of birds</li> </ul>	
Ardee	<p>Hard defences</p> <ul style="list-style-type: none"> <li>flood embankments</li> <li>walls</li> </ul>	<p><b>Dundalk Bay SAC (11.1km downstream)</b></p> <ul style="list-style-type: none"> <li>Release of suspended sediments and associated nutrients or pollution incidents from machinery could lead to a reduction in water quality water quality, affecting the extent or composition of designated habitats.</li> <li>Construction of fluvial hard defences upstream could result in hydrological changes, by increasing capacity and flow rates in the downstream channel.</li> </ul> <p>Due to distance from AFA impacts works unlikely to significantly impact SAC</p> <p><b>Dundalk Bay SPA (11km downstream)</b></p> <ul style="list-style-type: none"> <li>The potential impacts to wetlands from sediment or pollution events will also affect protected bird species by reducing the available habitat and/or altering or reducing food resources.</li> <li>Noise and visual disturbance causing displacement of birds</li> </ul> <p>Due to distance from AFA impacts works unlikely to significantly impact SAC</p>	<p>In addition to AA impacts</p> <ul style="list-style-type: none"> <li>There is significant potential for the spread of invasive species due to works.</li> </ul>
Carlingford and Greenore	<p>Hard Defences</p> <ul style="list-style-type: none"> <li>flood embankments</li> <li>walls</li> </ul> <p>Improvement of channel conveyance</p> <ul style="list-style-type: none"> <li>culvert upgrade</li> </ul> <p>2 Pumping Stations</p>	<p><b>Carlingford Lough SPA (adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>Release of suspended sediments and associated nutrients or pollution incidents from machinery could lead to a reduction in water quality, affecting the extent or composition of wetland habitat habitats and the food supply of Brent Geese and other waterbirds.</li> <li>Change in hydrological regimes, impacting upon the conservation objectives of wetland habitats and the bird species they support.</li> </ul>	<p>Due to location of AFA there is likely to significant impacts on Carlingford Lough SPA and Shore SAC</p> <p>In addition to AA impacts</p> <ul style="list-style-type: none"> <li>There is significant potential for the spread of invasive species due to works.</li> </ul>

		<ul style="list-style-type: none"> <li>• Additional sections or changes to current coastal hard defences may cause changes to the natural circulation of sediment and organic matter and lead to increased rates of erosion in adjacent coastline</li> <li>• Physical disturbance by machinery and workers during construction and maintenance could lead to a loss of habitat adjacent the hard defences and along access routes reducing habitat and altering food resources for protected birds.</li> <li>• Noise and visual disturbance causing displacement of birds</li> </ul> <p><b>Carlingford Shore SAC (adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>• Release of suspended sediments</li> <li>• Pollution</li> <li>• Changes to hydrology</li> <li>• Construction of physical barriers such as coastal walls can interrupt longshore drift, leading to increased rates of erosion impacting on habitats.</li> <li>• Physical disturbance by machinery and workers</li> <li>• Mapped areas of 'Perennial vegetation of stony banks' occur south of the proposed works, between Greenore and Cooley point, however there may be additional areas of shingle within the SAC. The extent of 'annual vegetation of drift lines' is not currently known, but it is believed to coincide with Perennial vegetation of stony banks</li> </ul> <p><b>Carlingford Lough SPA (Northern Ireland)</b></p> <ul style="list-style-type: none"> <li>• Physical disturbance by machinery and workers during construction and maintenance of the flood walls/embankments could lead to a loss of habitat adjacent to the hard defences and along access routes</li> </ul>	
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		<p>reducing the available habitat and alter or reduce food sources for protected bird species</p> <ul style="list-style-type: none"> <li>Noise and visual disturbance causing displacement of birds</li> </ul>	
Dundalk and Blackrock South	<p><b>Option 2</b> Hard Defences average height of 1.4m and a total length of 19.5km</p> <ul style="list-style-type: none"> <li>flood embankments</li> <li>walls</li> <li>demountable barriers</li> <li>road raising</li> <li>tanking of property</li> </ul> <p>Improvement of Channel Conveyance</p> <ul style="list-style-type: none"> <li>430m length of the Blackrock River to be lowered</li> <li>replacement of two undersized culverts</li> <li>two undersized parallel culverts replaced on Dundalk Blackwater</li> </ul> <p>Storage</p> <ul style="list-style-type: none"> <li>located upstream of the Castletown River requiring a short 15m embankment, along with a culvert and weir.</li> </ul> <p>Channel Conveyance, Storage OR</p> <p><b>Option 4</b> Hard Defences average height of 1.4m and a total length of 17.7km</p> <ul style="list-style-type: none"> <li>flood embankments</li> </ul>	<p><b>Dundalk Bay SAC (within, adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>Release of suspended sediments and associated nutrients or pollution incidents from machinery could lead to a reduction in water quality, affecting the extent or composition of wetland habitats</li> <li>Potential significant impacts during construction of defences on or set back from the coastline, particularly in the area northeast of Dundalk Racecourse, where replacement of current coastal hard defences is required through the SAC for a significant distance.</li> <li>Impacts from sedimentation are also likely during construction of fluvial hard defences and improvement of channel conveyance by culvert replacement and river channel dredging immediately upstream of the SAC. Erosion and sediment supply may be exacerbated downstream of the modified conveyance areas with potentially significant negative effects.</li> <li>There are likely to be intermittent impacts during flood events or maintenance activities</li> <li>Additional sections or changes to current coastal hard defences may cause changes to the natural circulation of sediment and organic matter and lead to increased rates of erosion affecting <i>Salicornia</i> and other annuals colonizing mud and sand</li> <li>Physical disturbance by machinery and workers during construction and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>There is the potential for significant direct, indirect and residual impacts to Dundalk Bay SAC and SPA.</li> <li>Option 2 was given a larger negative score (-1031) compared to option 4 (-385) in the CFRMP</li> </ul>

	<ul style="list-style-type: none"> <li>walls</li> <li>demountable barriers</li> <li>road raising</li> <li>tanking of property</li> </ul> <p>Improvement of Channel Conveyance</p> <ul style="list-style-type: none"> <li>430m length of the Blackrock River to be lowered</li> <li>replacement of two undersized culverts</li> </ul> <p>Storage</p> <ul style="list-style-type: none"> <li>located upstream of the Castletown River requiring a short 15m embankment, along with a culvert and weir.</li> </ul>	<ul style="list-style-type: none"> <li>There is likely to be a direct loss of natural and semi-natural habitat in the direct footprint and vicinity of hard defences, particularly in the area east/ northeast of Dundalk Racecourse, where replacement of current coastal hard defences is proposed through the SAC for a significant distance.</li> </ul> <p><b>Dundalk Bay SPA (within, adjacent to AFA)</b></p> <ul style="list-style-type: none"> <li>The potential impacts to wetlands from sediment or pollution events will also affect protected bird species by reducing the available habitat and/or altering or reducing food resources.</li> <li>Noise and visual disturbance causing displacement of birds</li> <li>Direct loss of wetland habitat footprint and vicinity of hard defences, particularly in the area east /northeast of Dundalk Racecourse, where replacement of current coastal hard defences is required through SPA</li> </ul> <p>The AA has concluded that even with the inclusion of the avoidance and mitigation measures, the FRM measures at Dundalk and Blackrock AFA still have the potential for adverse residual impacts on European sites and these residual impacts may be significant.</p>	
Inniskeen	<p>Hard Defence</p> <ul style="list-style-type: none"> <li>flood embankments</li> <li>walls</li> <li>253m long section of raised road</li> </ul>	<p><b>Dundalk Bay SAC 11.4 km downstream</b></p> <ul style="list-style-type: none"> <li>Release of suspended sediments</li> <li>Pollution</li> <li>Changes to hydrology</li> </ul> <p>Due to distance from AFA impacts works unlikely to significantly impact SAC</p> <p><b>Dundalk Bay SPA 10.2 km downstream</b></p> <ul style="list-style-type: none"> <li>The potential impacts to wetlands from sediment or pollution events will also affect protected bird species</li> </ul>	<p>Due to location of AFA there is unlikely to be significant impacts on Dundalk SPA and SAC however consideration must be given to potential cumulative impacts of other AFAs FRMs</p> <p>In addition to AA impacts</p> <ul style="list-style-type: none"> <li>There is significant potential for the spread of invasive species due to works.</li> </ul>

		<p>by reducing the available habitat and/or altering or reducing food resources.</p> <ul style="list-style-type: none"> <li>Noise and visual disturbance causing displacement of birds</li> </ul> <p>Due to distance from AFA impacts works unlikely to significantly impact SPA</p>	
Monaghan	<p>Hard Defences</p> <ul style="list-style-type: none"> <li>flood embankments</li> <li>walls</li> </ul>	<p>Although a hydraulic linkage is present between the AFA catchment and Lough Neagh and Lough Beg SPA, due to the distance between the sites there is not considered to be any potential impact pathway and it is therefore determined that the proposed measures put forward in the FRMP for Monaghan AFA can be screened out of requiring appropriate assessment</p>	
Termonfeckin	Improvement of Channel Conveyance	<p><b>Boyne Coast and Estuary SAC 1 km downstream</b></p> <ul style="list-style-type: none"> <li>Weir removal and dredging affect designated habitats through release of suspended sediments and associated nutrients or through pollution incidents from machinery affecting extent or composition of designated habitats.</li> <li>There are likely to be intermittent impacts during flood events on the Boyne</li> <li>Changes in channel hydrology, by increasing capacity and flow rates.</li> </ul> <p><b>Boyne Estuary SPA is 1.5 km south</b></p> <ul style="list-style-type: none"> <li>Release of suspended sediments and associated nutrients or through pollution incidents from machinery could lead to a reduction in water quality, affecting the extent or composition</li> <li>Noise and visual disturbance causing displacement of birds</li> </ul> <p>The AA concluded that following the avoidance and mitigation measures suggested the FRM measures at Termonfeckin AFA</p>	<p>Residual impacts likely from both works and maintenance dredging.</p> <p>In addition to AA impacts</p> <ul style="list-style-type: none"> <li>There is significant potential for the spread of invasive species due to works.</li> </ul>

		may have residual impacts on Boyne Coast and Estuary SAC and Boyne Estuary SPA in respect of intermittent residual sedimentation impacts on wetland habitats during flood events or maintenance following dredging of the Termonfeckin River.	
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## 5.2 Mitigation

The proposed mitigation options from CFRAMP are assessed as to the degree they ameliorate the expected impacts on NATURA 2000 sites.

General mitigation strategies are laid out in Chapter 6 of the NIS

- The principal mitigation recommendation is that the predicted negative effects should be considered further during the next stage of option development, when details of the option (e.g. visual appearance, alignment of flood defences) can be optimised through detailed feasibility studies and design in order to limit identified impacts on sensitive receptors. Where this can be successfully achieved, the implementation of mitigation measures can give rise to a reduction in the significance of the identified negative environmental effects.
- Before any works are carried out, detailed method statements and management plans (construction and environmental) should be prepared, including timing of works and information on the specific mitigation measures to be employed for each works area. Works should only be carried out once the method statements have been agreed with relevant authorities such as the NPWS and Inland Fisheries Ireland (IFI). At the project level it will not be sufficient to defer the production of construction method statements. These should be completed in the detailed design stage and should be subject to further Appropriate Assessment where potential impacts have been identified in this NIS for the FRMP.
- Consideration should be given to the planning and timing of construction works. FRM works on adjoining reaches of rivers in different AFAs should not be scheduled to occur simultaneously with each other, or with other parallel projects
- Direct instream works such as culvert upgrades or proposed measures along the riverbank have the greatest potential for negative impacts during spawning / breeding and early nursery periods for aquatic protected species. No instream or potentially significantly damaging out of river works should occur during restricted periods for relevant species and consultation should be undertaken with Inland Fisheries Ireland (IFI) in this regard

Further mitigation measures are laid out under the headings

- Avoidance of Impacts by Selecting Alternative Options and/or Design Solutions
- Mitigation of loss of habitats and species
  - Mitigation in relation to Lamprey and Salmonids
- Mitigation of Suspended solids pollution
- Mitigation of other pollution
- Guidelines to be consulted during detailed planning of the works phase

**Mitigation proposals from Sustainable Water Network that are applicable to all AFAs include:**

- Avoid unnecessary vegetation clearance, particularly trees

- Maintain a green barrier to reduce stream bank erosion
- Reinstatement of appropriate riparian vegetation once works completed
- Use of carbon-neutral concrete for all structural walls
- Ensure best practice with regard to invasive species prior, during and after construction
- Qualified and experienced ecologist on site during construction phase. Any changes in method statements and management plans must be signed off by relevant experts and authorities.
- Ensure best practice with regard to invasive species prior, during and after construction

**Table 5.2:** Assessment of effect of proposed mitigation options on assessed impacts on NATURA 2000 sites. CA= complete amelioration of likely impact, PA=partial amelioration, NO= no amelioration possible, RI=residual impact (rate: significant, insignificant, none)

Site (No)	SWAN Assessment of impact of pFRMO	AA mitigation	Assessment of AA mitigation	SWAN mitigation proposal
Annagassan	Due to location of AFA there is likely to significant impacts on Dundalk Bay SAC and SPA	<b>Dundalk Bay SAC and SPA and Strabannan-Braganstown SPA</b> <ul style="list-style-type: none"> <li>Defences set back from the coastline and river channel wherever possible.</li> <li>Avoid working in-channel in the River Glyde.</li> <li>Careful timing of embankment improvement in the River Glyde to avoid periods of high flow</li> <li>Hydrodynamics study/survey to assess the likely implications of coastal hard defences to erosion rates in adjacent areas.</li> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul>	PA	<ul style="list-style-type: none"> <li>Carry out all general and specific mitigation proposals.</li> <li>Incorporate Seasonal Restrictions for Non-Breeding Birds mitigation proposal from Shannon NIS</li> </ul>
Ardee	Due to location of AFA there is unlikely to significant impacts on Dundalk Bay SAC and SPA	<b>Dundalk Bay SAC and SPA</b> <ul style="list-style-type: none"> <li>Defences set back from the river channel wherever possible.</li> <li>Avoid working in-channel.</li> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul>	PA	<ul style="list-style-type: none"> <li>Carry out all general and specific mitigation proposals.</li> <li>Incorporate Seasonal Restrictions for Non-Breeding Birds mitigation proposal from Shannon NIS</li> </ul>
Carlingford and Greenore	Due to location of AFA there is likely to significant impacts on Carlingford Lough SPA and Shore SAC	<b>Carlingford Lough SPA (Ire and NI)</b> <ul style="list-style-type: none"> <li>Set hard defences back from the SAC boundary, wherever possible, to avoid impacting on designated wetland habitat.</li> </ul>	PA	<ul style="list-style-type: none"> <li>Carry out all general and specific mitigation proposals.</li> <li>Incorporate Seasonal Restrictions for Non-</li> </ul>

		<ul style="list-style-type: none"> <li>Coastal and fluvial hard defences should be set back from the river channel/coastline</li> <li>Hydrodynamics study/survey to assess the likely implications of coastal hard defences to erosion rates in adjacent areas.</li> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul> <p><b>Carlingford Shore SAC</b></p> <ul style="list-style-type: none"> <li>As above</li> <li>Survey to assess the presence of any vegetated shingle habitat and annual vegetation of drift lines.</li> </ul>		Breeding Birds mitigation proposal from Shannon NIS
Dundalk and Blackrock South	There is the potential for significant direct, indirect and residual impacts to Dundalk Bay SAC and SPA.	<p><b>Dundalk Bay SAC and SPA</b></p> <ul style="list-style-type: none"> <li>Coastal defences set back from the river</li> <li>Ecological survey to assess the habitat types and extent of potential habitat loss or damage adjacent to hard defences in the area northeast of Dundalk</li> <li>Increasing channel conveyance: Careful timing of works to avoid periods of high flow that could result in increased sediment mobilisation.</li> <li>Only carry out maintenance of the channel when absolutely necessary and, avoid periods of high flow that could result in increased sediment</li> <li>Hydrodynamics study/survey to assess the likely implications of coastal hard defences to erosion rates in adjacent areas and potential adverse impacts on <i>Salicornia</i></li> </ul>	RI likely even with proper application of proposed mitigation.	<ul style="list-style-type: none"> <li>Option 4 positions the defences at Marsh North further inland, so they are not bisecting the designated areas.</li> <li>Reject option 2 in favour of option 4.</li> </ul>



		<ul style="list-style-type: none"> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul>		
Inniskeen	Due to location of AFA there is unlikely to be significant impacts on Dundalk SPA and SAC however consideration must be given to potential cumulative impacts of other AFAs FRMs	<b>Dundalk Bay SAC and SPA</b> <ul style="list-style-type: none"> <li>Coastal defences set back from the river</li> <li>Avoid working in-channel</li> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul>	CA	<ul style="list-style-type: none"> <li>Carry out all general and specific mitigation proposals.</li> <li>Incorporate Seasonal Restrictions for Non-Breeding Birds mitigation proposal from Shannon NIS</li> </ul>
Termonfeekin	Residual impacts likely from both works and maintenance dredging.	<b>Boyne Coast and Estuary SAC and Boyne Estuary SPA</b> <ul style="list-style-type: none"> <li>Employ best practice sediment control measures.</li> <li>Detailed design should include mitigation against scouring.</li> <li>Careful timing of works to avoid periods of high flow that could result in increased sediment mobilisation.</li> <li>Only carry out maintenance of the channel when absolutely necessary and, avoid periods of high flow that could result in increased sediment</li> <li>Avoid carrying out construction work out and maintenance of hard defences in the over-wintering period (November - March).</li> </ul>	RI likely even with proper application of proposed mitigation.	<ul style="list-style-type: none"> <li>Carry out all general and specific mitigation proposals.</li> <li>Incorporate Seasonal Restrictions for Non-Breeding Birds mitigation proposal from Shannon NIS</li> </ul>

### 5.3 Recommendations

- FRMPs at a number of AFAs have the potential to impact on Dundalk Bay SAC and SPA. The cumulative impact of these works has not been assessed in terms of long term changes in flow rate and sedimentation. The timing of the works at AFAs should not be scheduled to occur simultaneously with each other. However, to avoid disturbing wintering birds work should not take place November – March. Additionally, a number of rivers in UoM06 are important for salmon, native wild brown trout, eel and lamprey. To protect these species, culverting, dredging operations and in-stream works should be to be undertaken outside the spawning and early life stages, i.e. October to May inclusive. This leaves four months within the year to undertake such works. It is probably that works will occur outside these 4 months, leading to additional avoidable impacts.
- Given the need to protect existing human settlements, much of the proposed flood management work is structural. Within the Draft Flood Risk Management Plan non-structural measures were not considered in the development of options based on structural measures. However, we believe non-structural measures should be evaluated in the earliest plans and should have bearing on the development of structural measures and not simply be complementary to them. Integrated flood management using the best mix of structural and non-structural measures, including addressing objectives at a basin level rather than isolated flood management options should be the starting point of FRMPs.
- SWAN understands the need for, and public pressure for localised structural FRMOs. However hard engineering solutions often have short-lived usefulness or unintended negative consequences. The unprecedented change in our climate due to global warming requires a strategy to manage floods in an ecological manner on a landscape/catchment basis using non-structural methods such as:
  - Preventing the drainage of bogs and wetlands and working with locals to end turf cutting
  - Restoring dredged and canalised tributaries
  - Restoring natural flood plains
  - Reducing surface run-off by blocking drains, planting native woodlands and reducing over-grazing and burning in our uplands.
  - Conserving, protecting and restoring vegetation and forests in mountainous areas, riparian woodland and meadows.

Such measures may be less acceptable to residents in flood affected areas than hard engineering solutions. Organisations like SWAN and SWAN have a role in helping the general public understand the benefits of landscape/catchment solutions to flooding. Related to this, there is a need to change the perception in some areas that such environmental groups advocate for nature over people and property.

- Public consultation days influence the choice of preferred FRMO. Environmental groups need to have a stronger presence at these.
- Monitoring of baseline environmental conditions and significant effects on the environment as a result of the implementation of the FRMOs must be transparent and the

results of such should be made available online throughout the project. Results from these should also be available as part of a meta-review of case studies of mitigation options to help interest groups assess the effectiveness of proposed mitigations.

- Maintenance of completed projects should strictly adhere to Appropriate Assessment recommendations. Any unforeseen maintenance should be subject to Appropriate Assessment.
- To prevent driving further climate change, where structural flood protection is deemed necessary, all concrete used for the structural works should be carbon-neutral (i.e. slag-based rather than Portland cement based).

The potential for residual impacts following mitigation were identified from proposed FRM options at Dundalk & Blackrock South and Termonfeckin. These potential impacts would need to be investigated further at the detailed design phase, with site-specific hydrological, hydraulic, ecological and bird surveys required to undertake a detailed Stage 2 Appropriate Assessment.

If significant negative residual impacts on NATURA sites adjacent to the proposed FRM works are still identified, other flood control options need to be considered for these areas.

## 6 Integrated Flood-Risk Management

In its recommendations for better policy integration, the EU WFD Common Implementation Strategy document on hydromorphological pressures states that:

***'Flood-risk management is probably the policy with the best potentialities for synergies with other aspects of water management, provided that adequate strategies are implemented. In some cases, traditional engineering solutions (dams, channelisation or dykes) have not delivered the expected results. The occurrence of floods cannot be reduced completely and the consequences of future floods are likely to have an increasing social and economic impact. Moreover, the prioritisation for locating flood defences to protect particular sites or land uses is being reviewed. Thus, another approach of flood-risk management is now promoted: an integrated flood risk management focusing on prevention, protection and preparedness (including forecasting). In this framework, , making space for river and coastal flooding in the areas where the human and economic stakes are relatively low, represents a more sustainable way of dealing with floods.'***<sup>31</sup>

Taking a catchment based approach represents a more sustainable way of dealing with floods.

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<sup>31</sup> CIS (2008) *Common Implementation Strategy for the WFD*. Policy paper on WFD and hydromorphological pressures. Focus on hydropower, navigation and flood defence activities. Recommendations for better policy integration.

## 6.1 Catchment-Based Approach

Catchment flood management is described as '*an approach to coordinating measures to manage flood risks. It offers a framework where many aspirations and plans can be brought together in a coherent and flexible way to manage pressures across catchments.*'<sup>32</sup> As acknowledged in the FRMP, the use of structural engineering measures has been the predominant method of addressing flood risk in urban areas through the use of flood relief schemes. However, it is now government policy (Flood Policy Review) to take a new approach to flood-risk management, and this is also described in the FRMP (pg. 4) as moving towards:

- **'A catchment-based context for managing risk;**
- *More pro-active flood hazard and risk assessment and management, with a view to avoiding or minimising future increases in risk, e.g., from development in floodplains; and*
- *Increased use of non-structural and flood impact mitigation measures.'*

The full potential of taking an integrated catchment management approach has not been realised in the FRMP, as there has been a lack of full coordination with the WFD and integration and alignment with the development of the RBMP.

The FRMP states that '*engineered solutions to manage existing and potential future risks are likely to continue to form a key component of the overall national flood risk management programme and strategy*'. SWAN acknowledges that in some instances, structural engineering solutions may be, for various reasons, either the only option, or necessarily part of the solution required to address flood risk. However, at present the plans as presented are overly reliant on such options, neglecting to fully consider the catchment-based approach, which would mandate increased use of measures such as NWRMs and other win-win options for both the WFD and FD. In fact, there are a significant number of measures that could be taken to reduce the risk of flooding that could also contribute to achieving WFD objectives. These 'win-win' measures include:

1. Increasing natural retention and storage capacity (e.g. floodplain restoration);
2. Adaption of structural measures (e.g. flood defences) to take WFD obligations into account; and
3. Using Sustainable Drainage Systems (SuDS) and increasing storm drain capacities to decrease urban flooding.<sup>33</sup>

In terms of an illustrative example, the catchment-based approach proved key to the success of the Farming Floodplains for the Future project in England:<sup>34</sup>

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<sup>32</sup> Scottish Government.

<sup>33</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.

<sup>34</sup> Jones M. (2010) [Farming Floodplains for the Future](#). Final Report. Staffordshire Wildlife Trust.

*'Its aim has been to understand, through delivery, how the farmed landscape can be viably managed in ways that reduce flood risk downstream, whilst enhancing the natural environment. Through successful delivery (including eight demonstration sites featured in a series of case studies), the project has shown that farmers and landowners can be engaged in flood risk management and, with the right incentives, can be encouraged to implement flood-alleviation measures on the ground. The key to success is taking a catchment-wide approach, focussing in headwaters and on tributaries, delivering cumulative gain through the downstream. The project has shown that this can be achieved through simple, natural, low-tech solutions, resulting in schemes that are sustainable, cost effective, require minimal maintenance and fit comfortable alongside existing farm enterprises.'*

It is negligent and demonstrative of worryingly narrow thinking that such catchment-based approaches to land-use management and NWRMs, incorporating for example agri-environmental schemes has so far been excluded to the extent that it has from the FRMP measures.

## 6.2 Natural Water-Retention Measures

Increasing the natural retention and storage capacity is an example of a Natural Water Retention Measure and this can be used as part of a natural flood-management strategy. Natural flood-management is used to reduce and delay the volume of water flowing downstream which will in turn reduce the flood level and risk. The Commission view is that *'Flood risk management should work with nature, rather than against it'* and that the *'ecosystem based approach is a more efficient way of adapting than simply focusing on physical infrastructure'*.<sup>35</sup> The Commission has given examples of natural flood-management strategies that could meet the requirements of the FD and WFD as follows:<sup>36</sup>

- **'Storing water'** by using and maintaining the capacity of ponds, ditches, embanked reservoirs, channels or land;
- **Increasing soil infiltration**, potentially reducing surface runoff, although this can be offset by greater subsurface flows. Free draining soil will make saturation less likely, and evaporation from soil can also make space for water;
- **Slowing water down** by increasing resistance to its flow, for example, by planting floodplain or riverside woods; and
- **Reducing water flow connectivity** by interrupting surface flows of water, for example, by water storage or planting buffer strips of grass or trees.'

Ireland-applicable examples of natural approaches in reducing flooding, including NWRMs, and which should be included as measures in the FRMP, are presented in Table 5.1.

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<sup>35</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. European Commission DG Environment, Brussels, Belgium.

<sup>36</sup> EC (2014) *Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (Water Framework Directive (WFD 2000/60/EC)*. Resource document. European Union, Luxembourg.

**Table 6.1** Natural approaches in reducing flooding (Source EC, 2011) <sup>37</sup>

Technique	Potential locations	Key goals
Hedgerow planting and management	Planted across slope along existing field boundaries	To enhance infiltration and storage within soils, and to impede overland flow of water and sediments
Blocking of inappropriate artificial drains using dams (permanent)	Any artificial drain throughout catchment, provided it would not increase flood risk to structures or property	To slow flows, enhance water storage and intercept excess sediments. Will eventually fill in over time
Wetland restoration	Flat upland areas, hillfoots and floodplains prone to waterlogging	To enhance flood storage capacity throughout the catchment
Native mixed woodland on hillslopes	Deforested and drained hillslopes	To intercept rainfall and enhance soil storage capacity, and to reduce erosion
Planting riparian buffer zones, or water margins	All watercourses, particularly heavily modified watercourses and those within artificially drained areas	To impede overland flow, enhance soil storage capacity and intercept mobilised debris and sediments

The Commission has stressed *'the need to improve long term flood risk management policies'*, and that natural flood-management and green infrastructure have important roles to play in future measures to prevent flood damage, particularly in view of climate change. This approach can provide a 'win-win' for FD, WFD and climate change mitigation objectives by eliciting benefits such as:

*'Contribution to the protection and restoration of ecosystems (floodplain and coastal ecosystems), mitigation of climate change impacts by conserving or enhancing carbon stocks or by reducing emissions caused by e.g. wetland and river ecosystem degradation and loss and, provision of cost effective protection against some of the threats that result from climate change such as increased floods'*.<sup>38</sup>

The negative impact that hard engineering can have on water quality and ecosystems makes it all the more important that other solutions that work with nature are given more prominence than at present in the FRMP. As the Commission emphasises:

*'Working with nature and strengthening ecosystems and their services to reduce flooding is about restoring rivers' natural ability to store or slow down flood waters the restoration of floodplains and wetlands [...] This can be achieved by Green Infrastructure restoring natural features and characteristics of catchments and coastlines, such as wetlands, floodplains ...'*<sup>39</sup>

<sup>37</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. European Commission DG Environment, Brussels, Belgium.

<sup>38</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. European Commission DG Environment, Brussels, Belgium.

<sup>39</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. Note by DG Environment.

Under the FD Article 4, Member States need to take floodplains as natural retention areas into account when assessing the adverse consequences of future floods; the value of floodplains' potential as natural retention areas is also asserted under Article 7 when it comes to developing flood-risk management plans. The restoration of floodplains and wetlands are an example of NFWM and should be included as a measure in the FRMP. This is the type of measure that could contribute to achieving both FD and WFD objectives. The Commission has summarised their usefulness in this aspect and for reducing flooding in Belgium by stating that:

*'The goods and services that wetlands provide to humanity are numerous and fundamental to meeting some of [the] most basic human needs. Wetlands are an effective buffer against flooding as they can store water in their soil or retain it as surface water thereby slowing down the rate of flooding. Wetlands and areas set aside for temporary storage of flood water have proved successful in reducing flooding for instance in the recent Belgian floods.'*<sup>40</sup>

The conservation and restoration of the natural functions of wetlands and floodplains are a key feature of integrated flood-risk management, providing opportunities for synergies with the WFD as described in the WFD CIS,<sup>41</sup> in which examples of how and where this has been implemented successfully are described. For example:

- Space for River in the Loire/Alliver
- Room for the River in the Rhine Delta
- Making Space for Water in England
- Flood Plain Restoration in Tisza
- Coastal Flood Plain Restoration in the Wash in England

### 6.3 Integrated Governance

One of the major obstacles when it comes to water management in Ireland is the lack of coherent legislation and integrated governance. This was highlighted in the FRMP SEA for the Shannon UoM 25/26 but could equally apply to UoM 6:

*'Stakeholder consultation undertaken to date confirms that there are a number of conflicting legislative requirements for water resources in the Shannon catchment, and that RBD/catchment-level integrated management plans for all water-related issues (abstractions, proposed developments, wildlife protection etc.) would be of national interest and benefit if scoped and resourced appropriately. Strategies do not currently exist for such integrated plans, but the increased need for sustainable water management may soon identify the need for such plans.'*

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<sup>40</sup> EC (2011) *Towards Better Environmental Options for Flood Risk Management*. Note by DG Environment.

<sup>41</sup> CIS (2008) *Common Implementation Strategy for the WFD*. Policy paper on WFD and hydromorphological pressures. Focus on hydropower, navigation and flood defence activities. Recommendations for better policy integration.

It is clear from extensive work on implementation of the Water Framework Directive over the past 15 years that an integrated approach is crucial to effective water management. Developing the Plans is the only a minor step in the context of the significant challenging in implementing them. In fact, there is now consensus amongst key government bodies and water management experts including the Department, the EPA and City and County Managers Association (CCMA) that as stated in the 2010 River Basin Management Plans themselves, implementation of the WFD failed in the first cycle because river basin management was '*assigned across a range of organisations with no single body having ultimate responsibility*' and that water management was '*fragmented along administrative lines*' and thus did not '*facilitate analysis, identification and implementation of the most cost-effective solutions to manage water...*' These conclusions apply equally to that particular area of water management being addressed in the FRM Plans, that is flood management and there is much that can and should be learned from the failure of the first WFD cycle in relation to necessary conditions for successful implementation.

SWAN has made a number of submissions to the Department regarding integrated governance,<sup>42</sup> a detailed discussion of which is beyond the scope of this submission. However suffice to say here that the proposed new governance system, which has been developed by the Department, does not provide the mechanisms necessary for the best-practise Integrated Catchment Management approach being promoted by the EPA; that is mechanisms to facilitate catchment-level decisions regarding selection of regarding the selection and implementation of water management measures, at a catchment level, including flood management. So it is regrettable that the OPW appears to play a particularly peripheral role in the new water management arrangements with very little ongoing day-to-day collaboration with the EPA Catchment Management Unit. Furthermore it is unclear whether and how the role of Local Authorities in implementing the FRM Plans will be incorporated into the new water governance system.

In addition to administrative arrangements a fundamental element of governance are the underpinning formal institutions, including laws and policies.<sup>43</sup> However, here too a fragmented approach to floods management is evident. Under the Regulations transposing the Floods Directive<sup>44</sup>, the OPW is the competent authority for implementing the Floods Directive and has the responsibility for developing the preliminary flood-risk assessment, the flood risk and flood hazard maps, and for developing the FRMPs, which need to be approved by the Minister for Finance. However once completed, it is the Local Authorities who decide whether to adopt the plans; the OPW '*have an oversight responsibility to monitor and report on progress in implementation*', but the responsibility for implementing the measures proposed in the plans lies with '*various organisations*' as outlined in the FRMP (pg. xxx). There is also a requirement that the OPW '*promote the co-ordinated implementation of the Directive across river basin districts or other units of management*'. It is unclear how this coordination will be achieved and how an integrated catchment-based

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<sup>42</sup> For example SWAN (2010) SWAN proposal for a new system of water governance. Sustainable Water Network, Dublin.

<sup>43</sup> OECD (2011) OECD Studies on Water: Water Governance in OECD Countries — A Multi-Level Approach. Organisation for Economic Co-operation and Development, Paris.

<sup>44</sup> European Communities (Assessment and Management of Flood Risks) Regulations 2010.



approach to flood management will be achieved given that implementation is the responsibility of authorities whose borders are administrative rather than catchment-based. This appears to represent a perpetuation of the fragmented approach to water management criticised in the 2010 River Basin Management Plans.

## 7 Public Participation and Active Involvement

Notwithstanding the extensive (and presumably costly) information and communications exercise in which the OPW and its consultants have engaged, it is SWAN's contention that the OPW's public engagement on the draft Flood Risk Management Plans is unsatisfactory and flawed in a number of fundamental ways. These relate to the requirements of the Aarhus Convention and the Floods Directive regarding, respectively, early and effective opportunities for the public to participate in decision-making and the requirement to encourage active public involvement.

In addition to the specific obligations in the Floods Directive, discussed below, the FRM Plan has numerous environmental dimensions and consequently requires the application of demonstrably rigorous public participation as described in Article 6 of the Aarhus Convention,<sup>45</sup> which specifically refers to public participation rather than consultation, and specifies what is necessary for public participation where "*decisions on proposed activities ... which may have a significant effect on the environment*" (Clause 1 b) are being considered". Most importantly, Article 6, clause 8, specifies that "*due account is taken of the outcome of public participation*" in any decision. The Convention also gives extensive details as to the provision of information for the public. Article 6 of the Environmental Impact Assessment Directive also requires that '*The public concerned shall be given early and effective opportunities to participate in the environmental decision-making procedures.*'

### 7.1 Public Participation - Requirements of the Floods Directive

The Floods Directive requires only that Member States make drafts of the PFRAs, flood-hazard maps and flood-risk maps available to the public. However, as well as making the FRM plan publicly available, there is an additional specific obligation to '*encourage active involvement of interested parties in the production, review and updating of the flood risk management plans*'. It furthermore requires that the FRMP include a summary of the public information and consultation measures/actions taken.<sup>46</sup>

### 7.2 Effective Public Participation and Active Involvement

While the Directive does not define 'active involvement', much work has been done on this in relation to the WFD, which has a similar requirement. Active involvement of stakeholders means

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<sup>45</sup> UNECE (1998) Convention on Access to information, public participation in decision-making and access to justice in environmental matters.

<sup>46</sup> FD Annex A (II) (2).

allowing them to actively participate in decision-making regarding the FRM Plan. According to the EU Common Implementation Strategy guidance document:<sup>47</sup>

*“Active involvement ... means that stakeholders actively participate in the planning process by discussing issues and contributing to their solution. Essential to active involvement is the potential for participants to influence the process.”*

A full discussion on the key elements of effective public participation/active involvement is beyond the scope of this submission, but it is well rehearsed in the literature and has been set out by SWAN in various submissions to DHPCLG.<sup>48</sup> A diverse range of mechanisms and particular techniques can be employed to actively involve the public,<sup>49</sup> which the OPW could be guided on by a relevant independent professional. Some simple distinctions are commonly recognised which broadly reflect the direction of communication and the flow of information.<sup>50</sup>

- **“Information”**, where the stakeholders are essentially passive recipients of information from the sponsor(s) of the exercise (information flowing from the sponsor(s) to the stakeholders);
- **“Consultation”**, where the stakeholders feedback their views, analyses, recommendations, and so forth, in response to a request from the exercise sponsor(s) – (information flowing from stakeholders to sponsor); and
- **“Participation”**, where the sponsor(s) and stakeholders engage in dialogue, allowing change by all parties and collaborative development of the proposal/decision or other, with stakeholders making input in designing how they participate.<sup>51</sup>

The most fundamental distinction between these categories relates to the different opportunities they provide for stakeholders to influence the outcome of the process. While specifically concerned with public agencies and decision-making, the recent [Maastricht Recommendations on Public Participation in Decision-making](#), published by the UN to support compliance with the Aarhus Convention, makes clear that *“public participation should be seen by all parties as a prerequisite of effective action and an opportunity for real influence, not merely as a formal procedural requirement”* (p.12) (SWAN’s emphasis).

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<sup>47</sup> (EC 2003) *Common Implementation Strategy for the Water Framework Directive (2000/60/EC)*. See <http://bit.ly/2cZbNK2>

<sup>48</sup> Sustainable Water Network (SWAN), 2012. SWAN Recommendations for Public Participation Mechanisms in the Department of Environment Community & Local Government (DECLG) 4-Tier Water Governance Proposal. Submission to DECLG and Sustainable Water Network (2012) Getting it Right ✓ or Getting it Right ✓ Ticking boxes vs. delivering genuine public participation in water management in Ireland. Presentation to The joint meeting of the Task Force on Public Participation in Decision-making of the Aarhus Convention & the Meeting of the Parties to the Protocol on Water & Health on ‘Public Participation in Environmental Decision Making: Focus on Water and Health’, June 2012

<sup>49</sup> E.g. Rowe, G. & Frewer, L.J. (2005) A typology of public engagement mechanisms. *Science, Technology & Human Values*, Vol. 30 (2), 251-290

<sup>50</sup> OECD (2001) *Citizens as partners: information, consultation and public participation in policy-making*. PUMA, OECD.

<sup>51</sup> Jeffery, N. (2009) *Stakeholder engagement: a road map to meaningful engagement*. No. 2 Doughty Centre series “How to do Corporate Responsibility.” Cranfield School of Management.

Rowley, T.J. & Moldoveanu, M. (2003) When will stakeholder groups act? An interest and identity-based model of stakeholder group mobilisation. *Academy of Management Review*, 28(2), 204-219.

In light of the above, to fulfil the **requirements of effective and meaningful participation**, certain conditions need to be met. Briefly, it requires that those whose interests are, or may be, affected by the matter concerned are:

- a. Made aware of their potential interest(s) and the nature of the proposal;
- b. Given access to adequate information and technical expertise to fully appreciate what is being proposed and the possible implications of this;
- c. Provided with accessible opportunities *to participate*\* in the development of the proposal, its amendment, and the decision(s) as to whether it proceeds or not, according to best available practice;
- d. Given clear undertakings on the use of their inputs, feedback on these, and transparency as to the extent of their influence on the decision-making in the process.

\* *The Aarhus Convention specifically refers to public participation rather than consultation (Aarhus Convention, 1998).*

### 7.3 Assessment of Provisions for Public Participation/Active Involvement in the Development of the FRM Plan

When examined against the above criteria from the literature, including the need for ongoing dialogue and collaborative development of the Plan with stakeholders, it is clear that the OPW has not delivered opportunities for effective public participation in the development of the FRM Plan. It has limited its engagement to information and consultation exercises and done almost nothing to encourage the involvement of stakeholders in the development of the Plan. There is no evidence of a genuine wish to develop a partnership approach with stakeholders, and there appears to be a clear democratic deficit partially due to a culture of traditional 'minimalist' consultation processes in the OPW, exacerbated by the fact that the new water governance structures are not yet fully in place, so that no mechanism exists by which to attempt to secure more stakeholder scrutiny and involvement.

In relation to provisions for basic consultation, it is SWAN's position that the public consultation on the Plans is wholly inadequate. The OPW has, by default, limited the ability of stakeholders to respond in a meaningful or significant way. The consultation on the first of these complex plans started in mid-July for a period of only ten weeks over the holiday period. This is far too short a period for stakeholders to review and assimilate the contents of the Plans and make a full response to them. There will be 29 plans in total published, with each plan containing separate measures for each AFA (300 in total). There were 9 Plans open for consultation in first ten week consultation period, each with their own separate suites of measures for specific stakeholder response, and 10 in total for this consultation deadline of the 28<sup>th</sup> October with another 10 due in November and December. SWAN requested a longer consultation period, which if the FRMPs had been aligned with the consultation on the second cycle WFD RBMPs (let it be noted that Article 7 (3) of the FD requires the coordination of the FD with the WFD when it comes to the '*active involvement of all interested parties*'), then both consultations should have occurred concurrently for a period of at least six months. It is regrettable that the request for a longer consultation period was denied due to political pressure to have the plans completed by the end of 2016.

It is therefore not possible for SWAN to provide a fully comprehensive and adequate response to all of these plans in the given time frame, as we would imagine is the case for many interested parties. It is difficult to envisage how it would be possible for an individual or for other stakeholders to adequately respond to the plans in the time given.

## 7.4 Conclusion

Principle 10 of the 1992 Rio Declaration recognised the need for all individuals to have access to adequate information on, and the ability to participate in, the decision-making process in relation to environmental issues. This principle was further articulated in law by states (such as Ireland) that subsequently ratified the 1998 Aarhus Convention, and thereby enshrined access to information, participation in decision-making and access to justice in environmental matters. Article 6 of the Convention specifies what is necessary for public participation where *"decisions on proposed activities ... which may have a significant effect on the environment"* (Clause 1 (b)) are being considered".

In light of SWAN's ongoing, vociferous advocacy for meaningful public participation, we are moved to censure the dismissive treatment of knowledgeable stakeholders during this process as undemocratic. Consequently we make our submission with the explicit reproach that flawed processes such as these not only disenfranchise the very communities they're meant to serve, but are emblematic of problem-solving strategies fatally distanced from exactly those environmental management approaches that will be most needed as manmade climate change threatens to push weather patterns in unpredictable directions beyond the palliative brink of mechanical ingenuity. The unfortunate and avoidable situations of trenchant public opposition in the cases of both domestic water charging and peat cutting demonstrate the exceptionally damaging consequences of failing to engage meaningfully with the public on water and wetland issues, and SWAN would urge the OPW in conjunction with the DHPCLG to develop and begin delivering a programme of public participation for the FRM Plan's development and implementation, in co-ordination with WFD implementation, as a matter of urgency.

## Appendix I: SWAN Member Organisations & Board of Directors

SWAN National Groups		SWAN Regional & Local Groups	
1.	An Taisce	15.	Carra Mask Corrib Water Protection Group
2.	Bat Conservation Ireland		
3.	Birdwatch Ireland	16.	Cavan Leitrim Environmental Awareness Network
4.	Coastwatch Europe Network		
5.	Coomhola Salmon Trust Ltd.	17.	Celebrate Water
6.	Eco-UNESCO	18.	Cork Environmental Forum
7.	Friends of the Earth	19.	Cork Nature Network
8.	Friends of the Irish Environment	20.	Longford Environmental Alliance
9.	Irish Peatland Conservation Council	21.	Macroom District Environmental Group
10.	Irish Seal Sanctuary	22.	Save Our Lough Derg
11.	Irish Water and Fish Preservation Society	23.	Save Our Lough Ree
12.	Irish Whale and Dolphin Group	24.	Save The Swilly
13.	Irish Wildlife Trust	25.	Shannon Whale & Dolphin Foundation
14.	Voice Of Irish Concern for the Environment (VOICE)	26.	Slaney River Trust

SWAN Board of Directors:	
Mark Boyden, Chair	Coomhola Salmon Trust
Mindy O'Brien, Vice Chair & Company Secretary	Voice of Irish Concern for the Environment (VOICE)
Karin Dubsky, Director	Coastwatch Europe
David Healy, Director	Friends of the Irish Environment
David Lee, Director	Cork Environmental Forum
Elaine Nevin, Director	ecoUNESCO