

Number: WG23928



Llywodraeth Cymru  
Welsh Government

[www.cymru.gov.uk](http://www.cymru.gov.uk)

Welsh Government

## Consultation Document

# Flood and Coast Investment Programme (FaCIP)

Date of issue: **17 December 2014**

Action required: Responses by **6 March 2015**

## Overview

This consultation is to consider the way that Welsh Government allocates funding for flood and coastal erosion risk management in Wales and ensuring it focuses on those places with the greatest risk. We intend to create a clear, objective way of directing funds to places at risk from all sources of flooding and coastal erosion.

## How to respond

Responses to this consultation should be e-mailed/posted to the address below to arrive by 6th March 2015 at the latest.

## Further information and related documents

Large print, Braille and alternative language versions of this document are available on request.

Insert any references to the internet, documents or information which might be useful to consultees e.g. consultation web address, detailed appendix to consultation.

## Contact details

Floodcoastalrisk@wales.gsi.gov.uk  
Flood Branch  
3rd floor  
Cathays Park 2  
Cardiff  
CF10 3NQ

e-mail: [David.Sargent@Wales.GSI.Gov.UK](mailto:David.Sargent@Wales.GSI.Gov.UK)

Tel: 02920 825175

## Data protection

### How the views and information you give us will be used

Any response you send us will be seen in full by Welsh Government staff dealing with the issues which this consultation is about. It may also be seen by other Welsh Government staff to help them plan future consultations.

The Welsh Government intends to publish a summary of the responses to this document. We may also publish responses in full.

Normally, the name and address (or part of the address) of the person or organisation who sent the response are published with the response. This helps to show that the consultation was carried out properly. If you do not want your name or address published, please tell us this in writing when you send your response. We will then blank them out.

Names or addresses we blank out might still get published later, though we do not think this would happen very often. The Freedom of Information Act 2000 and the Environmental Information Regulations 2004 allow the public to ask to see information held by many public bodies, including the Welsh Government. This includes information which has not been published. However, the law also allows us to withhold information in some circumstances. If anyone asks to see information we have withheld, we will have to decide whether to release it or not. If someone has asked for their name and address not to be published, that is an important fact we would take into account. However, there might sometimes be important reasons why we would have to reveal someone's name and address, even though they have asked for them not to be published. We would get in touch with the person and ask their views before we finally decided to reveal the information.

## Index and table of figures

1 Introduction .....	3
2 Background and Policy Objective .....	4
2.1 <i>The need for a revised system</i> .....	5
3 How flood and coastal erosion schemes are funded.....	6
3.1. <i>How flood and coastal erosion budgets are split</i> .....	6
3.2 <i>What will a Flood and Coast Investment Programme cover</i> .....	7
4. Combining flood and coastal risk into a Flood Risk Index .....	9
4.1 <i>What flood data will be used to measure risk?</i> .....	10
4.2 <i>Assessing the Likelihood of Flooding</i> .....	11
4.3 <i>Assessing Coastal Erosion</i> .....	12
4.4 <i>Quantifying the combined risk of flooding</i> .....	14
4.5 <i>Presentation of the Flood Risk Index</i> .....	16
5. Approaches to Delivery (Programme management) .....	17
5.1 <i>Application process and assessing benefits</i> .....	18
5.2 <i>Governance and approving applications</i> .....	21
Consultation Questions .....	22
Appendix 1: Options Appraisal & Evaluation.....	23

## **1 Introduction**

The Welsh Government is the primary funder of flood and coastal erosion risk management in Wales.

This consultation is to consider the way that Welsh Government allocates funding for flood and coastal erosion risk management in Wales and ensuring it focuses on those places with the greatest risk.

Understanding flood and coastal erosion risk and prioritising investment is a fundamental principle of the Flood Risk Regulations 2009, the Flood and Water Management Act 2010<sup>1</sup> and our National Strategy for flood and coastal erosion risk management in Wales<sup>2</sup>.

This principle is in line with our Programme for Government and complements the approach to securing a better Wales in the Future Generations Bill. Targeting our investment will help ensure that our resources are used efficiently, enhance resilience of our communities and infrastructure and ensure that Wales remains a safe place to live, work and invest.

This consultation proposes a new way to prioritise funding according to national priority and establish a Flood and Coastal Erosion Risk Management Investment Programme. For the purposes of this consultation we will refer to this as the Flood and Coast Investment Programme or FaCIP.

It sets out a series of questions on how such a programme would operate using a spatial understanding of flood risk to help make more informed, area based, funding decisions.

This consultation will discuss:

- Background and need for such a prioritisation programme;
- How flood and coastal erosion schemes are currently funded;
- What the Flood and Coast Investment Programme should take into account;
- How we define flood and erosion risk at a national level in terms of likelihood and consequences;
- How we should prioritise our most at risk communities – including the creation of a combined risk index;
- Approaches to delivery. How a risk index could be used, who makes the final decisions and what factors could be taken into account.

---

<sup>1</sup> *Flood risk regulations (2009), the flood and water management act (2010)*

<sup>2</sup> *National strategy for flood and coastal erosion risk management in Wales (2011)*

## **2 Background and Policy Objective**

Flooding can occur from a variety of sources; from rivers, the sea, surface water run-off, groundwater or reservoirs.

The Flood and Coast Investment Programme will use a national Flood Risk Index to combine multiple sources of flood and erosion risk to make it simpler to compare risk in different places. This will then be used to direct investment to the most appropriate areas.

We acknowledge that it can be difficult to identify the combined risk for communities due to the way floods occur. In addition, direct comparisons are hard to make between flooding, that usually causes temporary damage, and coastal erosion, which can cause irreversible damage. Therefore any combined risk will make clear the limitations that exist and be complemented by additional local evidence.

We intend to create a clear, objective way of directing funds to places at risk from all sources of flooding and coastal erosion.

**Prioritising investment in the most at risk communities** is one of the four key objectives set out in our National Strategy for Flood and Coastal Erosion Risk Management<sup>3</sup>.

The objective is made clear with the sub-objective which states that Welsh Government should:

*“Develop a National Programme of Investment for flood and coastal erosion risk management”*

With this in mind, the Welsh Government has agreed with the principle of such a programme and that:

*A National Programme of Investment should set out a prioritisation methodology to enable areas of Wales to be ranked according to risk from all sources of flooding and coastal erosion. This will then assist in focusing investment to target the most at risk communities, using the most appropriate methods to manage this risk.*

The policy objective is therefore twofold:

- To develop a methodology to prioritise areas at risk – potentially forming a single source or Flood Risk Index;
- Use the index as a starting point to guide a national funding programme that will direct funding to schemes in the highest risk areas.

A Flood and Coast Investment Programme will also influence the remaining three objectives in our National Strategy, by helping us to better understand the risk of

---

<sup>3</sup> National strategy for flood and coastal erosion risk management in Wales (2011)

flooding from multiple sources, communicate that risk in a clear way to help raise awareness, direct investment, build resilience and reduce the consequences from flood and erosion events. The remaining three objectives are set out below:

- Reducing the consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;
- Raising awareness of and engaging people in the response to flood and coastal erosion risk;
- Providing an effective and sustained response to flood and coastal erosion events.

To assist in this process, the Welsh Government set up a stakeholder group to scope the requirements of a Flood and Coast Investment Programme and devise a way in which flood and coastal erosion risk can be brought together into a combined risk index. The intention is to use that index to guide flood and coastal erosion risk funding applications alongside established cost/benefit assessments.

## **2.1 The need for a revised system**

Recent reports and research on climate change<sup>4</sup> reaffirm that climate change brings with it sea level rise, increased storm intensity and potential flood events. Such reports strengthen the business case for action, highlighting the projected impacts and costs – economic, social and environmental.

As the risk of flooding increases, so will the pressure on flood and coastal risk management budgets hence the importance of prioritising investment to ensure funding goes to the right places.

There is already prioritisation and cost/benefit analysis on flood and coastal erosion work, but many different strands of funding exist and planning ahead for larger projects can be difficult. Local priorities are currently set by each Risk Management Authority for specific areas without an overarching national assessment of where the risk may be greatest.

It is also difficult to compare the merits of a scheme at risk from river flooding to one at risk from surface water flooding, coastal flooding or coastal erosion. A national Flood Risk Index could be used as a first step to encourage dialogue and bring clarity to applications and funding decisions.

In supporting the Flood and Coast Investment Programme, an index of combined flood and coastal risk will bring multiple benefits:

- it will identify at-risk areas so that long-term planning can commence;
- it can help raise awareness in those areas;
- it will allow risk management authorities or joint public/private enterprises to prepare applications for funding with greater certainty;
- promote partnership funding and natural flood risk management; and
- ultimately, reduce risk and build resilience in communities.

---

<sup>4</sup> *Intergovernmental Panel on Climate Change (2012).  
Met Office and NERC, (2014); Heavier summer downpours with climate change (2014)*

### **3 How flood and coastal erosion schemes are funded**

The way that projects are currently funded means that schemes to address different types of flooding are considered separately. Having a number of different strands to our funding can sometimes be complex.

The majority of the Welsh Government funding is spent by either Natural Resources Wales or local authorities. The Welsh Government capital budget is allocated entirely to support Natural Resources Wales or local authority flood alleviation and coastal defence schemes.

Natural Resources Wales has developed a medium term capital improvement programme, with priorities based on its Communities at Risk Register and the Welsh Government allocates an annual capital budget to support its programme.

Grant funding to local authorities is currently made through individual applications made on a scheme by scheme basis. Local authorities prioritise according to local need and submit applications supported by project appraisal reports in accordance with national guidance.

The cost and overall benefit of any schemes is taken into account before funding is allocated. This is included in a project appraisal report and is required to support all capital projects.

Project appraisal is based on the principals of the Treasury 'Green Book'<sup>5</sup> and sets out the requirements for assessing the flood or coastal erosion risk. The appraisal of options takes into account technical, economic and environmental considerations. Having investigated the problem and completed a full appraisal of options, the report concludes whether public investment is justified and provides recommendations for a preferred scheme option.

However, there are currently two appraisal guides used by Natural Resources Wales (NRW) and the Lead Local Flood Authorities (LLFAs). Prior to a new Programme commencing, we intend to work with all Risk Management Authorities to produce nationally consistent appraisal guidance.

#### **3.1. How flood and coastal erosion budgets are split**

The Welsh Government capital Flood and Coastal Erosion Risk Management budget is currently split with around 55% going to revenue, including awareness programmes, some maintenance work and staffing for Natural Resources Wales. The remaining 45% is used for capital, including new flood and coastal risk management schemes and improvement of existing defences.

The Welsh Government capital Flood and Coastal Erosion Risk Management budget has traditionally allocated around 1/3 to local authorities and 2/3 to Natural

---

<sup>5</sup> The *Treasury Green Book – appraisal and evaluation in central Government (2003)*

Resources Wales, but this varies depending on related applications. In recent years a higher proportion has been allocated to local authorities to provide match funding for projects supported by the European Regional Development Fund.

The Welsh Government capital Flood and Coastal Erosion Risk Management budget split between local authority capital schemes and Natural Resources Wales capital programme is not currently based on an assessment of national risk due in part to the different types of flooding and responsibilities under the Flood and Water Management Act 2010. Rather it is determined by applications to address risk prioritised within each Risk Management Authority.

Better flood risk management plans and improved modelling and mapping, including surface water mapping, means that we have the capability to identify locations at highest national risk and take proactive intervention measures.

It is worth noting that there can also be a reactive response to flooding and coastal erosion. After a significant event, defence improvement schemes and funding can be directed to support affected communities, in particular when existing flood infrastructure has failed.

### ***3.2 What will a Flood and Coast Investment Programme cover***

**The Flood and Coast Investment Programme will guide Welsh Government's contribution to investment in the flood and coastal erosion risk management programme.** This will include funding currently directed to Lead Local Flood Authorities via grants and to Natural Resources Wales as grant in aid.

It is important that the most appropriate flood and coastal erosion interventions are used in each area to manage risk and build resilience. Those may be traditional 'hard' structural defences or alternative activities which use natural processes, reduce flows and create safer places.

Capital investment is traditionally the funding that goes towards physical flood and coastal defence schemes. However, it should not be limited to hard defences but be utilised for all flood and coastal erosion risk management including resilience measures and broader land management schemes.

To illustrate how much this equates to, the 2013/14 The Welsh Government capital Flood and Coastal Erosion Risk Management budget in Wales was around £15 million. This was supplemented by additional funds from Welsh Government central capital allocation and the European Regional Development Fund, bringing the total to around £32 million. The amount of funding will differ according to UK Government settlements and the contribution from alternative funding streams.

Revenue investment can be more complex. ; A large part is funding for staff working in flood risk management, but it can also include maintenance of flood defences, awareness schemes and research and may be tied in with capital



expenditure. For example, awareness raising and community support alongside a new flood defence scheme.

The Flood and Coast Investment Programme will only take the Welsh Government capital Flood and Coastal Erosion Risk Management budgets into account to begin with, but this can be used in all forms of flood risk management, with justification, in whatever way can best address risk.

It is the intention of Welsh Government to extend the Flood and Coast Investment Programme to include some of its revenue budget once the programme has been fully established and if it proves to be successful. This will ensure a longer-term holistic approach to flood risk management where all funding interventions are based on risk.

The Welsh Government capital Flood and Coastal Erosion Risk Management budget would be made available for the Flood and Coast Investment Programme with the possible exception of any external funding that is specifically tied to a certain area or type of project.

It is beyond the scope of this consultation to list exactly how risk should be addressed as this will change in different locations. We would expect interventions or schemes to follow the approach set out in the National Strategy for Flood and Coastal Erosion Risk Management. Alternatives to hard defence infrastructure should be considered where appropriate. This may include utilising our natural resources in a more beneficial way to not only reduce flood risk but also provide wider environmental and economic benefits. Investment can also be used to find out more about the risk in an area and develop options on how best to address it.

It is not intended for any investment programme to be an entirely automated process. No index can take all real-life situations into account and joining datasets together will bring limitations to its use. Section 6 discusses delivery options including a board to oversee the allocation of funding.

**Q1. Do you agree with the general need for a Flood and Coast Investment Programme as put forward in sections 2 and 3 above?**

**Q2. Do you have any comments on using the Programme for all aspects of flood and coastal erosion risk management in whatever way is most appropriate to address risk?**

#### **4. Combining flood and coastal risk into a Flood Risk Index**

Combining flood and coastal erosion risk from all sources into a single Flood Risk Index will help to prioritise investment in the right places. The index will focus attention on areas where the risk is considered greatest and promote discussions about the true risk in that area and if intervention is required.

When considering the risk associated with flooding and coastal erosion, the word 'risk' encompasses two things:

- the **likelihood** of an event happening; and
- the **consequences** that will result if an event occurs.

The risk index should consider both the likelihood and the consequences (or perceived impact) of flooding to give a true measure of risk. Assessments of probability and impact are based on information that is continually changing and improving. However, to fairly demonstrate, on a national scale, the distribution and relative levels of risk, the ranking must be produced using nationally consistent datasets.

**The Flood Risk Index should use consistent data with national coverage to ensure like-for-like comparisons.**

**Likelihood** is often referred to with return periods, for example “a 1 in 100 chance of river flooding in any given year”. We can use such likelihoods to say that an area with a 1 in 30 chance is more likely to flood than an area with a 1 in 200 chance and score it higher for the index.

**Consequences** are what could happen if flooding were to occur in a place. We propose a consistent way of assessing consequences based upon the development, infrastructure or land-use that exists in a place.

For example, if a potential flood will affect a residential area, that area will score higher than if the same likelihood flood will affect industrial units or recreational space.

Combining different types of flooding is not straightforward as their likelihood and consequences are measured and modelled in different ways, each with error margins or limitations.

**To create a Flood Risk Index, it will be necessary to have an area-based approach and an understanding of:**

- What the risks are - what constitutes nationally important risks, for example, risk to life from river or surface water flooding;
- Where the risks are - the spatial distribution of risk and if some areas are prone to multiple risk.

**We therefore require:**

- A methodology to create a national Flood Risk Index that helps focus attention on the most at-risk areas. This may use data from: current assessments e.g. the National Flood Risk Assessment (NaFRA), surface water flood maps and the National Coastal Erosion Risk Map (NCERM); or other assessments brought together and calculated in a new way.

#### **4.1 What flood data will be used to measure risk?**

In creating a Flood Risk Index we propose to consider the main sources of flooding as identified in the national strategy:

- Sea flooding;
- River flooding, including main rivers and ordinary watercourses; and
- Surface water flooding.

We envisage creating a combined index, which scores risk from these three sources.

Coastal erosion will be included in our considerations but must be scored differently due to the different nature of the risk. Coastal erosion is usually a slower process; however, there is less chance to recover from an erosion event. For example, when land is lost as a cliff retreats, the result is more permanent with less opportunities for resilience measures.

Groundwater will not be included in the initial rankings. The risk from groundwater flooding is relatively low in Wales but it will not be ignored if that risk increased or became a problem in a particular location.

Spatial datasets will continue to improve and investment decisions should be made with the best available local data and understanding the error margins associated with any data. The intention is for the Flood Risk Index to be regularly maintained and updated when there is a significant change in the underlying flood risk or coastal erosion mapping.

**Local flood risk data** is frequently better than national datasets because they benefit from local plans and knowledge on the ground. We propose that if local flood data is available and considered better than national datasets it can be used in the application or allocation process to support or override the risk index. Using local data later in the process will prevent it from skewing the index towards areas with better flood modelling.

We intend for the index to be a high level national indicator of combined flood and erosion risk, not a precise measurement of local risk.

Allowing detailed local studies during the allocation process will ensure that local sources of flooding are not ignored in decision making but that the index remains based on national risk and not the availability of detailed data. This would allow risk to be compared on reliable and fair means.

It would therefore be accepted that any combined national flood index will be a broad assessment with limitations that will be made clear to users.

Another factor in measuring risk should be observed or actual flood events. Records of flood events supplement and add confidence to flood modelling. Some places may suffer low-level flooding regularly but be missed by flood modelling and so appear as a low risk area.

The Flood and Coast Risk Index is intended to help inform funding decisions to address flood risk of national priority. Frequent flooding of a single property may not be an appropriate trigger for the programme, but annual flooding of the same 10 homes could be.

Historical or observed flooding should be a material consideration in applications for funding and included at appraisal. There is no consistent way to capture every flood and some minor floods may be the result of other factors such as blocked drains. As local authorities have a duty to report on flooding in their area, this information can be retained at a local level and used as appropriate to flag up areas that are repeatedly flooding.

## **4.2 Assessing the Likelihood of Flooding**

We propose to assess the likelihood of river, coastal and surface water flooding by using flood risk maps which show the probability of flooding. Initially this may be limited to flood risk with:

- 1 in 30 chance (or greater) of occurring in any year (3%)
- 1 in 100 chance (or greater) of occurring in any year (1%)
- 1 in 1000 chance (or greater) of occurring in any year (0.1%)

Source data could include the Environment Agency Flood Maps, Flood Map for Surface Water or National Flood Risk Assessment (NaFRA) or a national risk map introduced to replace the above.

Many areas benefit from existing flood defences which reduce the risk of flooding. However, nationally consistent defence datasets are not available; both in terms of the level of defence and also physical condition of the defence. Furthermore, no nationally available dataset is available for surface water flood defences.

If information on existing flood defences is included in the national ranking then there is a possibility that appropriate maintenance or replacement schemes are overlooked due to the assumption that an area is low risk because an existing defence will always work perfectly.

We therefore suggest that we exclude existing defences when we prepare the national Flood Risk Index with discussions on the condition of existing defences held at local Risk Management Authority level. This would provide a ranking of *maximum natural risk*, facilitating production of a consistent ranking. Defence data will be used at a local level to inform scheme appraisal and the allocations process.

Sites benefitting from some form of defence could be included as a marker on the index and map without commenting on the condition of that defence.

### **4.3 Assessing Coastal Erosion**

Coastal erosion is the term used to describe the loss of land by the action of the tide and waves. As well as the physical impact of the sea on the landmass, it includes other natural processes, such as weathering, dissolution, abrasion, corrosion and transportation.

The Flood and Coastal Investment Programme should be flexible enough to include areas at combined erosion and flood risk so that adaptation schemes can be considered.

Land lost to erosion is not usually recoverable, unlike land that is affected by flooding. Whilst the process can be slowed in some areas, intervention methods are different than in those areas only prone to flood risk - and resilience measures less appropriate.

However, coastal erosion will rarely happen in isolation. In-combination effects with coastal flooding will increase the risk to certain areas and may result in more permanent loss or degradation.

The National Coastal Erosion Risk Mapping (NCERM) project aims to provide the latest knowledge on coastal erosion in a consistent and accessible format. We intend to use information from this project to assess the impacts of coastal erosion. As with flooding we propose to gather information on both residential and non residential properties that are at risk of erosion.

It is possible to consider properties that are located in areas at risk from erosion over the short, medium and long term. Therefore, those at risk in the short-term and medium term (within the next 50 years) can be given the highest coastal risk score.

This evaluation of risk can be included alongside the ranking, but separate to the flood risk 'score' due to the different nature of the risk.

**Q.3 Do you have any comments on the proposal for a national Flood Risk Index to help understand risk from all sources?**

**Q.4 Do you agree that a Flood Risk Index should remain a high level indicator of combined risk but allow local flood modelling to be used to support evidence in applications?**

**Q.5 Do you have examples where flooding has repeatedly occurred in a place currently shown as a low flood risk?  
Please provide relevant evidence as appropriate.**

**Q.6 Do you agree that information relating to defences should be excluded from the Flood Risk Index?**

**Presence of defences could be shown on any map and included in the later appraisal stage.**

**Q.7 Do you agree with the approach to Coastal Erosion risk and that it should be marked separately to flood risk?**

**If not, please provide an alternative suggestion.**

#### **4.4 Quantifying the combined risk of flooding**

The National Strategy for Flood and Coastal Erosion Risk Management in Wales set out that “Risk to life will always be the most significant factor in determining priority of investment”. We therefore propose to make this our core consideration when considering the impact of flooding.

Wider social, environmental and economic risk will not be ignored, but scored with lower weightings or incorporated in further discussions and through the application process.

Quantifying or scoring the consequences of risk can be difficult due to the way that people and places vary. We can make assumptions about the age of people or whether they are employed but this does not necessarily mean that they are more or less resilient to flooding<sup>6</sup>. We intend to score the combined risk index against the number and type of property at risk. As previously stated, any risk index for the Flood and Coastal Investment Programme will be a broad, national assessment of flood and coastal erosion risk. We would expect more detailed local assessment to follow as appropriate.

To do this we propose using nationally available datasets to assess the number of homes that are potentially at risk of flooding within a defined spatial area. Other land and properties, such as agriculture, offices and shops can also be scored but with a lower weighting.

Areas can be defined in a number of ways, and it is necessary to decide upon a spatial unit on which to score the combined risk. These would be the ‘building blocks’ that divide Wales into smaller areas. Popular units include ward boundaries, postcodes and census output areas.

At present, Lower Super Output Areas (LSOAs) are proposed as the spatial unit for FACIP. These are commonly used for socio-demographic analysis using census data, including the Welsh Index of Multiple Deprivation.

Each LSOA contains approximately 1500 homes. They are small enough to capture communities and ‘pockets’ of risk as well as being capable of combining to produce larger geographies as they fit within local authority ward boundaries. This would help with larger schemes that benefit a much wider area.

To assess risk at Lower Super Output Area (LSOA) level, properties in each area are scored against each source of flood risk and those scores are then combined to give an overall risk for the area. That score can be made up from:

- Number of properties at risk in that area,
- Type of properties and land at risk in the area
- River and coastal flood extent outlines
- Surface water risk outlines

---

<sup>6</sup> AD Research & Analysis for Welsh Government (2012), *Flood Advocacy and Support Service for Communities in Wales*.

Risk will be scored using weightings to provide a total risk score for each area allowing areas to be ranked and displayed on a map.

The type of property ensures we capture the risk of flooding to businesses and public buildings as well as homes. Weightings will be used so that non-residential properties do not unduly influence the ranking in favour of industrial areas.

We intend to invite infrastructure owners to contribute information about the vulnerability of their assets to flooding. We anticipate that this information will be useful to Risk Management Authorities so that they can work with infrastructure owners when considering funding of projects.

It is important that this assessment of risk is as transparent, simple and readily repeatable as possible to facilitate national updates if improved national datasets become available.

Many areas benefit from a flood warning service. Data on the provision and level of service of flood warnings will be excluded from consideration in production of the risk ranking. This data would be used at a local level to inform proposed interventions, appraisals and funding allocation decisions.

**Q.8 Do you agree with the principles set out in Section 4.5 on assessing risk from multiple sources and scoring by Lower Super Output Areas (LSOA)? Do you have any comments or suggestions?**



#### **4.5 Presentation of the Flood Risk Index**

Once all sources of flooding have been considered the scores will be processed to produce a combined Flood Risk Index. Coastal erosion scorings will likely be provided alongside the flood risk score for coastal risk areas.

Although the process will generate a score for each area, it is proposed that results are grouped together, for example, showing the top 5% of flood risk or top 30 areas, followed by next 30 and so on. This is considered appropriate given the generalised nature of the modelling and the error margins at play in combining different datasets. It will also avoid labelling an area as the “most at-risk in Wales”, particularly as it may already be protected by significant flood defences.

The spatial nature of the data make it well suited for storage and presentation in a GIS. This will allow flood index maps to be produced alongside a list of areas and published online. They can also be cut to each local authority boundary. GIS software is used in all Risk Management Authorities.

The Flood Risk Index should be a consistent product that encourages all Risk Management Authorities to sit around a table to discuss all the risks in a local area and potential interventions to manage these risks. It is not intended to be the final evaluation of risk on which economic appraisals are based to support investments. It is the quantitative analysis tool that helps us to get an idea of where funding could be - but must be complemented by other information, dialogue and agreement.

Questions expected in further analysis are:

- do we adequately understand the risk?
- do we understand how the different sources of risk work together?

We expect the Flood Risk Index to be reviewed as and when better data becomes available that is nationally consistent.

**Q.9 Do you have any further comments on the presentation or development of the proposed Flood Risk Index?**

## **5. Approaches to Delivery (Programme management)**

During the five year period covered by the National Strategy for Flood and Coastal Erosion Risk Management in Wales<sup>7</sup>, Welsh Government will directly invest over £250 million in flood and coastal erosion risk management in Wales. However, flood schemes usually have multiple benefits and offer wider economic, social and environmental improvements increasing their value.

Welsh Government and Risk Management Authorities will continue to seek wider benefits and opportunities for funding from other sources. This may include investment from alternative grants, or by Local Authorities, the private sector and, where appropriate, investment from communities.

It is intended that a Flood Risk Index will focus attention to areas where the risk is considered greatest, interventions are most urgent and outcomes provide a good return on investment. Once this focus has been established we would expect flood risk management authorities to review areas they are responsible for, on a decreasing risk basis.

Effective risk management interventions at area or catchment level will require input from everyone associated with the risk. Discussions between multiple authorities and the public are likely to be necessary and partnership working will be encouraged. Risk areas may be combined to form a wider land and water management approach to reduce flood risk for a number of communities down-catchment. Such wider discussions will be helped by an area-based approach with evidence provided by the Flood Risk Index.

When considering possible interventions alongside the Flood Risk Index, the Risk Management Authority should use their own understanding of an area to complement the findings of the index. Examples below set out possible options:

- i. Flood Risk Index (FRI) shows a national priority and concurs with local understanding. Likely intervention is low cost, complexity and risk. Risk Management Authority to deliver intervention.
- ii. FRI shows a national priority and concurs with local understanding. Likely intervention is high cost, complexity and risk. Risk Management Authority to develop and appraise possible interventions.
- iii. FRI shows a national priority and concurs with local understanding. Local data shows highly mitigated risk due to presence of appropriate defences in good condition and good warning provision. No further intervention required at this time.
- iv. FRI shows a national priority but local understanding of the risk is low. Risk Management Authority to further investigate risk from all sources.

---

<sup>7</sup> National Strategy for Flood and Coastal Erosion Risk Management in Wales (2011)

- v. FRI shows some risk but at low national priority, and concurs with local understanding. Risk Management Authority may pursue a locally funded solution to increase resilience or an awareness raising scheme.
- vi. FRI shows low national priority, but local understanding is good and shows a higher level of risk. Risk Management Authority could use this clear evidence to challenge the ranking in an application for funding.
- vii. FRI shows low national priority, local understanding is limited, but implies the risk is greater, maybe through frequent flooding events. Risk Management Authority to further investigate risk from all sources.

Local authorities could apply for grant funding for further research, appraisals, awareness-raising, resilience schemes and flood interventions. The implication of the Flood Risk Index is that areas ranked highly would attract a 'presumption of funding' from the Flood and Coast Investment Programme. However, this is not a guarantee of funding in whole or in part.

### **5.1 Application process and assessing benefits**

To receive funding from the National Programme, the lead Risk Management Authority will need to make an application in accordance with guidance that will be published. We envisage that an application should demonstrate:

- an understanding of risk and how it relates to the risk index;
- how it will address the sources of risk;
- that adaptive and innovative interventions are being considered;
- any partnership working and multiple benefits of any proposal;
- alignment with long term strategic planning;
- social, economic and environmental justification.

It is likely that for high cost interventions, funding will be allocated on a phased basis e.g. for assessment to understand the risk, appraisal of interventions, design and implementation.

Applications for funding would need to be made in accordance with a national timetable with pipeline projects available to come in if additional funding becomes available. Such a timetable could look like the table below:

<b>Month</b>	<b>Likely Activity</b>
Jan – March	Bids for allocation submitted by Risk Management Authorities using the FaCIP Flood Risk Index as a
March – April	Bids reviewed by FaCIP Programme Board / WG
April	Indicative allocations shared with Risk Management Authorities for
May – June	Final Allocations approved by FaCIP Programme Board / WG

Guidance will be issued on the application process, what is likely to be taken into account and how schemes will be prioritised. Figure x below provides a suggested application process.

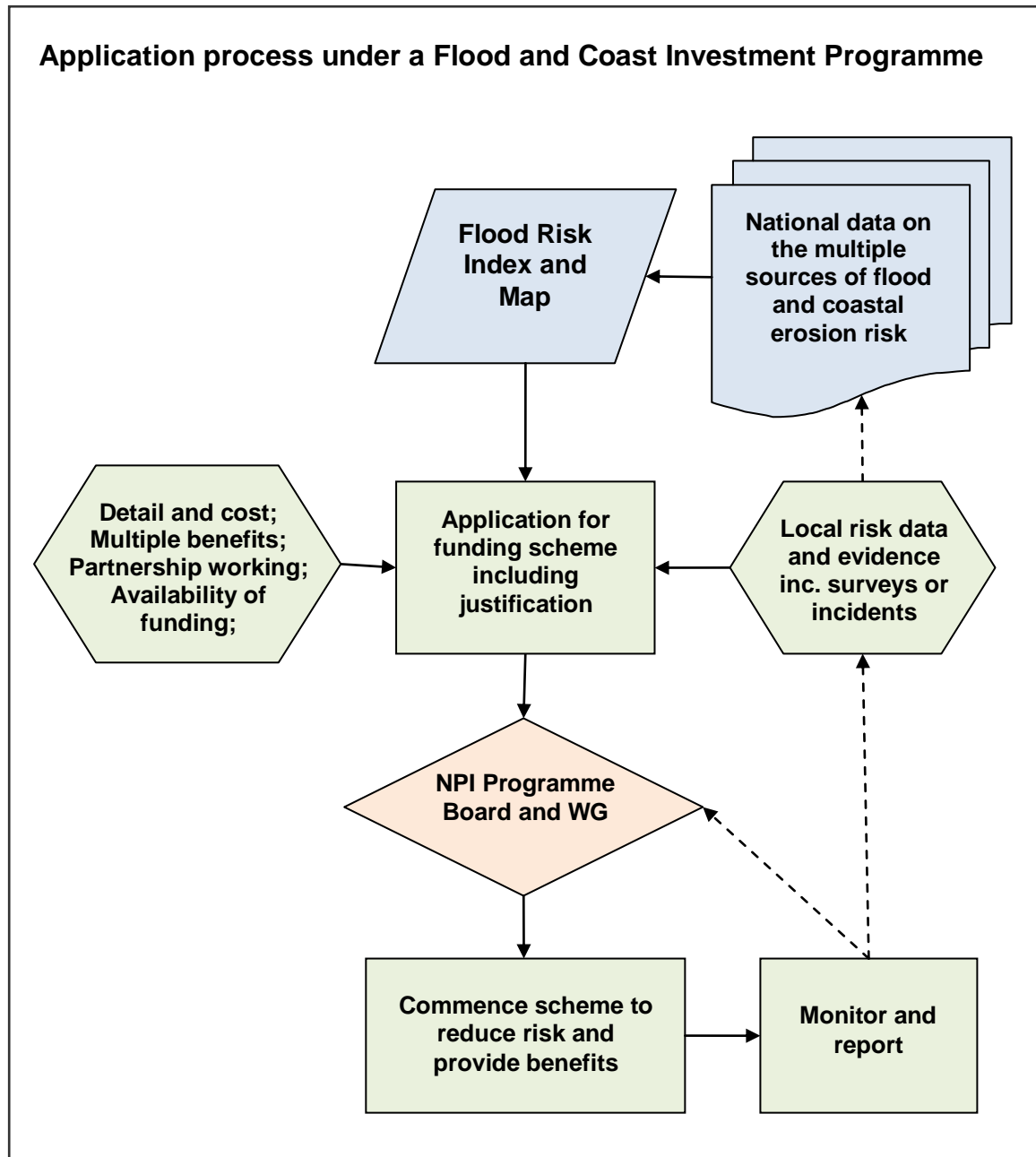


Figure 1: Potential application process under FaCIP

Initially, the Programme will only cover capital expenditure. This may include:

- Nationally strategic initiatives best addressed at the national scale
- Funding for new interventions on a prioritised basis
- Interventions driven by legal and Health and Safety obligations
- Funding for maintenance of existing schemes on a prioritised basis

Prioritisation is likely to be based on the risk ranking but utilising local data where available. This will produce raw priority scores in a relatively consistent manner for all proposed interventions.

Established cost/benefit assessments should still be considered for all potential schemes. It will be necessary to add additional evidence as appropriate. Factors may include:

- risk to life;
- longer term sustainability of the community and the wider environment;
- economic impacts, costs and benefits;
- impacts of flooding on the operational capacity of critical infrastructure;
- frequency of flooding;
- environmental costs and benefits derived from the work;
- demonstration of partnership working;
- multiple benefits and wider resource management (see below);
- availability of appropriate compensation sites where work impacts designated habitats;

**Multiple benefits** will include reducing flood risk to homes, business and infrastructure but should also consider wider economic, environmental or social aspects. This might include climate resilience, green growth, water quality, wellbeing, tourism, recreation, education, awareness-raising and community resilience.

They should not be limited to the immediate area. A scheme may have wider spatial benefits, such as catchment-wide flood-risk alleviation, land and water management improvements or safeguarding nationally important infrastructure. Over larger areas, the need for partnership working and public participation becomes essential.

**Q.10 Do you have any comments or suggestions on the application process?**

## **5.2 Governance and approving applications**

We propose that a programme board is put in place to review applications, recommend specific applications for approval and monitor outcomes.

Appropriate governance structures and processes will need to be established. Regular monitoring of schemes in the programme will be necessary to check progress, if outputs have been realised and how risk has been reduced. This will benefit the Risk Management Authority, the programme board and Welsh Government. Updates will also help the programme to react to changes in expenditure and outcome forecasts, keeping it 'on track' to deliver on budget and targets.

Guidance for schemes would come from national guidance whilst monitoring of individual schemes would be undertaken by the Risk Management Authority with reports back to the programme board.

Responsibilities of the programme board and any delegated authorities are likely to include:

- Determination of applications and business cases;
- Assuring proposed interventions align with National Strategy, FACIP objectives and guidance, Shoreline Management Plans, relevant policies and duties/directives;
- Reviewing reports on schemes from Risk Management Authorities;
- Reporting on overall programme and outcomes to Welsh Government
- Pro-actively seeking applications.

Membership of this board is expected to be drawn from Natural Resources Wales, Local Authorities, Welsh Government, Welsh Water, Institute of Civil Engineers and relevant public stakeholders. The board would likely meet on a quarterly basis or by exception.

**Q.11 Do you have any comments or suggestions on the programme board or governance of a Flood and Coast Investment Programme?**

**Q.12. Do you have any other comments that you would like to put forward?**

## **Consultation Questions**

Q1. Do you agree with the general need for a Flood and Coast Investment Programme as put forward in sections 2 and 3 above?

Q2. Do you have any comments on using the Programme for all aspects of flood and coastal erosion risk management in whatever way is most appropriate to address risk?

Q.3 Do you have any comments on the proposal for a national Flood Risk Index to help understand risk from all sources?

Q.4 Do you agree that a Flood Risk Index should remain a high level indicator of combined risk but allow local flood modelling to be used to support evidence in applications?

Q.5 Do you have examples where flooding has repeatedly occurred in a place currently shown as a low flood risk? Please provide relevant evidence as appropriate.

Q.6 Do you agree that information relating to defences should be excluded from the Flood Risk Index? Presence of defences could be shown on any map and included in the later appraisal stage.

Q.7 Do you agree with the approach to Coastal Erosion risk and that it should be marked separately to flood risk? If not, please provide an alternative suggestion.

Q.8 Do you agree with the principles set out in Section 4.5 on assessing risk from multiple sources and scoring by Lower Super Output Areas (LSOA)? Do you have any comments or suggestions?

Q.9 Do you have any further comments on the presentation or development of the proposed Flood Risk Index?

Q.10 Do you have any comments or suggestions on the application process?

Q.11 Do you have any comments or suggestions on the programme board or governance of a Flood and Coast Investment Programme?

Q.12. Do you have any other comments that you would like to put forward?

## **Appendix 1: Options Appraisal & Evaluation**

This section explains what types of interventions are likely and follows the approach in the National Strategy for Flood and Coastal Erosion Risk Management in Wales<sup>8</sup>.

Traditionally flood risk has been managed by increasing drainage and building defences. Similarly, defences and sediment control structures such as groynes and breakwaters have been the primary means of addressing coastal erosion. The legacy of this is a large number of ageing defence structures in Wales.

Climate change projections and recent research show that the risks of flooding and coastal erosion are changing. In response, Wales is adopting a risk management approach. It is not sustainable or economically viable to continue to build bigger defences to protect from all risk.

Alongside traditional defences and drainage, natural processes, adaptation and community-led solutions will be sought that bring together a range of measures at varying scales. Interventions will not be constrained to flood risk in the local area but should look for multiple benefits. Potentially, the reduction of flood risk may involve interventions further up the catchment, away from the community at risk.

Examples of risk management measures, which may also be deployed alongside hard or soft engineered defence structures, include but are not limited to:

- developing better flood forecasting and warning systems;
- ensuring emergency plans and recovery arrangements are in place;
- avoiding inappropriate development in flood and coastal erosion risk areas;
- making new and existing development resilient to flood risk;
- approaches that utilise the natural environment, adopt soft engineering in place of traditional solutions, managing land to reduce runoff, utilising beaches and salt marshes to absorb wave energy along the coast;
- deploying Sustainable Drainage Systems (SuDS) for surface water management for both new and existing developments;
- creating areas suitable for inundation and water storage to prevent flooding elsewhere;
- increasing awareness of flood and coastal erosion risks in communities;
- building resilience and preparedness to flood and coastal erosion events;
- identifying 'roll-back' and managed realignment in coastal areas and supporting home owners and communities in that area.

Adopting a risk management approach is about recognising that drainage and defence may not always be the most appropriate solution, and that some areas may require an interlinked approach combining several different options.

So, for example, a community that often experiences surface water flooding may benefit from a scheme reducing the amount of hard paved surfaces, better use of SuDS or improving maintenance of culverts. In contrast, for coastal communities at threat from erosion, public engagement may be more important, so that those

---

<sup>8</sup> *National Strategy for Flood and Coastal Erosion Risk Management in Wales (2011)*



at risk understand how coastal change is likely to affect them, how it will be managed and how they should plan for the future.