



# **FLOOD MANAGEMENT POLICY REVIEW**

## **Final Report Proposed Policy Framework**

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**FLOOD MANAGEMENT POLICY REVIEW****FINAL REPORT  
PROPOSED POLICY FRAMEWORK****DOCUMENT ISSUE**

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## 1.0 Introduction

The core business areas within Rivers Agency have been changing in recent years. In the past its role was primarily that of a Drainage Authority with a focus on arterial drainage schemes, flood protection to agricultural land and the maintenance of designated watercourses. Today Rivers Agency's role is more akin to a Flood Defence Authority focusing on flood protection in urban areas, urban flood relief schemes and the maintenance of designated watercourses. Rivers Agency is also looking to the future in terms of its role in river basin management; flood risk management; flood emergency planning; flood defence and land use planning.

Rivers Agency appointed RPS Consulting Engineers (RPS) in association with Risk Policy Analysts (RPA) to undertake an independent review of its Flood Management Policy and to provide a policy framework for the future which reflects the changing role of the Agency.

The results of the review and the options available for the future direction of Flood Management Policy and its delivery are presented in RPS's Options Report (Ref 1).

A Consultation Document (Ref 2) was also prepared to seek the views of stakeholders, interested parties and members of the public on the proposed changes to the Flood Management Policy. The Consultation Document was available for public response and comment for a 12 week period from 15 August to 6 November 2006.

A description of the consultation process and a record of the responses to the Consultation Document are presented in RPS's Consultation Process Compendium (Ref 3).

All responses to the Consultation Document were given due consideration by RPS. To assist with the evaluation process, RPS prepared a Post Public Consultation Discussion Document (Ref 4) to address and add clarity to key issues raised during the consultation process.

This Final Report draws on all the information gathered during the review and consultation process to present a proposed Policy Framework to help shape a Rivers Agency which will be able to meet the future requirements for flood management in Northern Ireland.

The opinions in this report are those of RPS Consulting Engineers: they do not reflect Government policy nor are they the views of those who participated in the consultations.

*This publication can be made available in an alternative format. For further details please contact tel: (028)90667914.*

## 2.0 Proposed Policy Framework

### 2.1 Vision and Key Aims

The changing role of Rivers Agency reflects the wider changes which are occurring through the implementation of EU policy within agriculture and the water environment. CAP Reform, the EU Water Framework Directive, the forthcoming EU Floods Directive and Northern Ireland's Sustainable Development Strategy are all key drivers which need to be reflected in Rivers Agency's vision and key aims.

The following over-arching vision of Rivers Agency is recommended to reflect the changing environment in which we live:

*'Rivers Agency by achieving business excellence, through the correct configuration of its resources, will seek to reduce risk to life and property from flooding and associated economic, social and environmental damage, through identifying and managing flood risk in an integrated, pro-active and catchment-based manner'.*

The following changes to the current key aims of Rivers Agency are also recommended:

#### Current policy aims

- a) to reduce the risk to life and damage to property from flooding from rivers and the sea; and
- b) to preserve the productive potential of agricultural land.

#### Proposed policy aims

- a) to reduce the risk to life and damage to property from flooding from rivers and the sea;  
and so,
- b) to undertake river and coastal management whilst delivering the greatest economic, social and environmental benefit, consistent with the Government's sustainable development principles.

Delivery of Rivers Agency's proposed vision and policy aims would be best achieved through a new Environment Agency for Northern Ireland which would draw together the Government Departments and Agencies with responsibility for the Water Environment. The current Review of Environmental Governance within Northern Ireland provides an ideal opportunity to instigate the integration of Rivers Agency within such a new Environment Agency for Northern Ireland.

### 2.2 Policy Development

Rivers Agency currently develops policies in-house among the Corporate Services, Development and Operations Directorates. Until recently, there has been no dedicated Policy Unit with suitably qualified professional staff. As a result policy development within Rivers Agency has tended to be disparate and under-resourced. This model of developing policy in-house differs significantly from most other Government Departments and Agencies where dedicated Policy Units have been established, for example, within DARD and DoE.

Clear policy is vital to achieve delivery of River Agency's vision and policy aims. The creation of a dedicated Policy Implementation Unit within Rivers Agency will be essential in the future to both advise Government on policy development and to translate policy into means of delivery.

## 2.3 Future Policy Needs - Rivers Agency's Main Functions

The following gap analysis of Rivers Agency's key functions is presented to compare and contrast the current situation and future policy needs.

### 2.3.1 Minimising Flood Risk

#### *Development Advice*

##### Current

- Rivers Agency has a strategic role in providing development advice to Planning Service to prevent inappropriate development in the flood plain. This has been a key factor in minimising the risk of flooding to properties in Northern Ireland.
- Rivers Agency's Planning Advisory Unit also provides expert engineering advice to Planning Service during the preparation and adoption of Area Development Plans.
- Rivers Agency's Operations Directorate and particularly the Agency's Area Offices also provide expert advice to Planning Service in relation to drainage implications of planning applications.

##### Future Requirements

- Development Advice is an essential component of future Flood Risk Management Policy.
- The new Planning Policy Statement (PPS15) places the onus on the applicant to provide the necessary information where an assessment of flood risk is required to facilitate the proper consideration of a planning application. In-house Rivers Agency expertise will however be required to assess the adequacy of the risk assessments.
- Rivers Agency is also consulted by Planning Service from a drainage aspect on selected individual planning applications. The number of these case files has been significantly increasing in recent years and is continuing to grow. Additional resources are required to deal with these growing demands.

### 2.3.2 Assessing Flood Risk

#### *Flood Risk*

##### Current

- Flood risk from rivers and the sea is the combination of the likelihood of flooding and its impact. The clearest available indicator of flood risk is the record of previous flooding events. Rivers Agency has created an archive of previous flooding events. Whilst the information is incomplete and the quality varies quite dramatically, it is of fundamental importance to the Rivers Agency in responding to flood emergencies and in assessing the viability of providing future flood protection.
- The evaluation of flood likelihood involves a statistical analysis of flow records which have been gathered since the 1970s. Rivers Agency is continuing to collect and analyse flow

records. These records provide a basis for estimating flood risk for those rivers specifically monitored and also a sound basis for estimating flows on other watercourses.

- Rivers Agency in conjunction with Planning Service is advancing the development of Flood Risk Maps for Northern Ireland.

#### Future Requirements

- Flood Risk Management Plans will be required in accordance with the EU Floods Directive (subject to its adoption). The development of Flood Risk Management Plans is of key importance to the future management of flood risk in Northern Ireland and will be needed irrespective of the status of the EU Floods Directive.
- The likely impact of climate change needs to be taken into account. Changes to the climate are likely to increase the risk to life and damage to property from flooding from rivers and the sea. This challenges the current methods being used to estimate flood risk and creates the need to look beyond historic events by the incorporation of scenario based assessments for areas at risk.
- The Flood Risk Management Plans will need to be integrated with the River Basin Management Plans required by the EU Water Framework Directive.
- A fixed timeframe for delivery will be required in accordance with the Floods Directive (subject to its adoption) and the EU Water Framework Directive.

### 2.3.3 Responding to Flood Risk

#### *Flood Warning Systems*

##### Current

- Since it is not practical to entirely eliminate the risk of flooding, flood warning systems can play an important role in reducing the impact of flood events by providing a period of time during which domestic and non-domestic property owners can make preparations such as sand-bagging their properties and moving items of value to upstairs areas in advance of the flood occurring. In GB the flood warning systems have been integrated to provide the general public with a national 'Floodline' service.
- Rivers Agency does not currently operate any formal flood warning system.

##### Future Requirements

- There are only limited opportunities to introduce an effective flood warning system given Northern Ireland's location on the extremity of the British Isles and its topography which tends towards smaller, flashier catchments compared to GB.
- The opportunities to introduce Flood Warning Systems appropriate to Northern Ireland should be periodically reviewed.

#### *Flood Alleviation Schemes and Development Infrastructure*

##### Current

- Whilst the proactive advice given during the area development planning process guards against future flooding problems, Rivers Agency will continue to be required to undertake major engineering works to refurbish ageing infrastructure, cater for new permitted development and upgrade levels of flood protection to design standard.

- The current prioritisation of major flood alleviation schemes relies, to a degree, on expert judgement and knowledge of the history of flooding. The benefit-cost viability of potential schemes is then assessed using Treasury Guidance on Appraisal and Evaluation in Central Government to determine the flood damage avoided. Rivers Agency is committed to undertaking its functions in a manner which is sympathetic to environmental and social needs, however, these aspects are not formally valued in the scheme selection process. The selection process will be greatly enhanced by the availability of Flood Risk Maps for Northern Ireland in 2007.
- Development Infrastructure Schemes are identified during the area development consultation process. Schemes often entail culvert upgrading to increase capacity to cater for increased run-off from new developments.
- Development infrastructure schemes, flood alleviation schemes, storm water drainage schemes and to some extent back drainage issues can give rise to confusion, particularly from the public's point of view, as to which organisation is responsible for dealing with urban flood events – Rivers Agency, Water Service or Roads Service.

#### Future Requirements

- The move to flood risk management and sustainability drivers may entail the use of 'new' catchment based solutions with greater integration among economic, environmental and social objectives.
- Priority status should be given to the Greater Belfast Area which contains the highest concentration of properties at risk from flooding.
- Drainage Infrastructure Charging is expected to recoup the cost of Development Infrastructure Schemes. In-house expertise will however be required to operate the scheme.
- An inter-departmental policy is required to develop catchment based storm and surface water management plans to ensure joined up thinking among the relevant agencies with a view to effectively dealing with urban flooding issues.

### ***Emergency Response and Recovery***

#### Current

- Rivers Agency takes the lead role in the inter-agency Flood Strategy Steering Group and Flood Liaison Group which were set up to promote a co-ordinated response to fluvial, coastal and urban (pluvial) flood emergencies. At present those parties with primary responsibility are: Rivers Agency, Water Service and Roads Service.
- Rivers Agency's operational staff have a key role to play in effectively dealing with fluvial and coastal flooding incidents.

#### Future Requirements

- The responsibilities for Emergency Response and Recovery within Northern Ireland have been broadened through the Review of Public Administration which will give responsibility for Civil Contingency Planning to the new seven Councils which are expected to be operational in 2009. It is therefore timely to undertake a review of the current Emergency Response and Recovery arrangements given the changing roles and responsibilities.
- The Civil Contingencies Framework in Northern Ireland is not yet a statutory instrument but new legislation is being proposed.
- Belfast City Council has already advanced plans for civil contingency through the creation of the Belfast Resilience Forum in which Rivers Agency actively participates.

- The new councils, over time, through their over-arching civil contingency planning role may be better placed to lead and co-ordinate all emergency response and recovery functions, under which umbrella Rivers Agency would continue to play a key role.
- Rivers Agency's role would be to continue to undertake emergency operations within rivers such as clearing of blockages and protecting property.
- Rivers Agency would also focus on understanding why a fluvial or coastal flooding event happened and taking action to protect against recurrence.
- Rivers Agency would however not be best suited for organising the evacuation of the public during a flood event including finding shelter and food and the clear up exercise after the flood event.
- It is recommended that the performance of the Belfast Resilience Forum be monitored as it evolves with a view to evaluating the pros and cons of this type of forum being able to provide an enhanced, co-ordinated emergency response vehicle to fluvial and coastal flooding incidents.

### **Communications Strategy**

#### Current

- Rivers Agency has not advanced the development of an effective Communications Strategy.

#### Future Requirements

- A Communications Strategy is needed to provide the general public with information as to whether they live in an area at risk of flooding and to focus on building resilience through education to prepare households for the eventuality of flooding and how to respond.
- The Strategy should be advanced in parallel with the development of the Flood Risk Maps for Northern Ireland in order that implementation can commence as soon after quantitative information becomes available.
- The proposed Floods Directive, similar to the EU Water Framework Directive, would require a high degree of public participation in the development of the Flood Risk Management Plans. This is a key aspect of the Directive and may require the establishment of a stakeholder advisory forum.

### **Coastal Flooding and Erosion Management**

#### Current

- At present, coastal erosion is not perceived to be a major issue in Northern Ireland but it will become more important in the future given the likely sea level rise which will result from climate change.
- Rivers Agency is currently responsible for the maintenance of 26 km of designated coastal flood protection defences under the Drainage Order. An administrative arrangement is in place whereby each Government Department takes responsibility for providing erosion protection of the coastal assets such as coastal roads, railway embankments etc for which it is responsible.
- Notably the Lagan Tidal Barrage, which was constructed as part of the Lagside regeneration scheme to improve water quality by controlling river levels, is not controlled by Rivers Agency.
- It is evident that the current piece-meal administrative arrangements for the protection of the coast are inappropriate.

### Future Requirements

- The Lagan Tidal Barrage controls river levels within the lower reaches of the Lagan and therefore has the potential to influence flood levels within parts of Belfast during storm conditions. The operators of the barrage need to be aware of the associated flood risks and a direct line of communication should be established with Rivers Agency to establish operating procedures during flood events.
- Shoreline management plans are required to manage the coastline in a holistic manner in the knowledge that works along one stretch of coastline are likely to impact on other areas within the natural coastal sediment cells and these should be linked to the Flood Risk Management Plans.
- Coastal flooding is an integral part of Flood Risk Management. An overhaul of the policy and the responsibilities assigned to the coastline is therefore required to achieve a more integrated approach to coastal management. Rivers Agency would be well placed to take a lead role in Coastal Flood and Erosion Management. A new Environment Agency for Northern Ireland would be best placed to be the regulatory authority for dealing with coastal issues.

### **River Maintenance**

#### Current

- Rivers Agency maintains 6,800 km of rural and urban watercourses, designated by the Drainage (NI) Order 1973. The work is largely carried out by Rivers Agency's Direct Labour Organisation (DLO), with some additional resources of Contractors.
- Rivers Agency's remit has been to undertake maintenance works with the minimum of environmental damage. Work programmes are agreed with DCAL Inland Fisheries and the Environment & Heritage Service and mitigation measures are agreed before commencement of the works.
- The DLO has developed an expertise in working effectively within environmentally sensitive watercourses and relations with their fisheries and environmental counterparts are very good at operational level. Limited river enhancement works are made as the work proceeds, where appropriate, under the provisions of the Water Order (NI) 1999.
- Rivers agency also has administrative responsibilities under Schedule 5 and Schedule 6 of the Drainage Order 1973:
  - (i) Schedule 5 of the Drainage Order 1973 places a statutory responsibility on riparians to maintain undesignated watercourses in a state of efficiency for the due discharge of any water that may flow into them; and is not impaired by reason of any act or omission of his or by anyone acting under his authority; and
  - (ii) Schedule 6 of the Drainage Order 1973 involves the issuing of consent to any persons wishing to place solid matter, structures, bridges etc into a watercourse where this is likely to affect the flow of water in the watercourse; or impede any drainage work; or impede the passage of fish; or interfere or in any way hinder the maintenance of the watercourse.

#### Future Requirements

- All future Government Policy must adopt the principle of Sustainable Development. Rivers Agency's river maintenance programme must therefore reflect economic, social and environmental needs.

- The current policy aim ‘to preserve the productive potential of agricultural land’ does not reflect the totality of Northern Ireland’s Sustainable Development objectives. The proposed policy change ‘to undertake river and coastal management whilst delivering the greatest economic, social and environmental benefit, consistent with the Government’s sustainable development principles’ is intended to reflect the wider context in which the function of river maintenance, particularly in rural areas, should lie.
- An onus is therefore placed on Rivers Agency to plan river maintenance work on designated watercourses taking on board all three aspects of Sustainable Development:
  - a) Economic – including the potential impact on the productive potential of agricultural land and other uses such as angling and recreation;
  - b) Social – impact on the rural community as a whole; and
  - c) Environmental – to protect and enhance the environment, including halting the loss of biodiversity.
- The proposed change in the policy is aimed at achieving a balanced approach to river maintenance, particularly in rural areas – it is recognised that rural maintenance must, and should, continue. Likewise, opportunities should be taken to recreate wetlands where it is appropriate to do so.
- To achieve this balanced approach to river maintenance, preparatory studies and consultations on a waterbody by waterbody basis should be undertaken in advance of river maintenance works taking place including an element of stakeholder participation. In practice, the Operational Units of Rivers Agency are already adapting to current Government thinking by consulting with EHS and DCAL in advance of river maintenance works taking place.
- The river maintenance work should also be planned in the context of delivering the objectives of the EU Water Framework Directive as well as conservation driven Directives, notably, the EU Habitats Directive and the EU Birds Directive.
- The specific requirements for farmers to maintain land in Good Agricultural and Environmental Condition (GAEC) take on board the principles of Sustainable Development and should also be taken into account in the river maintenance programme.
- The ethos of Sustainable Development should also extend to undesignated watercourses. Rivers Agency are responsible for administration of Schedule 5 of the Drainage Order which places a statutory responsibility on riparians to maintain undesignated watercourses in a state of efficiency for the due discharge of any water that may flow into them. Given that the maintenance of drainage channels (sheughs) is not a requirement to achieve Good Agricultural and Environmental Condition (GAEC), revised guidelines to reflect economic, social and environmental needs should be drawn up.
- It is clear that all work within rivers must be carried out in an environmentally sensitive manner for which River Agency’s Direct Labour Organisation (DLO) is eminently suited.

## 2.4 Future Policy Needs - Other Work Areas

### *Water Level Control*

#### Current

- Rivers Agency currently controls water levels in Lough Neagh and Lough Erne.
- Two small dams at Hillsborough are also owned by DARD and the maintenance of these structures lies with Rivers Agency.
- Rivers Agency also has powers and responsibilities, under Article 33 of the Drainage Order 1973, with respect to the control of dams and sluices under private ownership. Article 33 places a general statutory duty on controllers of dams to control or operate them in such a way as to minimise damage or injury to land through flooding. It also gives Rivers Agency permissive powers, where it considers necessary, to serve notice on the controller of a dam to undertake remedial works to repair any structural defects in the dam which Rivers Agency staff may observe when carrying out drainage functions in relation to watercourses. Only in the event of failure to comply with a notice, may Rivers Agency assume control of a dam.

#### Future Requirements

- The EU Water Framework Directive requires Member States to mitigate against the effects of both floods and drought in order to maintain good water quality.
- Rivers Agency may be best placed to take on a regulatory role for water level control within rivers and the larger lakes. In this case Rivers Agency would need to work closely with the Environment & Heritage Service which is likely to take on a regulatory role for water abstractions.
- A new Environment Agency for Northern Ireland would be best placed to be the regulatory authority for water level control and abstractions.
- As a logical progression, Rivers Agency or the new Environment Agency for Northern Ireland would also be best placed to be assigned responsibility for reservoir safety. This would mirror the situation in GB whereby in 2004 the Environment Agency for England and Wales was assigned the responsibility for the enforcement of the Reservoirs Act 1975. This Act provides the legal framework to ensure the safety of large raised reservoirs and applies to reservoirs/dams that hold over 25,000 cubic metres of water above natural ground level.

### *Morphology Control*

#### Current

- Rivers Agency has no current remit.

#### Future Requirements

- The EU Water Framework Directive sets morphological targets which may require the restoration of watercourses which have been heavily modified in the past, where economically feasible to do so and also subject future works to regulatory control.
- Rivers Agency may be best placed to take on a regulatory role although there may be a perceived conflict between a future regulatory role and the Rivers Agency's current operational role.
- A new Environment Agency for Northern Ireland would be best placed to be the regulatory authority for dealing with morphological issues.

**Consenting Sustainable Drainage Systems (SuDS)**

## Current

- Rivers Agency has no current remit.

## Future Requirements

- The EU Water Framework Directive will lead to Programmes of Measures aimed at achieving 'good status' in all water bodies. The programmes of measures are likely to promote the use of Sustainable Drainage Systems (SuDS).
- In this case Rivers Agency may be best placed to take on a regulatory role for these measures as they directly impact on the flow regime of watercourses.
- A new Environment Agency for Northern Ireland would be best placed to be the regulatory authority for consenting SuDS. It may be appropriate to combine the maintenance of SuDS with the maintenance of open spaces and as such the responsibility for maintaining SuDS would be better placed elsewhere in Government.

## 2.5 Policy and Legislative Arrangements

The following policy and legislative arrangements would be required to implement future Flood Risk Management Policy for Northern Ireland.

### Implementation of the Floods Directive

The transposition of the Floods Directive into national legislation would provide a timely opportunity to set out a Policy Framework for Flood Risk Management for Northern Ireland.

The implementation of the Floods Directive would make Flood Risk Management legally imperative.

In the event that the Floods Directive is not adopted, it is still proper to introduce new legislation with the same remit.

This legislation should be used to set the basis for the following:

- i) to develop, and regularly update, Flood Risk Maps for Northern Ireland taking into account economic, environmental and social factors
- ii) to provide transparent procedures for the prioritisation of capital works associated with flood alleviation schemes
- iii) to provide asset management plans for Rivers Agency's assets
- iv) to provide for the up-keep of the existing hydrometric network, and its expansion, to include sea level monitoring where necessary
- v) to maintain an archive of flood events
- vi) to take due consideration of the likely impacts of future climate change
- vii) to provide an appropriate communications strategy, including flood warning where feasible
- viii) to provide a procedure for public participation in the development of Flood Risk Management Plans including the establishment of a stakeholder advisory forum
- ix) to develop a means for co-ordinating the development of Flood Risk Management Plans for cross-border catchments with the competent authority in the Republic of Ireland
- x) to develop Flood Risk Management Plans on a River Basin District basis and to periodically review and update the Plans
- xi) to integrate the Flood Risk Management Plans with the River Basin Management Plans required under the EU Water Framework Directive
- xii) to provide fixed timeframes for the delivery of the above in line with the requirements of the Floods Directive

### Implementation of the EU Water Framework Directive

The EU Water Framework Directive has been transposed into national Regulation through the Water Environment (WFD) Regulations (NI) 2003. The Regulations establish the Department of Environment as being the competent authority for its delivery but the Regulations also cite other Government Departments as being responsible authorities for implementing aspects of the Directive within the specialist areas of their remit. DARD, the Rivers Agency's current parent Department, is cited within

the Regulations and members of Rivers Agency sit on the main Water Framework Directive Board and the inter-departmental Water Framework Directive Working Group.

The WFD Regulations (2003) provide a new Policy Framework for the protection and enhancement, where required, of the water environment. Under this umbrella there is an opportunity to empower Rivers Agency, through the provision of supplementary legislation, with the following roles and responsibilities:

- xiii) the Regulatory Authority for Water Level Control in order to mitigate against both floods and droughts
- xiv) the Regulatory Authority for all engineering works within the river channel and for the designation of Heavily Modified Water Bodies
- xv) the Regulatory Authority for the consenting of Sustainable Drainage Systems (SuDS)

The WFD Regulations (2003) and any further supplementary legislation would make the above tasks legally imperative. Whilst Rivers Agency would be well positioned to deliver these additional tasks, they would fit better within a new Environment Agency for Northern Ireland.

### Coastal Flood and Erosion Management

It is evident, through the findings of the study, that the management of the Northern Ireland coastline is currently very piece-meal and is consequently in need of significant reform. New legislative arrangements are required whereby a new Regulatory Authority is empowered with the following roles and responsibilities:

- xvi) overall responsibility for Coastal Flood and Erosion Management
- xvii) all engineering works within the coastal zone

Rivers Agency would be well placed to take a lead role in Coastal Flood and Erosion Management. A new Environment Agency for Northern Ireland would be best placed to be the Regulatory Authority for dealing with coastal issues.

### Surface Water Drainage

It is also evident, through the findings of the study, that development infrastructure schemes, flood alleviation schemes, storm water drainage schemes and to some extent back drainage issues can give rise to confusion, particularly from the public's point of view, as to which organisation is responsible – Rivers Agency, Water Service or Roads Service. This situation may be further complicated in the future with Water Service moving to a Go-Co Organisation and functions of Road Service being passed to the new Councils under the Review of Public Administration.

An inter-departmental policy is required to develop catchment based storm and surface water management plans to ensure joined up thinking among the relevant agencies with a view to effectively dealing with pluvial flooding issues. The policy needs to clearly set out the roles and responsibilities of each organisation in the development of the management plans and how proposals for new drainage infrastructure works are communicated among the agencies and incorporated into the management plans. The policy also needs to define how the management plans will be implemented in an integrated manner at an operational level. Rivers Agency should be responsible for the following activities under this proposed inter-departmental policy:

- xviii) provision of information related to culverts, inlets etc under the control of Rivers Agency

- xix) responding to fluvial or coastal flooding events by analysing why the event happened, taking action to protect against recurrence and providing on the ground work force support as part of a wider response team.

### **Review of the Drainage Order 1973 (and subsequent amendments)**

A review of the Drainage Order, as well as the Lough Neagh and Lower Bann Drainage and Navigation Act (NI) 1955, will be required to reflect the proposed changes in the Rivers Agency's policy aims and objectives.

The review of the Drainage Order should be used to set the legislative basis for the following:

- xx) to provide for flood risk management activities in compliance with the proposed Floods Directive
- xxi) to provide for management of hydromorphological pressures in compliance with the EU Water Framework Directive
- xxii) to provide for environmental enhancement works including water level management and compliance with Northern Ireland's Biodiversity Strategy
- xxiii) to provide for input to storm and surface water management plans in conjunction with other government departments.

### **Reservoir Safety**

New legislative arrangements are required whereby Rivers Agency or a new Environment Agency for Northern Ireland would be assigned responsibility for reservoir safety. This would mirror the situation in GB whereby in 2004 the Environment Agency for England and Wales was assigned the responsibility for the enforcement of the Reservoirs Act 1975. This Act provides the legal framework to ensure the safety of large raised reservoirs and applies to reservoirs/dams that hold over 25,000 cubic metres of water above natural ground level.

The new legislative arrangements should make provision for the following:

- xxiv) maintaining a register of reservoirs and making information available to the public
- xxv) ensuring that reservoir owners/operators ("Undertakers") have appointed a Panel Engineer, Supervising Engineer and Inspecting Engineer
- xxvi) ensuring that the Undertaker commissions regular inspections by a suitability qualified Inspection Engineer
- xxvii) powers of enforcement
- xxviii) commissioning essential works and appropriate engineers in the interest of safety in the event of non-compliance and recouping the costs from the Undertaker
- xxix) acting in an emergency where immediate action is needed to protect persons or property against the escape of water from the reservoir
- xxx) providing advice on legislative requirements

### 3.0 Policy Delivery and Implementation

The preferred option for policy delivery and implementation is through a new Environment Agency for Northern Ireland which would draw together the Government Departments and Agencies with responsibility for the Water Environment.

The integration of the Rivers Agency with elements of the Department of the Environment, notably Environment & Heritage Service, and DCAL Inland Fisheries would serve to strengthen the synergies between the organisations and therefore assist in both delivery and implementation of the proposed policy changes.

The opportunities for delivery and implementation of flood management within a new Environment Agency for Northern Ireland are summarized in Table 1.

Table 1 Opportunities for delivery and implementation of flood management within a new Environment Agency for Northern Ireland

Table 1: Review of Activities, Future Requirements and Opportunities within a new Environment Agency for NI.				
Activity	Existing Organisation	Future Requirements	Conclusions	Opportunities for Rivers Agency within a new Environment Agency for NI
<b>Policy development</b>	Rivers Agency develops its own policy. Until recently, policy development is been disparate with no dedicated Policy Unit with appropriately qualified staff.	Clear policy is vital to achieve objectives and identify need for resources. Greater need for environmental awareness and increasing environmental legislation (WFD, etc.) has to be addressed.	The present policy development is seen as inadequate and does not meet the needs for a forward looking integrated approach.	The new Environment Agency could provide over-arching policy that takes a holistic approach to catchment management. A small policy implementation unit could be provided to process/deliver guidance for operating sections within the new Environment Agency for NI. However, there may be conflicts between regulation and delivery which will require addressing.
<b>Development advice</b>	Advice on town and country planning applications and development plans is undertaken (but under-resourced). Rivers Agency had key input to PPS 15 which incorporates a general rule of no further development in flood plains. Some work is out-sourced.	With increased pressure for development the no development rule will be challenged. It is therefore necessary to have clarity and a defensible position linking with local authority development plans. Flood plain and risk mapping (depth, velocity, probability) is vital for risk based decisions on development proposals.	The Rivers Agency has embraced the development in flood plains issue but should move to a more risk based approach. There are current resource issues and the no-development policy has yet to be challenged.	An integrated planning section that provides information on flood risk, environmental and heritage issues goes some way towards a one stop shop for developers. Scale of new agency may obviate the need for outsourcing – advice on development should be based on in-house knowledge and expertise.

<b>Table 1: Review of Activities, Future Requirements and Opportunities within a new Environment Agency for NI.</b>				
<b>Activity</b>	<b>Existing Organisation</b>	<b>Future Requirements</b>	<b>Conclusions</b>	<b>Opportunities for Rivers Agency within a new Environment Agency for NI</b>
<b>Flood Alleviation Schemes and Development</b>	Improvement works are undertaken as needs are identified and the procedure is set out in the Drainage Order and Drainage (EIA) Regulations. This includes environmental assessment and public consultation. The design work is mostly procured through a Consultancy Framework and managed by Rivers Agency.	The move to flood risk management and environmental drivers such as functional floodplains may entail the use of 'new' solutions with greater integration with environmental objectives.	The existing organisation and legislation are not ideally suited to providing integrated approaches to flood risk management and more holistic solutions that can meet a variety of objectives (biodiversity strategy, social objectives, etc.).	Improvement projects can be addressed with greater environmental integration and input from in-house expertise. There will need to be clear definition of funding, prioritising works and expenditure unless environment schemes and Flood Risk Management schemes are individually ring fenced.
<b>Flood Risk</b>	Rivers Agency in conjunction with Planning Service is advancing the development of a Flood Risk Map for Northern Ireland. The approach follows that used in England & Wales and more recently in Scotland. This work is of key importance as it will provide Rivers Agency with a sound basis for providing development advice, prioritising flood alleviation schemes and will provide essential data with which to inform Asset Management Plans, Emergency Response Plans and Communication with the public.	Flood Risk Management Plans will be required which should take into account the impact of climate change. A fixed timeframe for delivery of the Flood Risk Management Plans will be required in accordance with the Floods Directive, (subject to its adoption).	The development of Flood Risk Management Plans is a key deliverable of the proposed Flood Risk Management Policy.	The new Environment Agency for NI provides an opportunity to fully integrate the Flood Risk Management Plans with the River Basin Management Plans required by the EU Water Framework Directive.

<b>Table 1: Review of Activities, Future Requirements and Opportunities within a new Environment Agency for NI.</b>				
<b>Activity</b>	<b>Existing Organisation</b>	<b>Future Requirements</b>	<b>Conclusions</b>	<b>Opportunities for Rivers Agency within a new Environment Agency for NI</b>
<b>Flood warning/emergency response and recovery</b>	The topography and location of Northern Ireland means flood warning is unlikely to be effective due to very short warning times. The Rivers Agency is a key partner in the Flood Liaison Group and has incident response procedures. However, the public may not be aware of flood risk and who to contact in a flood event.	More severe weather as a result of climate change may include increased rainfall, sea level rise and increased frequency and intensity of storms. This could result in an increase in fluvial and coastal flooding incidents.	Rivers Agency is not an emergency service but does provide expertise and advice as necessary in flood emergencies. There is a need for a public awareness campaign to include 'who is at risk, what to do in case of flood, who to contact, etc.'	Potential for greater inclusion to include coastal flooding and clarify role and structure of new organisation. Emergency planning and an awareness campaign could also be included but co-ordination may be more suited elsewhere in Government.
<b>Communications Strategy</b>	Some key links with Government Departments are unsatisfactory. No communications strategy. Public consulted through environmental statements where appropriate as set out in EIA Regs.	Generally greater public awareness of issues that affect them. Need for open and transparent government.	Communications with all relevant Government Departments and public needs addressing.	The setting up of a new Environment Agency for NI gives opportunity to develop an integrated communications strategy.

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<b>Coastal Flood and Erosion Management</b>	Rivers Agency is responsible for 26 km of coastal flood defences. Coastal erosion is not a major issue in NI but if there are problems resolution defaults to Rivers Agency. There is no specific Rivers Agency coastal management policy. Coastal erosion not under any remit (NI not included in Coast Protection Act).	Sea level rise and increased storminess will impact on coast and coastal communities. The proposed Marine Bill may have some impact if the landward boundary is taken as Mean High Water Spring Tide.	Coastal flood defence partly covered but no clear responsibility for overall coastal flood and erosion management.	Strategic management of the coast incorporating flood and erosion and environmental management.
<b>River Maintenance Urban watercourses</b>	The majority of Rivers Agency's workforce is involved in operations (approx 300 of the 450). Urban watercourse maintenance is seen as a priority with works associated with clearing culverts, screens and channels. Operations have good knowledge of both areas where maintenance is required and working procedures. The DLO provides flexibility in prioritising work and responding to emergencies.	Moving towards a flood risk management approach still requires maintenance of urban watercourses. However, levels of risk will dictate maintenance regimes rather than time based rolling programmes.	The change of emphasis to flood risk management will require a greater knowledge of levels of risk and how this is translated into working practices.  An integrated approach to flood risk management must include all areas at risk from both rivers and the sea.	Maintenance will still be a core function and knowledge of the area such as that found in the existing workforce will be important. The numbers required will need to be reviewed in the light of any changes to a flood risk management approach. Maintaining local bases would provide local knowledge and flexibility to react to needs.

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<b>River Maintenance Rural watercourses</b>	The Rivers Agency was initially set up to drain and maintain the drainage of agricultural land. This requirement is set out in the Drainage Order. Rural watercourse maintenance, however, now takes second place to works to reduce flooding to urban areas. The method of working has also changed in that all the work force is aware of environmental constraints (with maps of ASSIs, historic monuments, etc.) and instructions regarding access, working and disposal areas. There is good co-operation with DCAL Inland Fisheries and EHS at an operational level.	The greater environmental awareness and changes to CAP, etc. change rural watercourse management from one of drainage to water level management.	This change has already started to some extent but needs formalising which may require change to legislation.	Rivers Agency was previously Watercourse Management Division of DANI reflecting changing needs. Although change to an Environment Agency may reflect the changing need, the flood risk management aspect must not be overlooked.
<b>Environment</b>	Rivers Agency has effective dialogue with EHS Natural Heritage at operational level. However, this is not reflected at higher levels in the organisations.	There is greater public awareness of environmental issues and a need to address agri-environment schemes, Water Framework Directive, climate change and Conservation Directives in a professional manner.	At operational level there is good liaison with environmental organisations but this needs addressing throughout the organisation.	Greater integration can build on the existing informal liaison. Duty to further biodiversity can be actively addressed using Rivers Agency's expertise in river management.
<b>New roles to implement the EU Water Framework Directive eg level control</b>	Flow measurement is carried out for low and high flows. Rivers Agency manage the water levels in Lough Neagh and Lough Erne.	Rivers Agency may take lead roles on aspects of Water Framework Directive implementation such as water level control to prevent the impact of floods and droughts on water quality.	There is existing infrastructure, information and expertise but a review of whether this is adequate for future challenges will be required.	Both EHS and Rivers Agency could undertake implementation of aspects of the Water Framework Directive. There are benefits in a co-ordinated and integrated approach. EHS provides licences for abstraction, Rivers Agency has an operational role, therefore sharing of information within one organisation could be beneficial.

## 4.0 Resource Requirements and Further Studies

This Section provides an estimate of the additional costs which would be required by Rivers Agency during the lead-in period to a new Environment Agency for Northern Ireland.

It also provides a list of strategic studies which would need to be undertaken to facilitate the integration of Rivers Agency's functions within a new Environment Agency for Northern Ireland.

### 4.1 Resource Requirements

There are three main areas where either new or additional responsibilities, or enhanced input to existing work will give rise to additional costs to provide a full and effective service.

These three areas are:

- Floods Directive and Water Framework Directive;
- Coastal flood and erosion risk management; and
- Development Control.

It is assumed that other responsibilities assigned to Rivers Agency could be taken on board within the existing staffing structure.

#### Floods Directive and Water Framework Directive

The flood risk mapping, flood risk assessments and flood risk management plans required under the forthcoming Floods Directive will be an additional requirement to the work already being undertaken. Much of the work can be contracted to consultants specialising in modelling and risk assessment but a core of staff will be required to manage the work. It is beneficial to have some specialist staff with an understanding of modelling and risk assessment and they would be integrated into the present staff structure. It is difficult to put a number on this but 4 Professional and Technical (P & T) staff comprising a senior manager, two technical managers and a support manager could oversee the projects and provide the necessary links within Rivers Agency.

Additional resources will be required to provide for management of hydromorphological pressures in compliance with the EU Water Framework Directive. It is not possible at this stage to decide on the additional number of posts required in Rivers Agency but say 5 P & T staff could be used for budgetary purposes. As a benchmark, it is understood that EHS have secured 34 additional staff posts associated with implementing the Water Framework Directive.

#### Coastal flood and erosion risk management

The Rivers Agency at present manages the coast by default. To provide a pro-active service that addresses risk from flooding and erosion additional resources will be needed and these should be integrated into the technical work already undertaken for river management to ensure a consistent approach and give flexibility. There is no 'yardstick' for easily assessing how many people are required but discussions with the coastal engineers in the Environment Agency suggest that 5 P & T staff members may be appropriate. However, the actual number will depend on length of coast at risk, work required, complexity of issues, etc.

There could be additional responsibility for Rivers Agency arising from the proposed Marine Bill but numbers of staff will have to be discussed with EHS and other interested parties. It is too early to give any indication of additional Rivers Agency resource requirements.

#### Development Control

Rivers Agency contributes to Development Control but consultation has identified a current lack of resources. Linked to this is the need for an organisation to oversee the consenting of SuDS and

Rivers Agency would seem to be the most appropriate body. The importance of advice for development plans and planning applications, as an integral part of flood risk management, must not be under-estimated due to the interface with people who could be at risk due to inappropriate development. A detailed study of workloads should be undertaken but for budgetary purposes a starting point of 6 additional P & T staff could be used (2 in each region plus 2 centrally based for developing policy/process).

### Budget Costs

From the above, the additional P & T staff resources are in the region of 20. The cost of providing this extra resource will be of the order of £70,000 per person (£35,000 basic plus 100% on-cost) which gives a total of £1.4 million per annum.

This would bring the total complement of Rivers Agency staff to some 466 (an increase of 4%).

Additional funds would also be required to feed into the existing Consultancy Framework in order for Rivers Agency to meet the goals of the proposed Floods Directive and EU Water Framework Directive within the required fixed timeframes. For budgetary purposes an extra-over spend of around £600,000 per annum is recommended.

Rivers Agency's annual budget of £ 22 million would therefore have to increase to around £ 24 million (at 2006 prices) to meet the challenges set out in this report.

## 4.2 Further Studies

The following strategic studies would need to be undertaken to facilitate the integration of Rivers Agency's functions within a new Environment Agency for Northern Ireland.

### 1. Future River Maintenance Requirements

A waterbody by waterbody assessment is required to define those channels which need to be maintained and those in which maintenance should either stop or be carried out less frequently.

### 2. Business Case for undertaking Environmental Enhancement Works

A business case is required for the need to undertake river environmental enhancement works in support of:

- the significant shift in DARD policy from agricultural productivity to achieving good agri-environmental conditions
- implementation of Northern Ireland's Biodiversity Strategy
- implementation of the EU Water Framework Directive, particularly in relation to obligations with respect to Heavily Modified Water Bodies
- response to stakeholders requirements who are seeking policies to reflect a wider environmental commitment.

The outcome of these studies would provide the evidence required to decide the future size and role of the DLO and where it best fits within the new administrative structures being proposed by the Review of Environmental Governance and the Review of Public Administration.

## References

1. RPS Consulting Engineers. Options Report, June 2006
2. RPS Consulting Engineers. Consultation Document, August 2006
3. RPS Consulting Engineers. Consultation Process Compendium, December 2006
4. RPS Consulting Engineers. Post Public Consultation Discussion Document, January 2007
5. RPS Consulting Engineers. Final Report - Proposed Policy Framework, March 2007 (this report)