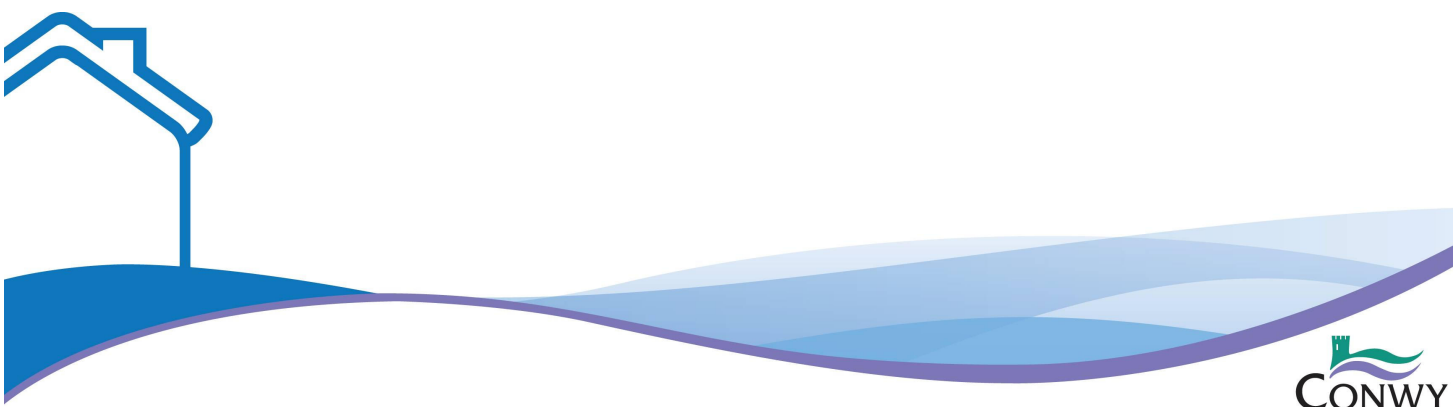
Conwy Local Flood Risk Management Strategy

Strategic Environmental Assessment – Environmental Report

March 2013

Conwy County Borough Council



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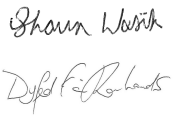
Checked by		S Wasik D Rowlands	14/02/13
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Abbreviations

AD	Anno Domini
AQMA	Air Quality Management Areas
ANOB	Area of Outstanding Natural Beauty
CFMP	Catchment Flood Management Plan
CCBC	Conwy County Borough Council
CO_2	Carbon Dioxide
CCW	Countryside Council for Wales
BC	Before Christ
DCLG	Department for Communities and Local Government
DEFRA	Department for Environment, Food and Rural Affairs
DCWW	Dwr Cymru Welsh Water
EA	Environment Agency
EAW	Environment Agency Wales
EC	European Community
EU	European Union
FFS	Flood Feasibility Study
FWMA	Flood Water Management Act
GHG	Green House Gases
GP	Ground Protection
GSPZ	Ground Source Protection Zone
HRA	Habitat Regulations Assessment
IMDs	Indices of Multiple Depravation
LANDMAP	Landscape Assessment and Decision Making Process
LLFA	Lead Local Flood Authority
LBAP	Local Biodiversity Action Plan
LDP	Local Development Plan
LFRMS	Local Flood Risk Management Strategy
LNR's	Local Nature Reserves
LSOA	Local Super Output Area
ODPM	Office of Deputy Prime Minister
ONS	Office of National Statistics
MMO	Marine Management Organisation
NAQS	National Air Quality Standards
NEC	Natural Environment and Communities
NNR	National Nature Reserves
PPP	Policy Plans and Programmes
PFRA	Preliminary Flood Risk Assessment

RIGS	Regionally Important Geological Sites
SAM	Scheduled Ancient Monument
SMP	Shoreline Management Plan
SSSI	Site of Special Scientific Interest
SPZ	Source Protection Zone
SAC	Special Area of Conservation
SPA	Special Protect Area
SAMAP's	Specific Area Management Action Plans
SEA	Strategic Environmental Assessment
SOA	Super Output Area
SuDs	Sustainable Urban Drainage System
SAB	SuDs Approval Body
TAN	Technical Advice Note
UK	United Kingdom
UKCCP09	United Kingdom Climate Change Projections 2009
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UDP	Urban Development Plan
WFD	Water Framework Directive
WG	Welsh Government
WAG	Welsh Assembly Government
WHS	World Heritage Site

Glossary

Act	A Bill approved by both the House of Commons and the House of Lords and formally agreed to by the reigning monarch (known as Royal Assent).
Aquifer	A layer of porous substrate that contains and transmits groundwater.
Baseline	A description of the present and future state of an area, in the absence of any development, taking into account changes resulting from natural events and from other human activities
Cadw	Welsh Government's Historic Environment Service
Catchment	An area that serves a river with rainwater; that is, every part of land where the rainfall drains to a single watercourse is in the same catchment.
CCW	Countryside Council for Wales – is the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment on Wales and its inshore waters.
Coastal Erosion	The wearing away of coastline, usually by wind and/or wave action.
Coastal Erosion Risk	Measures the significance of potential coastal erosion in terms of likelihood and impact.
Coastal Erosion Risk Management	Anything done for the purpose of analysing, assessing and reducing a risk of the wearing away of coastline.
Coastal Flooding	Occurs when coastal defences are unable to contain the normal predicted high tides that can cause flooding, possibly when a high tide combines with a storm surge (created by high winds or very low atmospheric pressure).
Consultation Body	An authority which because of its environmental responsibilities is likely to be concerned by the effects of implementing plans and programmes and must be consulted under the SEA Directive. The Consultation Bodies designated in the SEA Regulations are Natural England, English Heritage and the Environment Agency
Climate Change Adaptation	Involves adjustments to natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities
Climate Change Mitigation	Involves taking action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions
Indicator	A measure of variables over time, often used to measure achievement of objectives
Culvert	A covered structure under road, embankment etc, to direct the flow of water.

Defences	A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area.
EA / EAW	Environment Agency and Environment Agency Wales - Executive Non-departmental Public Body responsible to the Secretary of State for Environment, Food and Rural Affairs and a Welsh Government sponsored Public Body responsible to the Welsh Ministers.
Flood	Any case where land not normally covered with water becomes covered by water.
Flood Risk	Product of the probability of flooding occurring and the consequences when flooding happens.
Flood Risk Management	The activity of understanding the probability and consequences of flooding, and seeking to modify these factors to reduce flood risk to people, property and the environment. This should take account of other water level management and environmental requirements, and opportunities and constraints.
Flood Risk Management Measures	The way in which flood risks are to be managed.
Fluvial Flooding	Flooding from rivers including ordinary watercourses and main rivers
Groundwater	Water held underground in the soil or in pores and crevices in rock.
Groundwater Flooding	Occurs when water levels in the ground rise above the natural surface. Low lying areas underlain by permeable strata are particularly susceptible.
Local Development Framework (LDF)	Sets out, in the form of a 'portfolio', the Local Development Documents which collectively deliver the spatial planning strategy for the area in question. The LDF also includes the Statement of Community Involvement, the Local Development Scheme and the Annual Monitoring Report.
Local Flood Risk	Defined within the Flood and Water Management Act 2010 as including surface runoff, groundwater and ordinary watercourses.
LFRMS	Local Flood Risk Management Strategy - Required in relation to Wales by Section 10 of the Flood and Water Management Act 2010 Local Flood Risk Strategies are to be prepared by Lead Local Flood Authorities and must set out how they will manage local flood risks within their areas.
LLFA	Lead Local Flood Authority - the County Council or the County Borough Council for the area (Local Authority).
Mitigation Measures	Refers to measures to avoid, reduce or offset significant adverse effects

Objective	A statement of what is intended, specifying the desired direction of change in trends
Ordinary Watercourse	All watercourses that are not designated Main River, and which are the responsibility of riparian landowners.
River flooding	Occurs when water levels in a channel overwhelms the capacity of the channel.
Scoping	The process of deciding the scope and level of detail of an SA, including the sustainability effects and options which need to be considered, the assessment methods to be used, and the structure and contents of the SA Report
SEA Directive	European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment'. Transposed into UK law via The Environmental Assessment of Plans and Programmes Regulations 2004
Strategic Environmental Assessment	Generic term used internationally to describe environmental assessment as applied to policies, plans and programmes. In this report, 'SEA' is used to refer to the type of environmental assessment required under the SEA Directive
SuDS	Sustainable Drainage Systems - Approach to surface water management which helps to deal with excesses of water by mimicking natural drainage processes and patterns.
Surface Water Flooding	In the urban context, usually means that surface water runoff rates exceed the capacity of drainage systems to remove it. In the rural context, it is where surface water runoff floods something or someone.
Surface Water Runoff	This occurs when the rate of rainfall exceeds the rate that water can infiltrate the round or soil and flows over ground.
Sustainability Appraisal	Generic term used in this report to describe the form of assessment that considers environmental, social and economic effects. However, for this report it is not the formal process associated with the Planning and Compulsory Purchase Act 2004
Sustainability Appraisal Framework	This is the objectives and criteria developed for the project
Sustainability Objectives	These are specific objectives that have been developed for this project. They are also part of the SA Framework, against which the project objectives and design have been tested for the purposes of this SA

Non-Technical Summary

Local Flood Risk Management Strategy

Under Section 10 of the Flood and Water Management Act (2010) Conwy County Borough Council (CCBC) is defined as a Lead Local Flood Authority (LLFA) and is required to 'develop, maintain, apply and monitor a strategy for local flood risk management in its area'. The Local Flood Risk Management Strategy (LFRMS) is designed to help everyone understand and manage the risk of flooding in the county. The Draft LFRMS contains 10 outcomes which form the basis for preparing actions to reduce the risk of flooding. It highlights the steps that are to be taken to improve knowledge of flood risk in the county, to work better with organisations and the public towards reducing those risks whilst aiming to balance the need of communities, the economy and the environment

Strategic Environmental Assessment

A Strategic Environmental Assessment (SEA) is required by law and is undertaken to identify possible effects that plans, programmes and strategies may have on the existing environment, and therefore increase the consideration of environmental issues in the decision making process. This Environmental Report shows the results of Stages A to C of the SEA process that has been undertaken in support of the development of this Local Strategy. The SEA evaluates the predicted impacts of the Local Strategy against environmental objectives that have been identified following consideration of the environmental issues affecting Conwy.

The likely effects of the LFRMS

The anticipated environmental impacts were presented within the SEA Scoping Report that was issued for consultation in July 2012. The principle topics identified were pressures upon water, climatic factors, soil, biodiversity, fauna and flora, landscape, cultural heritage, population and human health and material assets. The only topic where it was considered that there would be limited impacts on the baseline was air quality and as such this was not assessed in further detail. The Environmental issues were used to develop 9 SEA objectives that the strategic outcomes of the Local Strategy were appraised against to test the potential environmental effects of implementation.

In considering the 10 strategic outcomes of the Local Strategy, when compared to the 9 objectives of the SEA, it has been concluded that the Conwy Local Flood Risk Management Strategy will either lead to positive impacts upon environmental assets and interests within the county of Conwy or will have neutral impacts. Opportunities to maximise positive effects have also been considered. The SEA process has not identified any significant negative impacts upon the environment upon implementation of the Local Flood Risk Management Strategy.

The main positive effects identified were flood risk reduction resulting in protection of people, property, infrastructure, businesses, water quality, historic assets, and biodiversity from flood damage. The only potential negative effects identified during the assessment stage were where measures may lead to future structural flood defence works/schemes. These effects are likely to be temporary and mitigated through best site practices, legislation, and the planning process.

Monitoring of the LFRMS

Due to the high level nature of the LFRMS and the positive results of the assessment, requirements and feasibility of monitoring is limited. However, although perceived negative effects were not identified, it is

considered that the LFRMS should still undergo monitoring to ensure that the implementation of the strategy is as predicted in this SEA. Monitoring helps ensure that the identified SEA objectives are being achieved. This will allow early identification of unforeseen adverse effects and this appropriate remedial action can be taken to mitigate against an negative impacts. Monitoring will be an important requirement to measure performance and ensure the LFRMS is being successfully implemented.

The next stage

The next stage of the process is Stage D which involves this Environmental Report and the LFRMS subject to a 6-week public consultation period with statutory consultees, stakeholders and the public, and making any necessary amendments and updates to the documents. The results of the consultation will be presented in the Final Environmental Report. Stage E 'Monitoring' will be carried out annually by CCBC following adoption of the LFRMS.

1. Introduction

1.1 Introduction

Conwy County Borough Council (CCBC) is required under Section 10 of the Flood and Water Management Act (FWMA) 2010[1] to develop, maintain, apply and monitor a Local Flood Risk Management Strategy (LFRMS). The LFRMS must address potential flood risk arising from local sources within the boundaries of the local authority area. These are defined in the Act as: surface water run-off, groundwater and ordinary water courses (including lakes and ponds). Flood risk arising from the sea, main rivers and reservoirs is outside the scope of the strategy and is managed by the Environmental Agency Wales (EAW) and other organisations. Flood risk arising from sewers is also outside the scope of the strategy and is managed by water companies (further details about the Conwy LFRMS[2] are presented in Section 3). Although omitted from the act, flooding associate with these sources need to be considered due to their potential interaction and cumulative effects to ensure that risks of flooding at local levels are addressed and to accord with the National Flood and Coastal Erosion Management Strategy[3].

Under the European Directive 2001/42/EC[4], on the assessment of the effects of certain plans and programmes on the environment (also known as the 'Strategic Environmental Assessment (SEA) Directive'), and the resulting Environmental Assessment of Plans and Programmes Regulations 2004[5], a SEA is required to ensure that the environmental effects of LFRMS are considered. This Environmental Report follows on from the first stage of the SEA process, following issue of the Scoping Report to the statutory consultees. The Environmental Report will be subject to a 6-week public consultation period the results of which will presented in the Final Environmental Report.

1.2 Purpose of the Assessment Stage and Environmental Report

The purpose of the assessment stage and Environmental Report is to review the strategic options for the Conwy LFRMS and the subsequent preferred Conwy LFRMS and identify any potential impacts (positive and negative). This will be achieved through undertaking the following:

- Review of the Conwy LFRMS SEA Scoping Report[6];
- Review of the proposed options and draft Conwy LFRMS;
- Assessment of the strategic options proposed for the Conwy LFRMS;
- Identify and evaluate predicted effects of the draft Conwy LFRMS though appraisal against the SEA Framework and assess cumulative effects;
- Identify mitigation measures;
- Develop monitoring proposals to be implemented by CCBC during the LFRMS period; and
- Prepare an Environmental Report for public consultation.

[1] Her Majesty's (HM) Government (2010) Flood and Water Management Act

[2] Conwy County Borough Council (November 2012) Local Flood Risk Management Strategy

[3] Welsh Government (November 2011) National Strategy for Flood and Coastal Erosion Risk Management in Wales

[4] Directive 2001/42/EC of the European Parliament and of the Council (June 2001) on the Assessment of the Effects of Certain Plans and Programmes on the Environment

[5] Her Majesty's Government (2004) Environmental Protection, Wales – The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004

[6] Conwy County Borough Council (July 2012) Conwy Local Flood Risk Management Strategy: Strategic Environmental Assessment – Scoping Report

1.3 Compliance with the SEA Directive

This Environmental Report has been prepared in accordance with the requirements of the SEA Directive. Table 1.1 indicates where the specific requirements in SEA Directive relating to the Environmental Report (SEA Directive Annex I) can be found within this report.

Table 1.1: SEA Directive Requirements Signposting Table

SEA Directive Environmental Report Requirements		Section of Environmental Report where Requirements is found
a)	An outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;	Chapter 3, Chapter 4, Appendix B
b)	The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	Chapter 4, Appendix B
c)	The environmental characteristics of areas likely to be significantly affected;	Chapter 4
d)	Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;	Chapter 4
e)	The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	Chapter 4, Appendix B
f)	The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	Chapter 5, Chapter 6, Appendix D
g)	The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	Chapter 7
h)	An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Chapter 5, Chapter 6
i)	A description of the measures envisaged concerning monitoring in accordance with Article 10; and	Chapter 7
j)	A non-technical summary of the information provided under the above headings.	At the start of this report before Chapter 1

1.4 Links with Wider Studies

Habitat Regulations Assessment

Under the European Directive 92/43/EEC[7] on the Conservation of Natural Habitats and Wild Fauna and Flora (also known as the 'Habitats Directive'), and the resulting Conservation of Habitats and Species Regulations 2010 (as amended)[8], a Habitat Regulations Assessment (HRA) is required where a plan may give rise to significant effects on European designated sites, known as Natura 2000 sites.

[7] Directive 92/43/EEC of the European Parliament and of the Council (May1992) on the Conservation of Natural Habitats and Wild Fauna and Flora

[8] The Conservation of Habitats and Species (Amendment) Regulations 2012

Natura 2000 sites consist of Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites, and also include potential SPA (pSPA) and candidate SAC (cSAC). Species and habitats involved in the 'Ramsar Selection Criteria' also require consideration under the Habitats Regulations as if they were designated Natura 2000 features. Within and around the county and coast of Conwy there are a number of SPA's and SAC's, and therefore a HRA may be required. A HRA Stage 1 'Test of Likely Significant'[9] (screening) has been undertaken for the LFRMS. The results indicate that it is unlikely that there will be any significant impacts relating to the implementation of the strategy and hence a full assessment is not required. However, should schemes need to be implemented it is advised that each scheme is assessed in its own merit under the appropriate legislation.

Water Framework Directive Assessment

The Water Framework Directive (WFD)[10] aims to provide a better water environment in Europe for surface waters, including rivers, estuaries and coastal waters and also groundwater.

The WFD requires that good status is achieved in all water bodies by 2015. For surface waters, good status is made up of good environmental status (or potential in artificial or heavily modified water bodies) and good chemical status. Ecological status consists of biological, hydromorphological and physico-chemical elements. For groundwater, good status consists of quantitative and qualitative status. Improvement measures have been planned for water bodies in order that they meet good status. The Directive also requires that there is no deterioration in water body status. WFD objectives are shown in Table 1.2.

Table 1.2: WFD Environmental Objectives

Objectives (from Article 4 of WFD)	Reference and Description
4.1(a)(i)	Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water;
4.1(a)(ii)	Member States shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status by 2015;
4.1(a)(iii)	Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status by 2015;
4.1(a)(iv)	Progressively reduce pollution from priority substances and cease or phasing out emissions, discharges and losses of priority hazardous substances; and
Ground Water 4.1(b)(i)	Prevent Deterioration in status and prevent or limit input of pollutants to groundwater.

Source: Water Framework Directive

A separate WFD assessment has not been carried out as part of the LFRMS. Instead this has been captured in the SEA with the assessment of the SEA objective for water quality. This ensures the objectives, requirements and targets of the WFD have been considered and complied within the LFRMS.

[9] Conwy County Borough Council (November 2012) Conwy Local Flood Risk Management Strategy: Habitat Regulations Assessment – Stage 1 Test of Likely Significance

[10] European Parliament (October 2000) Council Directive Establishing a Framework for the Community Action in the Field of Water Quality (2000/60/EC)

1.5 Limitations of the SEA

During the production of this Environmental Report, CBCC has relied on published data and information provided internally by CBCC and from third party organisations.

The baseline data used as part of this assessment was correct up until July 2012. However, it is possible that the baseline may have changed during the production of the Environmental Report. As such the compiled baseline data has been used to provide a snapshot of the current conditions in the county.

This report is regarded as a live document and as such shall be updated throughout the SEA process, as new information becomes available or other information presents itself. The proposed consultation process aims to address and minimise any gaps in information to ensure all potential environmental effects have been considered with regard to the Conwy LFRMS.

2. SEA Process and Methodology

2.1 SEA Legislative Requirements and Purpose

An SEA is required for the Conwy LFRMS under the European Union Directive 2001/42/EC, more commonly known as the SEA Directive. The Directive was transposed into United Kingdom (UK) law via the Environmental Assessment of Plans and Programmes Regulations 2004, which requires an assessment of the effects of certain plans and programmes on the environment.

Article 3 of the SEA Directive defines the scope of when a SEA is required for plans and programmes. Article 3 (2b) states that a SEA is required for plans and programmes which are prepared for water management, and set the framework for development consents, and/or are likely to have a significant environmental effect. The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 also state that a SEA is required for plans and programmes which are required by legislative, regulatory or administrative provision and are either subject to preparation and/or adoption at national, regional, or local level or prepared by an authority for adoption through a legislative procedure (e.g. The Flood and Water Management Act).

Some of the key objectives of the SEA process are to afford a high level of protection to the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans. The SEA also works to inform the decision-making process through the identification and assessment of the significant and cumulative effects that a plan or programme may have on the environment. This is conducted at a strategic level and enables consultation on the potential environmental effects of a plan with a wide range of stakeholders.

2.2 SEA Process and Stages

The Conwy LFRMS SEA was carried out in accordance with the Office of Deputy Prime Minister (ODPM) (now the Department for Communities and Local Government (DCLG)) Guidance 'A Practical Guide to the Strategic Environmental Assessment Directive' (September 2005)[11], and meets the requirements of the SEA Directive (and resulting SEA Regulations). Figure 2.1 shows the different stages in the SEA process, and Table 2.1 breaks the stages down into the individual tasks involved.

[11] Department for Communities and Local Government (September 2005) A Practical Guide to the Strategic Environmental Assessment Directive

Figure 2.1: SEA Process Stages

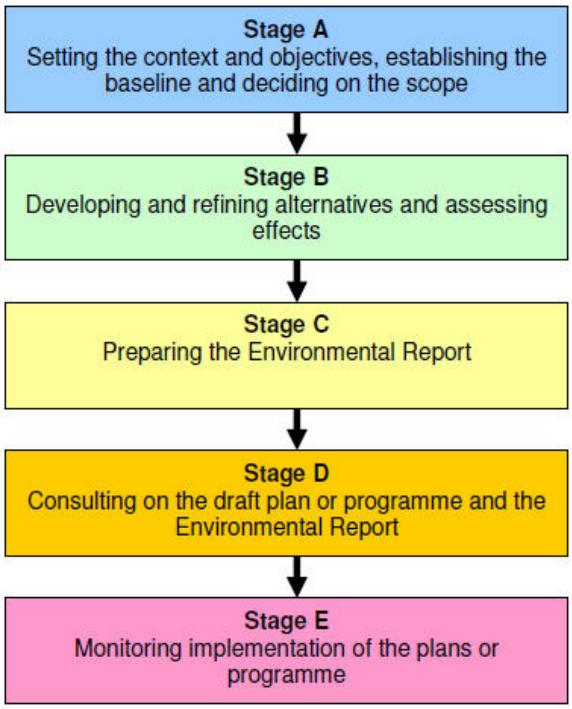


Table 2.1: Description of SEA Stages and Tasks

SEA Stage	SEA Task	Task Purpose
Stage A Setting the context and objectives, establishing the baseline and deciding on the scope	A1: Identifying other relevant plans, programmes, and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives
	A2: Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives
	A3: Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring
	A4: Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed
	A5: Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme
Stage B Developing and refining alternatives and assessing effects	B1: Testing the plan or programme outcomes against the SEA objectives	To identify potential synergies or inconsistencies between the outcomes of the plan or programme and the SEA objectives and help in developing alternatives
	B2: Developing strategic alternatives	To develop and refine strategic alternatives
	B3: Predicting the effects of the draft plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and alternatives
	B4: Evaluating the effects of the draft plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme
	B5: Considering ways of mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered

SEA Stage	SEA Task	Task Purpose
	B6: Proposing measures to monitor the environmental effects of plan or programme implementation	To details the means by which the environmental performance for the plan or programme can be assessed
Stage C Preparing the Environmental Report	C1: Preparing the Environmental Report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers
Stage D Consulting on the draft plan or programme and the Environmental Report	D1: Consulting on the draft plan or programme and Environmental Report	To give the public and the Consultation Bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme. To gather more information through the opinions and concerns of the public
	D2: Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account
	D3: Decision making and providing information	To provide information on how the Environmental Report and consultees' opinions were taken into account in deciding the final form of the plan or programme to be adopted
Stage E Monitoring implementation of the plans or programme	E1: Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects
	E2: Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified

Source: Adapted from 'A Practical Guide to the Strategic Environmental Assessment Directive' (ODPM, September 2005)

2.3 SEA Scoping Consultation Results

The SEA Scoping Report was subject to a 5-week consultation period during which the three statutory consultees (Environment Agency Wales (EAW), Countryside Council for Wales (CCW), and Cadw) had the opportunity to comment on the scope, content and level of detail of the Scoping Report. Feedback was received from the statutory consultees and is provided in Appendix A along with how the feedback has been considered in the SEA process.

3. Description and Context of the Conwy Local Flood Risk Management Strategy

3.1 Conwy Local Flood Risk Management Strategy

Under the Flood and Water Management Act 2010, all Lead Local Flood Authorities (LLFA's) are required to develop, maintain (which includes updating and reviewing), apply, and monitor the application of a strategy for local flood risk management in their area. This strategy is known as a Local Flood Risk Management Strategy (LFRMS).

A 'local flood risk' is defined within the Act as being a flood risk from:

- Surface run-off;
- Groundwater; and
- Ordinary watercourses.

The reference to ordinary watercourses includes a reference to a reservoir, lake, pond or other areas of water which flows into an ordinary watercourse.

Conwy County Borough Council is a LLFA, and as such has prepared a LFRMS. The Conwy LFRMS is a high level strategy document that sets out management policies for flood risk management. The Strategy does not provide details on management for specific flood risk areas. Specific Area Management Action Plans (SAMAP's) may be produced in the future, and will cascade down from the Strategy.

The Welsh Government (WG) has produced a National Strategy for Flood and Coastal Erosion Risk Management in Wales. This is the overarching document for all LFRMS in Wales. The LFRMS must be consistent with this document. The WG has also produced a guidance document for LLFA 'Local Flood Risk Management Strategies: Local Strategy' (November 2011)[12].

The WG guidance states that LFRMS should be developed in keeping with the four overarching objectives for flood and coastal erosion risk management in Wales as set out in the National Strategy. The four objectives are:

- **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; and
- **Prioritising investment** in the most at risk communities.

Section 10(4) of the FWMA, specifies what must be included within a LFRMS:

- The Risk Management Authorities in the Local Authority's area;
- The flood and coastal erosion risk management functions that may be exercised by those Authorities in relation to the area;
- The objectives for managing local flood risk (including, when available, any objectives included in an LLFA flood risk management plan prepared in accordance with the Flood Risk Regulations 2009[13]);

[12] Welsh Government (November 2011) Local Flood Risk Management Strategies – Local Strategy

[13] Her Majesty's Government (2009) The Flood Risk Regulations 2009

- The measures proposed to achieve those objectives;
- How and when the measures are expected to be implemented;
- The costs and benefits of those measures, and how they are to be paid for;
- The assessment of local flood risk for the purpose of the strategy;
- How and when the strategy is to be reviewed; and
- How the strategy contributes to the achievement of wider environmental objectives.

3.2 Conwy LFRMS Objectives and Strategic Options

3.2.1 Introduction

The consultation version of the Conwy LFRMS contains ten overarching objectives which follow the guiding principles for flood risk management in Conwy. These objectives are identified in the Conwy LFRMS as strategic outcomes.

The measures set out in later sections of the Conwy LFRMS seek to support these objectives. Further to these is a set of environmental objectives which aim to achieve wider environmental benefits as required by the Flood and Water Management Act.

The Conwy LFRMS will be supplemented by annual action plans in order to give a more detailed overview of what CCBC want to achieve that year and how it will be undertaken.

3.2.2 Strategy Outcomes

The ten overarching outcomes are:

1. To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks;

2. Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk;

3. To collaborate with FRMA's, stakeholders and the public to reduce flood and coastal risks, and share data and resources to the greatest benefit;

4. To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;

5. To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments;

6. Improve and/or maintain the capacity of existing drainage systems by targeted maintenance;

7. Take a sustainable approach to flood risk management balancing economic, environmental and social benefits;

8. Increase approaches that utilise the natural environment;

9. Ensure the development of skills required to implement effective and innovative flood risk management Measures; and

10. Identify projects and programmes which are affordable, maximising capital funding from internal and external sources.

3.2.3 Strategy Options

1	To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks
1.1	Record all flooding incidents and where appropriate carry out flooding investigations;
1.2	Record all appropriate structures/assets on watercourses so that ownership and responsibility can be identified in the event of a problem with flooding;
1.3	Develop a consistent approach to designation of flooding/drainage structures;
1.4	Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment;
1.5	Develop a standard press statement to be issued following a flood event;
1.6	Develop a county wide map based record of flood risk assets, Flood Investigation Reports, historical flooding and areas at risk of flooding to allow a proactive risk management approach to be taken by the flood authority;
1.7	Create flood hazard and flood risk maps and flood risk management plans for areas in the county known to be at risk of significant flooding; and
1.8	Update the Conwy County Flood Risk Assessment

2	Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk
2.1	Raise public awareness of the impacts of climate change on flooding and (failure of) coastal defences;
2.2	Publish a public awareness strategy (Workshops, public awareness events, update and improve the Council Website, adverts in local press) and communicate it;
2.3	Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents;
2.4	To collaborate with statutory bodies to promote the existing flood warning service (EAW) and their proposed flooding campaigns;
2.5	Create an integrated county wide real time hydraulic and flood alert map (long term);
2.6	Make the public aware of available flood prevention and mitigation measures (resistance and resilience) to protect their property and assets; and
2.7	Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood.

3	To collaborate with FRMA's, stakeholders and the public to reduce flood and coastal risks, and share data and resources to the greatest benefit
3.1	Identify responsibilities of the riparian owners of managing their assets, through public engagement;
3.2	Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge, data and lessons learnt;
3.3	Develop an effective communication plan to ensure collaborative working and data sharing;

3.4	Undertake stakeholder engagement, to identify responsibilities of flood risk partners; and
3.5	Introduce a process to carry out internal and external flood debrief meetings following a flood.

4	**To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion**
4.1	Identify vulnerable groups within the community, and prepare action plans in the event of flooding;
4.2	Identify areas at greatest risk of flooding, and develop a capital cost investment programme to alleviate flooding;
4.3	Educate general public on options for protecting their properties through flood prevention options and resistance and resilience measures;
4.4	Assist and provide support following a flood event; and
4.5	Develop site specific flood response plans for at high risk communities.

5	**To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments**
5.1	Develop clear guidance for the Planning Department when assessing planning applications;
5.2	Develop a process with the Planning Department to create clear advise and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments);
5.3	Establish a SuDS Approval Body (SAB);
5.4	Keep the Planning Department informed and up-to-date with flood areas in the County; and
5.5	Develop policies for effective land use management and enhance development control procedures where appropriate.

6	**Improve and/or maintain the capacity of existing drainage systems by targeted maintenance**
6.1	Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment;
6.2	Develop a risk based reactive and cyclical maintenance regime; and
6.3	Develop a risk based programme for improving existing infrastructure.

7	**Take a sustainable approach to flood risk management balancing economic, environmental and social benefits**
7.1	Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits;
7.2	Consider the principles of the Conwy Sustainability Strategy in FCERM; and
7.3	Consider the use of attenuation through wetlands to increase the length of flow durations, store flood water, and provide amenity and ecological benefits.

8	**Increase approaches that utilise the natural environment**
8.1	Adopt natural flood-risk management techniques including SuDS;
8.2	Keeping up-to-date with new and innovative technologies for flood defence and flood management;

8.3	Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits; and
8.4	Continue to implement Conwy's non-culverting statement.

9	**Ensure the development of skills required to implement effective and innovative flood risk management measures**
9.1	Provide appropriate staffing levels and develop staff expertise to deliver the requirements of the act;
9.2	Invest in appropriate software and hardware;
9.3	Outsource specialist skills to deliver specific projects, and
9.4	Collaborate and provide support, training and network of staff across the region.

10	**Identify projects and programmes which are affordable, maximising capital funding from internal and external sources**
10.1	Identify potential funding sources which may include communities and local business's;
10.2	Undertake full lifecycle cost benefit analysis for projects including social, and environmental benefits; and
10.3	Investigate opportunities for match funding and grants.

4. Stage A Scoping Summary

4.1 Plans and Programmes Summary

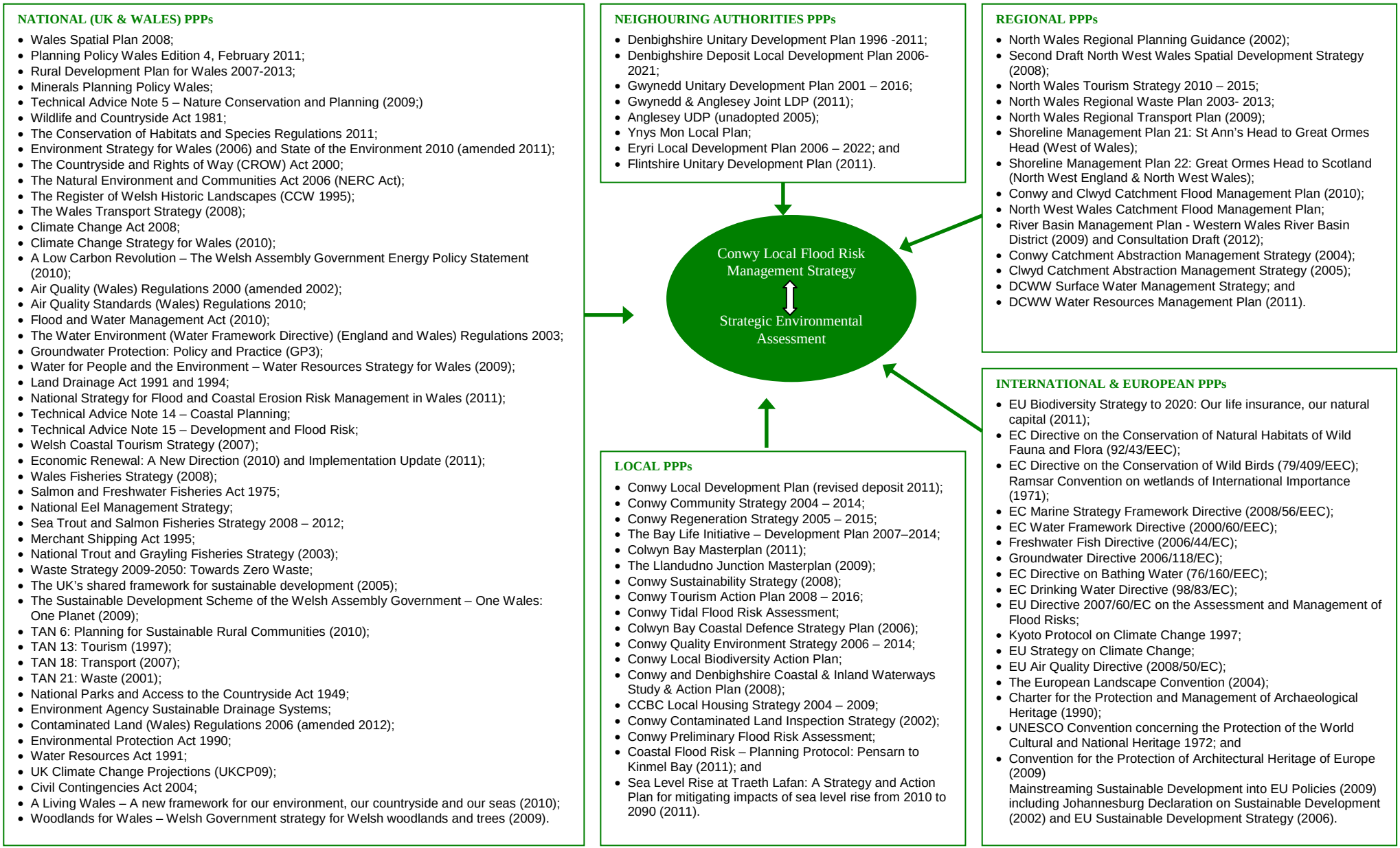
The LFRMS must comply with all current relevant policies, plans, programmes (PPPs) and environmental protection legislation at international, national and local levels.

The SEA Directive requires "an outline of the plan or programme's relationship with other relevant plans and programmes"; Annex 1(a) and

"the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plans or programme and the way those objectives and any environmental considerations have been taken into account during tits preparation." Annex 1(e)

The LFRMS must support and where possible strengthen the objectives of other local plans and strategies within Conwy County. A review of these documents is required in order to identify any potential inconsistencies or constraints between these documents and the LFRMS. Any inconsistencies and constraints identified can then be addressed. Figure 4.1 below lists the current and relevant PPPs, which were considered during the Scoping stage. Appendix B presents the PPPs review and a description on how these objectives or requirements were integrated into the LFRMS.

Figure 4.1: Relevant Policies, Plans, Programmes and Environmental Protection Legislation



4.2 Baseline Scoping Summary

Current baseline information for the environment and socio-economics was collected and examined for the Conwy County during the scoping exercise. The baseline information collected during the scoping stage of the process forms an evidence base against which environmental effects (either positive or negative) resulting from the LFRMS can be predicted and assessed.

SEA Directive requires: 'The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.' Annex I(b);

'The environmental characteristics of areas likely to be significantly affected' Annex I(c);

'Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.' Annex 1(d)

The baseline information collected is presented under the topics outlined in Annex 1(f) of the 'SEA Directive' and is contained within Appendix C. The topics which were reviewed during the scoping exercise are detailed below:

- Air;
- Water;
- Climatic Factors;
- Soil;
- Biodiversity, Fauna and Flora;
- Landscape;
- Cultural Heritage (architectural and archaeological heritage);
- Population and Human Health; and
- Material Assets.

4.2.1 Future Baseline

The SEA Directive requires the following to be identified:

'The relevant aspects of the current state of the environment (i.e. the current baseline) and the likely evolution thereof without implementation of the Plan or Programme'.

Prediction of future trends is difficult because they depend on a wide range of global, national, and regional factors and decision-making which can change without prior warning.

Assuming that the proposed LFRMS is not implemented and based on the information currently available to date it is believed that the following trends and statements that were identified in the scoping exercise stand.

This is under the assumption that no actions or developments (above and beyond the programmed works) are undertaken relating to flooding and flood protection as defined in the Act:

- Air quality – new development, regeneration and tourism may lead to increased car journeys within the County and may increase traffic on the A55 leading to localised air quality effects. Public transport improvements, national air quality targets and European emissions standards for new vehicles should contribute to reducing future air quality impacts from motor vehicles;
- Water – water quality is likely to continue to be maintained and improved through legislation such as the Water Framework Directive. New development could increase surface water run-off and exacerbate flooding issues. Future flooding may cause pollution of watercourses and groundwater;
- Climatic Factors – future climate change effects are likely to include sea level rise, higher temperatures and more severe weather conditions (higher intensity and duration) including flash floods;
- Biodiversity – habitats and species are likely to continue to be protected through European and UK legislation. However, future development may put pressure on these ecological areas. Future climate change effects and flooding may affect ecosystems, habitats and species;
- Population – the population of the County is predicted to increase. This may put development pressure on the land and development may have to be located in flood risk areas. Future severe flood events may affect the population in term of damage to houses, local infrastructure and services that communities rely on. Future flood events may also affect the economy through damage to businesses and tourism;
- Human Health – future flood events may impact on human health through injury or death, emotion stress of flooding, and pollution leading to health issues;
- Material Assets – regeneration and future investment and demand are likely to increase the number and quality of material assets such as housing, transport infrastructure, waste facilities, power stations and community facilities;
- Landscape – future flood events and future development may affect the quality and character of landscapes;
- Soil – future flood events may cause damage to agricultural land which could have consequences for the rural economy. Future flooding in contaminated areas could also increase pollution; and
- Cultural Heritage – historic assets are likely to continue to be protected through European and UK legislation. Future flooding may damage historic assets and their character.

4.3 Key Environmental Issues and Opportunities

A key stage in the scoping process was to decide what topics were relevant for the Conwy LFRMS SEA and what topics (if any) should be scoped out. Table 4.1 below presents those topics that have been scoped in and out. It also presents the key issues and opportunities relevant to each topic that were identified during the scoping exercise. Topics were scoped in based on the likelihood of flood risk and the LFRMS potentially impacting them. This was assessed using professional judgement to review baseline conditions and current environmental issues for Conwy and to determine the likelihood of this potential impact.

Table 4.1: Key Issues and Opportunities

SEA Topic	Scoped In	Scoped Out	Evidence	Key Issues and Opportunities
Air Quality		✓	In general air quality in the County is good, meeting National Air Quality Standards. Air pollution is primarily from road transport.	Air quality is unlikely to be effected by the Conwy LFRMS. However, if the LFRMS proposes active intervention such as capital works in certain areas there may be minor temporary effects during construction from plant machinery and construction transportation, but this should be mitigated by use of best environmental site practices. Due to the fact that Conwy Council has no declared AQMAs and the LFRMS is unlikely to have effects on

SEA Topic	Scoped In	Scoped Out	Evidence	Key Issues and Opportunities
				air quality it is proposed to scope out air quality from the SEA.
Water	✓		The majority of water courses and water bodies in the County are classed by the EAW as good to moderate quality in terms of both ecological and chemical parameters. Groundwater vulnerability which indicates the susceptibility of the underlying aquifer to pollution varies across the County. The areas of limestone around the Orme and Llysfaen are classified as susceptible areas. There is a groundwater source protection zone near Trofarth. Surface water flooding is a common source of flooding in the County.	Flooding can have a potential negative impact on water quality. Flooding of contaminated land, sewerage networks, agricultural land and urban land can result in the spread of pollutants from their sources into watercourses. The LFRMS may have effects for water quality by: • Implementation of SuDS: should reduce pressure on the sewerage network, reducing the likelihood of floods arising from it and preventing the spread of pollutants. To fulfil the local authority's role as a SuDS Approval Body (SAB), the LFRMS will describe how the implementation of SuDS will be managed across the local authority; • Proper management of flood risk: will attempt to avoid the flooding of contaminated land and the subsequent spread of pollutants into watercourses and the sea impacting the quality of the water bodies; • Releasing pollutants into watercourses, which have been produced by the construction undertaken for flood alleviation schemes, may diminish water quality. However, this is likely to be avoided via the flood defence/land drainage consent process and pollution control guidelines; and • Careful management of water in terms of flood risk will allow for better water resources management through adaption to climate change and other water related pressures.
Climatic Factors	✓		The County is predicted to have warmer, drier summers and wetter, warmer winters Sea level is projected to rise as a result of climate change.	Climate change can increase flood risk through heavy rainfall leading to flash floods. The LFRMS will need to take climate change effects into consideration when planning flood management. Although the LFRMS is not directly concerned with tidal flooding, tidal flooding may have cumulative effects with surface water flooding (storm surge) which is prevalent in Conwy County due to the coastline and River Conwy. Since the coastal strip is heavily populated this could have significant effects. The LFRMS may have effects for climate change by: • Managing and mitigating the future effects of climate change with regard to flooding including infrastructure; • Increasing sustainability across the Conwy County with regard to flood risk management, as it will incorporate more sustainable flood management techniques (SuDS), which are more beneficial compared to current techniques; • Opportunity to Use 'greener' solutions for flood defences including using material which are sustainable and locally sourced, use of natural defences and use of SuDS; and • Potential increase in carbon emissions from flood management activities such as the construction of concrete-made flood defences or the creation of methane producing habitats (i.e. wetlands).

SEA Topic	Scoped In	Scoped Out	Evidence	Key Issues and Opportunities
Soil	✓		Over three quarters of the County's area is used for agriculture. However, 87% of this land is classified as Grade 4 or 5 (poor or very poor quality). Due to this the majority of agricultural land is used for livestock. Rural Conwy relies heavily on agriculture as a source of income. Legacy of contaminated land along the Conwy Valley from the metal extracting industry.	Flooding can cause damage of agricultural land (including the wider functions of soil) making it unusable for farming and can ruin crops and injure or kill livestock. This is an important issue as rural the Conwy county economy relies heavily on the agricultural industry. Flooding can also wash away soils leading to siltation or rivers and streams, however It should also be noted that the flooding can increase the nutrients in the areas by providing additional nutrients washed down stream. Flooding of contaminated areas can cause pollution of watercourses and groundwater, and can affect human health. The LFRMS may have effects on soil by: • Implementing an efficient flood risk management plan to reduce the occurrence and level of severity of floods in the Conwy County. This in turn may make land available for agriculture which was previously deemed as unsuitable due to flood risk, and should reduce the incidents of pollution relating to flooding.
Biodiversity, Fauna, and Flora	✓		The County is rich in flora and fauna. It contains several SPA, SAC, SSSI, NNR, LNR and RIGS. These are also important for tourism.	Natural flooding plays an integral role in creation and maintenance of wetland habitats, upon which many species rely on. However, flooding events could potentially lead to the destruction of habitats sensitive to flooding. The LFRMS may have effects for biodiversity, including: • May alter natural flooding regimes which could potentially negatively impact ecosystem that rely on flooding to maintain their habitats and soil fertility; • Flood alleviation / defence measures mat restrict or prevent the movement of migratory and mobile wildlife species between habitats; • The discharge of floodwater into water bodies can also have a detrimental effect on biodiversity in terms of direct physical damage and impact on water quality; • May benefit biodiversity by reducing the number of severity of flood events that could threaten habitats and species; • Physical flood defences (e.g. embankments/levees, walls, weirs, sluices and pumping stations) used in flood management may negatively impact the habitats of certain species in turn affecting those species, e.g. white clawed crayfish, otters, water voles and fish species; • Natural flood alleviation schemes have the potential to increase biodiversity through the creation of new habitats; and • Flood defence works need to timed appropriately to avoid fish spawning season, and bird breeding season.
Landscape	✓		38% of the County is within the Snowdonia National Park, and the County also contains landscapes designated as	Flood events could potentially result in the damage/destruction of important landscape features. The LFRMS may have effects for landscape through: • Alteration of the landscape character both positive

SEA Topic	Scoped In	Scoped Out	Evidence	Key Issues and Opportunities
			outstanding which include the seascapes of Llandudno and Colwyn Bay. These areas are important for tourism.	and negative. A natural flood alleviation method may enhance the character of the landscape. However, man-made structural defences may detract from the quality of the landscape; and • May benefit the landscape quality by reducing the occurrence and severity of floods, which could in turn damage important landscape features.
Cultural Heritage	✓		The County has a rich heritage and contains many listed buildings, conservation areas, historic parks and gardens and a World Heritage Site. These areas are also important for tourism.	Flooding may cause damage to the fabric of historic assets and/or their setting. The LFRMS may have effects for cultural heritage through: • There may be opportunities for synergy between a reduction in the flood potential of some areas and the protection of historic features, for example historic monuments are vulnerable to damage from water erosion so actions which reduce the rate of water flow can be beneficial. This is particularly important for Conwy where cultural heritage sites play such a key role in supporting tourism; • Implementing an efficient flood risk management plan to reduce the occurrence and level of severity of floods in the County will help protect historic assets (e.g. historic monuments are vulnerable to damage from water erosion so actions which reduce the rate of water flow will be beneficial); and • Flood defence structures and construction activities may result in damage to historic assets or affect their setting. However, this is likely to be avoided through best practice site method and the planning approvals process.
Population	✓		Current population is 111,000 and this is expected to increase. The narrow coastal belt contains around 80% of the County's population The County's economy relies heavily on the service and tourism sectors.	Flooding events can severely impact local population. Flooding can cause damage to houses, local infrastructure and services that communities rely on. Flooding can also affect people's livelihoods and the economy through damage to business premises and lost revenue due to stock damage or transportation delays. Flooding can also damage tourism assets and put visitors off coming to an area. Population increase will led to new development which increase flood risk and assets at risk from flooding. The LFRMS may have effects for population through: • Benefiting the local population by reducing flood risk and its impacts for communities, businesses and tourism; • Reducing flood risk may make land available for development which was previously deemed as unsuitable due to flood risk; • Costs associated with implementation of the LFRMS; and • Opportunity to work with planners to reduce new development in high flood risk areas; work with businesses to raise awareness of flood risk and how to deal with a flood event; work with developers to design SuDS into new developments.
Human	✓		Deprivation is higher in the	Flooding events can impact human health through a

SEA Topic	Scoped In	Scoped Out	Evidence	Key Issues and Opportunities
Health			coastal towns and housing based deprivation in the County is above the Wales average Conwy has a large elderly population.	number of factors including injury and death; emotional stress of flooding to a home and loss/damage to personal items; pollution and contamination. It is anticipated that the impacts of climate change may be felt disproportionately by the most vulnerable society. As such, the most deprived areas and elderly people may be more vulnerable to flood risk. The LFRMS may affect human health though: • Implementing an efficient flood risk management plan to reduce the occurrence and level of severity of floods in the Conwy County, and consequently the number of people at risk; and • Opportunity to raise awareness of flooding, what to do in the event of a flooding incident and who to contact for help and advice. This may also help reduce perceived fear associated with flooding as residents will be equipped with the knowledge of how to deal with a flood event.
Material Assets	✓		Household number projections for 2008-2028 will require around 420 new dwellings each year. Additional land is required for future waste arisings.	Flooding can damage and destroy key assets and infrastructure including: • Damage to houses by making them uninhabitable; • Damage to waste management infrastructure, resulting in spread of contaminants; • Damage to transport infrastructure, reducing accessibility to essential services; • Damage to power stations and supplies, affecting energy supplies; and • Damage to community facilities making them unfit and unsafe for use. The LFRMS may have effects for material assets by: • Implementing an efficient flood risk management plan to reduce the occurrence and level of severity of floods in the County, reducing assets and infrastructure at risk of flooding; • Reducing flood risk may make land available for development which was previously deemed as unsuitable due to flood risk; and • Opportunity to work with developers to design SuDS into new housing developments, new waste facilities etc, and encourage use of grey water recycling; work with planners to ensure new development, key assets and infrastructure are not located in high flood risk areas.

4.4 SEA Framework

The SEA Framework was developed during the scoping stage and includes the SEA objectives, assessment criteria and indicators (see Table 4.2). The SEA objectives were developed based on the SEA Directive topics, baseline information, and key issues for the County. The indicators will be used as the basis for monitoring proposals to monitor the implementation of the LFRMS (Section 7).

Table 4.2: SEA Framework

Topic	Conwy Strategy SEA Objectives	Assessment Criteria	Indicators
Water	Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	• Will it affect the ecological status/potential of water bodies? • Will it affect the chemical status/potential of water bodies? • Will it affect overall water quality of water bodies?	• Ecological status of water bodies; • Chemical status of water bodies; • Bathing water quality; and • Number of pollution incidents following flood events.
Flood risk	Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	• Will it reduce the risk of flooding from ordinary watercourses? • Will it reduce the risk of flooding from surface water run-off? • Will it reduce the risk of flooding from groundwater? • Will it reduce the risk of flooding from artificial water bodies? • Will it reduce the risk of flooding from storm surges? • Will it help provide a better understanding of flood risk?	• Number of residential and non-residential properties at risk of flooding from local sources; • Number of new developments permitted in areas of flood risk (including flood plains); • Number of flood defences schemes implemented; • Number of SuDS implemented; and • Number and severity of flooding incidents in Conwy and their source.
Population, Human Health	Enhance human health and wellbeing through reducing flooding effects[14].	• Will it increase awareness of flood risk? • Will it prescribe procedures for emergency planning for flood risk? • Will it help communities be more resilient and prepare better for flooding events? • Will it help reduce the perceived fear of flooding? • Will it help to maintain accessibility to key services	• Number of flood related injuries and fatalities; • Number of residential and non-residential properties at risk from flooding; • Number of flood events leading to transport disruption; • Number of awareness raising activities and events undertaken; and

[14] It should be noted that the objective on population and human health has been changed from the scoping stage because it was felt that the objective should be broadened to include human health effects from a reduction in flooding in general, not just through flood risk awareness raising and emergency planning.

Topic	Conwy Strategy SEA Objectives	Assessment Criteria	Indicators
		and goods? • Will it reduce flood risk for businesses and reduce revenue lost through flooding? • Will it protect tourism assets and reduce tourism revenue lost through flooding?	• Number of complaints.
Biodiversity	Protect and enhance biodiversity and geo-diversity across the Conwy County.	• Will it encourage habitat creation through SuDS and flood defence works? • Will it involve loss or damage to habitats as a result flood defence works? • Will flood management proposals affect habitats that rely on localised flooding e.g. wetlands? • Will it affect ecological areas that are benefited by flood cycles? • Will it help protect ecological sites and species from flood risk?	• Negative impacts on statutory and non-statutory ecological sites as a result of flooding; • Number of flood incidents that have resulted in loss of protected or LBAP species; • Area of protected or LBAP habitat damaged or brought into less favourable condition though flooding; • Area and type of habitat created or lost as a result of SuDS and flood defence works; and • Populations of priority species lost or increased through flood defence works.
Landscape	Protect and enhance landscape quality and character across the county.	• Will it protect landscape quality and character from flood risk? • Will it enhance (or detract) landscape quality?	• A landscape area considered as locally important at risk from flooding; • No significant adverse landscape effects from flooding related development in terms of local landscapes; • No significant impacts on Registered Landscapes of Historical Interest in Wales; and • Positive (or negative) visual impact of flood defence schemes located within outstanding areas of landscape quality or significance.
Cultural Heritage	Protect historic assets and their landscapes.	• Will it affect the fabric of an historic asset • Will it affect the setting of a historic asset • Will it help protect historic assets from flood risk?	• Number of designated historic assets at risk of flooding; and • Number of listed buildings on the ‘at risk’ register at

Topic	Conwy Strategy SEA Objectives	Assessment Criteria	Indicators
			risk from flooding.
Climate Factors	Educate, manage, plan and adapt for the effects of climate change.	• Will it assist in educating people about the impacts of climate change on flood risk? • Will it help the County to adapt to climate change effects? • Will it encourage implementation of SuDS?	• Number of SuDS schemes implemented; • Predicted future flood risk with climate change; and • Number of educational activities (exhibitions, workshops, leaflets, questionnaires, advertising) undertaken.
Material Assets	Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	• Will it help protect key transport infrastructure? • Will it help protect energy, power and telecommunication assets? • Will it help protect community facilities including schools, libraries, hospitals etc? • Will it help protect waste facilities? • Will it affect the water resources? • Will it help reduce the number of properties at risk of flooding?	• Number and severity of incidents leading to disruption or damage to transport infrastructure; • Number and severity of incidents leading to disruption or damage to service provision; • Number of residential and non-residential properties at risk of flooding across Conwy; • Number of power, waste and telecommunication assets at risk of flooding; • Number of critical services at risk of flooding; and • Transport infrastructure at risk from flooding.
Soil	Protect best quality soil and agricultural land and minimise the potential for pollution.	• Will it help protect soils and agricultural land? • Will it help minimise the potential for pollution from flooding?	• Area of agricultural land at risk of flooding; • Area of agricultural land lost due to the need for flood defence; and • Number of pollution incidents arising from flooding.

4.5 Compatibility of SEA Objectives

When developing objectives based on environmental, social and economic issues, it is likely that not all of these objectives will relate or be compatible. For example, objectives which are economic issues may sometimes conflict with environmental objectives, and vice versa. A compatibility assessment of the SEA objectives is presented in Figure 4.2, and demonstrates any potential conflicts and uncertainties between objectives.

The following key has been used to illustrate the SEA objectives compatibility:

+	Objectives are compatible
-	Objectives are potentially incompatible
0	Objectives are not related
/	Uncertainty over relationship

Figure 4.2: SEA Objectives Compatibility Matrix

SEA Objectives	1	2	3	4	5	6	7	8	9
1									
2	+								
3	+	+							
4	+	/	+						
5	+	/	+	+					
6	0	/	+	0	+				
7	+	+	+	+	+	+			
8	0	+	+	0	0	0	+		
9	+	+	+	+	+	0	+	0	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

SEA Objectives

Table 4.3: SEA Objectives

Ref	Conwy LFRMS SEA Objectives
1	Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.
2	Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.
3	Enhance human health and wellbeing through reducing flooding effects.
4	Protect and enhance biodiversity and geo-diversity across the Conwy County.
5	Protect and enhance landscape quality and character across the county.
6	Protect historic assets and their settings .
7	Educate, manage, plan and adapt for the effects of climate change.
8	Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.
9	Protect best quality soil and agricultural land and minimise the potential for pollution.

Instances of uncertainty between objectives are explained below:

Objective 2 with Objective 4: Some habitats rely on localised flooding events or inundation by water. Seeking to minimise the impacts of flooding in a particular locality may lead to a starvation of water for habitats in close proximity. There is also the potential that waters channelled away from one locality will result in too much water in other localities. There is also potential that flood defence works may result in detraction of ecological sites and affect habitats and species.

Objective 2 with Objective 5: There is the potential that flood defence works to reduce and manage flood risk may detract from the landscape character.

Objective 2 with Objective 6: There is the potential that flood defence works to reduce and manage flood risk may detract from historic assets.

5. Strategic Options Development and Assessment

5.1 Compatibility of LFRMS Outcomes and SEA Objectives

Testing the compatibility of the LFRMS outcomes against the SEA objectives is the first task in Stage B of the SEA process. It helps to identify any potential synergies or inconsistencies between the LFRMS and SEA objectives and contributes to the development of the proposed options. A compatibility matrix (see Figure 5.1) was completed between the SEA and the LFRMS objectives.

The following key has been used to illustrate the LFRMS and SEA objectives compatibility:

+	Objectives / Outcomes are compatible
-	Objectives / Outcomes are potentially incompatible
0	Objectives / Outcomes are not related
/	Uncertainty over relationship

5.2 Summary of Compatibility

The LFRMS outcomes and SEA objectives are all compatible. The LFRMS outcomes aim to reduce the risks, impacts and consequences of flooding for people, business, property, infrastructure and the environment. These outcomes support the SEA objectives on protecting communities, biodiversity, landscape, heritage, water, soils etc. Adopting a sustainable approach to flood risk management will help ensure that flood management schemes do not adversely effect the environment.

Figure 5.1: LFRMS and SEA Objectives / Outcomes Compatibility Matrix

		Strategic Environmental Assessment Objectives								
		1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	3. Enhance human health and wellbeing through reducing flooding effects.	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	5. Protect and enhance landscape quality and character across the county.	6. Protect historic assets and their landscapes.	7. Educate, manage, plan and adapt for the effects of climate change.	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	9. Protect best quality soil and agricultural land and minimise the potential for pollution.
Conwy CBC Local Flood Risk Management Strategy Outcomes	**Outcome 1**	+	+	+	+	+	+	+	+	+
	Outcome 2	+	+	+	+	+	+	+	+	+
	Outcome 3	+	+	+	+	+	+	+	+	+
	Outcome 4	+	+	+	+	+	+	+	+	+
	Outcome 5	+	+	+	+	+	+	+	+	+
	Outcome 6	+	+	+	+	+	+	+	+	+
	Outcome 7	+	+	+	+	+	+	+	+	+
	Outcome 8	+	+	+	+	+	+	+	+	+
	Outcome 9	+	+	+	+	+	+	+	+	+
	Outcome 10	+	+	+	+	+	+	+	+	+

Conwy CBC LFRMS Outcomes

Outcome 1. To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks;
Outcome 2. Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk;
Outcome 3. To work together (both FRMA, stakeholders and public) to reduce flood and coastal risks, sharing data and resources to the greatest benefit;
Outcome 4. To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;
Outcome 5. To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments;
Outcome 6. Improve and/or maintain the capacity of existing drainage systems by targeted maintenance;
Outcome 7. Take a sustainable approach to flood risks management balancing economic, environmental and social benefits;
Outcome 8. Increasing approaches that utilise the natural environment;
Outcome 9. Ensure the development of skills required to implement effective and innovative flood risk management measures; and
Outcome 10. Identify projects and programmes which are affordable, maximising capital funding from internal and external sources.

5.3 Assessment of Strategic Options

A variety of options or 'measures' were developed under each of the LFRMS outcomes (see Section 6.1). The aim of the measures was to help CCBC to deliver the LFRMS outcomes by providing more detailed approaches and tasks to be undertaken. Each of the measure was assessed against the SEA Framework (Table 4.2). A 'Do Nothing' option and a 'Business as Usual' option were also assessed. A definition of these options is presented below:

- Do Nothing – the flood risk management team at CCBC is disbanded and no further work on flood risk management is undertaken; and
- Business as Usual – the existing flood risk management team at CCBC is retained and current flood risk management activities continue but the LFRMS is not implemented.

The measures were appraised against the SEA Framework by determining the level of environmental performance of the measure against each of the SEA Framework objectives. It should be noted that the assessment was a high level, strategic evaluation of implementing policy.

The assessment criteria and key used were as follows:

+++	Significant positive effect
++	Moderate positive effect
+	Minor positive effect
0	Neutral or no effect
-	Minor negative effect
- -	Moderate negative effect
- - -	Significant negative effect
?	Uncertainty over effect or multiple effects which are both positive and negative
D	Effect depends on implementation

Duration of Effect	
LT	Long Term
MT	Medium term
ST	Short Term
Perm	Permanent
Temp	Temporary

Cumulative Effect	
D	Direct
I	Indirect
SE	Secondary
SY	Synergistic

Definitions of scoring key:

Duration of effect:

- Long Term – effects that will occur between 50 and 100 years after implementation of the plan;
- Medium Term – effects that will occur between 20 and 50 years after implementation of the plan;
- Short Term – effects that will occur between 0 and 20 years after implementation of the plan;
- Permanent – are effects of the plan that are permanent e.g. loss of trees for a development; and
- Temporary – are effects of the plan that are temporary in nature, usually these would be temporary construction impacts.

The duration of short, medium and long term has been taken from the time periods set out in the Local Flood Risk Management Strategies guidance (Welsh Government, November 2011).

Cumulative Effect:

- Direct – are effects that are a direct result of the plan. For example, the plan or development would create jobs;
- Secondary or indirect - are effects that are not a direct result of the plan, but occur away from the original effect or as a result of a complex pathway. Examples of secondary effects are a development that changes a water table and thus affects the ecology of a nearby wetland; and construction of one project that facilitates or attracts other developments; and

Synergistic effects - interact to produce a total effect greater than the sum of the individual effects. Synergistic effects often happen as habitats, resources or human communities get close to capacity. For instance a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species at all.

5.4 Summary of Options Assessment

The full assessment tables and commentary are presented in Appendix D. Below is a written summary of the assessment results.

5.4.1 Initial Draft LFRMS Outcome 1

Measure 1 – Do nothing
If the CCBC flood management team, Risk Authorities and the public do not understand flood risks and issues then the risks cannot be effectively managed and flooding will continue to be a problem and furthermore is likely to get worse as climate change affects cause more frequent and severe weather events. This is likely to have significant negative effects on flood risk reduction, human health, infrastructure, property and businesses, historic assets and soils. In addition, the measure would not allow for climate change planning and adaptation. There are also likely to be moderate negative effects on biodiversity, water quality and landscape from flood damage.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
The flood management team keep up-to-date with current flood risk knowledge and flood management techniques and communicate these to the public so that all have an understanding of current flood risk issues. As more data is recorded and built up over time the understanding of risks and risk areas will increase and more efficient and effective management can be implemented to reduce flood risk. This will have benefits in terms of protecting humans, property and businesses, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. Business as Usual also involves keeping abreast of climate change effects and projectors and taking these into consideration in planning flood management.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Instigate and publicise the process for recording all flooding incidents and where appropriate carry out flooding investigations
This measure would ensure that the process for recording flood incidents and carrying out flood investigation was consistent and transparent, allowing data to be used for future flood management. This is likely to result in more effective flood management, identifying responsibility, bringing all useful information together in one place, providing an understanding of the incident, outlining possible causes of flooding and potential long-term solutions to protect people and their homes from flooding. This is likely to have benefits

in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage in the future. It will also help plan for future climate change effects.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Develop a consistent approach to registering and recording of flood and drainage assets and make relevant data readily available to all interested parties
This measure would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects.

SEA Recommendation - Measure 4 and Measure 6 are basically the same and only one or the other needs to be included.

Measure 5 – Asset ownership and responsibility
This measure would ensure that everyone knew who owned which assets and what their responsibilities are regarding those assets. This would help reduce flood risk as people are more likely to take ownership and responsibility of looking after their own assets, and also if a flood event occurs there will be no disagreement over whose responsibility it is to take action. However, just because people know they have responsibilities doesn't mean they will carry them out. Therefore, there are likely to be minor positive effects in terms of reducing flood risk and impacts on humans, infrastructure, property, businesses, historic assets and soils. There are unlikely to be effects on biodiversity and landscape.

SEA Recommendation – This measure supports Measure 4 or Measure 6 and would have more benefits if it was incorporated as one measure.

Measure 6 – Develop a consistent approach to designation of flooding/drainage structures
This measure is similar to measure 4 and will therefore have similar effects. It would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects.

SEA Recommendation – Measure 4 and Measure 6 are basically the same and only one or the other needs to be included.

Measure 7 – Develop a county wide flooding and drainage asset model to allow a proactive risk management approach to be taken by the flood authority
This measure is likely to have significant positive effects in terms of better understanding and reducing flood risk and will have a positive impact in terms of protecting human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model making it more accurate. Reduced flood risk will have moderate positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

SEA Recommendation – This measure would provide significant positive effects in terms of flood risk understanding and flood reduction and could be included in the LFRMS.

5.4.2 Initial Draft LFRMS Outcome 2

Measure 1 – Do nothing
Doing nothing will have significant negative effects in terms flood risk, human health and impacts on property, infrastructure, businesses and historic assets because individuals and communities will not be

aware of the risk and what measure they should put in place to reduce flood risk and flooding consequences. In the medium and long term as frequency and severity of flooding events increase with climate change effects, doing nothing to prepare for this will have negative impacts on water quality, biodiversity, landscape and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently CCBC carry out some awareness raising campaigns and events, especially in high flood risk areas. This helps increase public awareness of flood risks and what to do to prepare for a flood. Therefore, this measure is likely to have positive effects on reducing the impact and consequences of flooding for human health, infrastructure, property, businesses and historic assets. As understanding and awareness increases there may be beneficial effects for biodiversity, landscape and soils from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Raise public awareness of the impacts of climate change on coastal erosion and flooding
Climate change will have significant impacts on coastal erosion and flooding in the future. It is important that people are aware of this so that they can plan for the future and prepare and adapt their homes for future flood risk. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Publish a clear public awareness strategy and communicate it (Workshops, public awareness events, publish information on the Council Website, adverts in local press)
Implementing a public awareness strategy through a range of media should engage with a wide variety and geographical distribution of people. The more people that are aware of flood risk and how to deal with it the more benefits will be gained in terms of flood protection. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property, assets and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents
This measure will help ensure that flood support is provided to people in non-emergency situations. The team can provide advice on what to do to prepare and protect assets and property from flooding. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – To collaborate with statutory bodies to promote the existing flood warning service and their proposed flooding campaigns
Awareness of flood warning services and flooding campaigns are important to allow people to prepare for a flood event and understand what to do in a flood event. This will have benefits on human health and reducing the impacts and consequences of flooding. It may also have minor positive effects on biodiversity, water quality, landscape and soils. By collaborating, CCBC can utilise staff and expertise from other authorities and help reduce costs to the Council.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 7 – Create an integrated county wide real time hydraulic and flood alert map
This measure is likely to have significant positive effects in terms of understanding and raising awareness of flood risk and reducing flood risk and associated impacts on human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model creating a more accurate reflection of flood risk in the County. Reduced flood risk will have positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

SEA Recommendation – This measure would provide significant positive effects in terms of flood risk understanding and awareness, and flood reduction and could be included in the LFRMS.

Measure 8 – Make public aware of available flood prevention and mitigation measures in the event of flood incidents
If the public are aware of the flood prevention options and mitigation measures available to them to reduce flooding and alleviate the effects of flooding then they are more likely to use these to protect themselves, their properties and businesses. This is likely to have positive effects in terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, this measure is the same as Measure 5 under Outcome 4 and therefore only one or the other should be included in the LFRMS.

Measure 9 – Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood
This measure should help people plan and prepare for flooding events which in turn should reduce the impacts on human health, property, businesses, infrastructure and historic assets. The measure is more focused on increasing awareness of what the public can do to stay safe in a flood and in clearing up afterwards than biodiversity and landscape. However, there may be some long term minor positive effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

5.4.3 Initial Draft LFRMS Outcome 3

Measure 1 – Do nothing
Not working together and sharing data and knowledge on flood risk is likely to have negative, transboundary effects and flooding issues in other catchments that can not be fully understood and collaboratively tackled. This will lead to flood risk issues resulting in negative effects on water quality, human health, biodiversity, historic assets, soils, infrastructure, property and businesses.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently there is a certain amount of data sharing and collaboration with FRMA's, stakeholders and the public. This provides positive effects in terms of reducing flood risk which will have resulting benefits in protecting humans, property, infrastructure, businesses, soils, water quality and historic assets from flood damage. There will be minor benefits for biodiversity and landscape.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Identify responsibilities of the riparian owners of managing their assets, through public engagement
This measure would ensure that riparian owners understood their responsibilities of managing their assets. This would slightly help to reduce flood risk as owners should fully understand what they are required to do. However, just because people know they have responsibilities doesn't mean they will carry them out. Therefore, there are likely to be minor positive effects in terms of reducing flood risk and impacts on humans, infrastructure, property, businesses, historic assets and soils. There are unlikely to be effects on biodiversity and landscape.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge, data and lessons learnt
This measure will ensure that CCBC continue to participate in sharing knowledge, data and lessons learnt. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Develop an effective communication plan to ensure collaborative working and data sharing
This measure will help ensure continued and effective communication to share data and work together to address flood issues. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – Undertake stakeholder engagement, to identify responsibilities of flood risk partners
Ensuring flood risk partners are aware of, and understand, their responsibilities is important for effective and collaborative flood management. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

5.4.4 Initial Draft LFRMS Outcome 4

Measure 1 – Do nothing
Under the do nothing option, flood risk and the associated consequences would not be addressed and the situation would continue to get worse as flood events increase due to climate change. This would have significant negative effects on human health, infrastructure, property, businesses and historic assets from flood damage. It is also likely to have minor and moderate negative effects on water quality, biodiversity, landscape and soils.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
CCBC currently manage and reduce flood risk using the resources available but not every area of the County can be protected. In the future as the impacts of climate change results in more frequent and severe flooding events CCBC will not have the capacity to deal with all flooding issues. This is likely to result in negative effects in terms of increased flood risk and flood damage for humans, infrastructure, property, businesses, historic assets, and soils.

SEA Recommendation – This measure will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 3 – Identify vulnerable groups within the community, and prepare action plans in the event of flooding
This measure is aimed at the protection of vulnerable groups within the community from flooding. Therefore, there will be positive effects in terms of human health and flood reduction but only for certain groups and areas. It is unlikely that there would be any effects on biodiversity, water quality, landscape, historic assets or soils.

SEA Recommendation – Although this measure only provides limited positive effects. The positive effects are considered important in protecting vulnerable groups from the effects of flooding, and could be included in the LFRMS.

Measure 4 – Identify areas at greatest risk of flooding, and develop a capital cost investment programme to mitigate against flooding
Identifying high flood risk areas will allow investment to be prioritised and targeted at the most appropriate areas. A capital cost investment programme is likely to result in construction of flood alleviation schemes. This will have positive effects in terms of reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Effects on water quality will depend on the type or flood defence scheme implemented. For example, creation of a wetland or reedbed will have positive effect on water quality. However, other defence works could affect water flows or could have potential for spillages and contamination during construction.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 5 – Educate general public on options for protecting their properties through flood prevention options and resilience measures
If the public are aware of the flood prevention options and resilience measures available to them to reduce flooding effects then they are more likely to use these to protect themselves and their properties and businesses. This is likely to have positive effects in terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, this measure is the same as Measure 8 under Outcome 2 and therefore only one or the other should be included in the LFRMS.

Measure 6 – Establish a post incident support team to assist following a flood event
Although this measure is likely to have limited benefits it is important for people's peace of mind to know that there is someone they can call to get advice and support following a flood incident. The support team may also be able to advise people what do to next time there is a flood. This could help reduce impacts and consequences for property and businesses. It may also help protect water quality as advice could be provided on where to store fuels, oils etc so they don't pollute the water during a flooding incident.

SEA Recommendation – Although this measure only provides limited positive effects. The positive effects are considered important in providing peace of mind and support to people following a flood event, and could be included in the LFRMS.

5.4.5 Initial Draft LFRMS Outcome 5

Measure 1 – Do nothing
If the planning department are not aware of flood risk areas and issues then they may allow development in inappropriate places such as floodplains and high flood risk areas. This will increase flood risk and the number of people and properties at risk. This will have significant effects in terms of increased flood risk negatively affecting humans, infrastructure, property, businesses, water quality, biodiversity, landscape, historic assets and soils. It may also exacerbate future climate change effects.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently the CCBC flood management team and planning department do have some communications on development policies in flood risk areas. This provides minor benefits in terms of flood reduction through appropriate location of new developments in relation to flood risk areas. This is likely to have minor positive effects in terms of protection of biodiversity, water quality, landscape, human health, historic assets and soils from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Develop clear guidance for the Planning Department when assessing planning applications
This measure would provide clear guidance to the Planning Department on how to deal with planning applications in flood risk areas and what standards should be set. This should help ensure development is not permitted in inappropriate locations such as floodplains or areas at high risk of flooding. It would also provide a consistent approach for determining all planning applications. The measure is likely to have positive effects in terms of reducing flood risk and assets at risk of flooding. Thus, having positive effects through protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage. It will also help plan and adapt for future climate change effects through discouraging building in appropriate places such as floodplains which may be needed in the future for flood water storage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Develop a process with the Planning Department to create clear advice and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments)
This measure would help ensure that developers design new developments with appropriate drainage and with consideration of flood risk issues. It would also encourage developers to incorporate appropriate SuDS into designs and plan for future climate change effects. The measure is likely to have positive effects in terms of preventing further areas of the County becoming at risk from flooding and lead to the protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Establish a SuDS Approval Body (SAB)
Establishing a SuDS Approval Body (SAB) should move SuDS higher up the agenda and encourage more implementation of SuDS in developments as flood management techniques. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to

reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also assist in planning and adapting for future climate change effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – Keep the Planning Department informed and up-to-date with flood areas in the County
This measure will help the planning department determine where new development should be appropriately placed to avoid flood risk areas. This should help reduce the numbers of development on floodplains or in high flood risk areas. This is likely to have positive effects in terms of flood reduction, human health and protection of infrastructure, property, businesses and water quality. It will also help contribute to future climate change planning and adaptation. The measure is concerned with development in relation to flood risk and is unlikely to have impacts on biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 7 – Develop policies for effective land use management and enhance development control procedures where appropriate
This measure would provide a clear and consistent approach to land use management and development control procedures in relation to development and flood risk. This would help planners to effectively plan new developments away from high flood risk areas and incorporate spatial development policies. This is likely to have positive effects in terms of flood risk reduction and benefits for humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from protection from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

5.4.6 Initial Draft LFRMS Outcome 6

Measure 1 – Do nothing
If drainage systems were not maintained then they would block up causing flooding and potential sewage overflows. These effects are likely to get worse with time as more drains become blocked increasing flooding. Both flooding and sewage will have health implications for humans, significant negative effects on water quality, and moderate negative effects on biodiversity and climate change adaptation. It will also have minor negative effects on landscape, cultural heritage and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently drainage maintenance is largely reactive. The maintenance team are usually called to unblock or mend/upgrade a drainage asset which prevents it from flooding. However, sometimes the drainage system floods before the team can remove the obstruction or upgrade the asset. Continued maintenance will provide minor benefits through a small reduction in flood risk. This is likely to have benefits in terms of human health, reduction of impact and consequences of flood, planning for climate change, protection of biodiversity and historic assets.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Identify and assess condition of existing drainage assets within the County, to prioritise capital investment
This option would provide a more proactive active looking at the condition of drainage assets to identify what and when assets will need upgrading to prioritise investment. This is likely to have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health,

property, infrastructure and businesses. It is likely to have minor positive effects on biodiversity, water quality, historic assets and climate change adaptation and planning.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Develop a risk based reactive and cyclical maintenance regime
This measure builds on Measure 2 by ensuring a prescribed and regular maintenance regime was in place. This would have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses, and water quality. It is likely to have minor positive effects on biodiversity and historic assets as a result of decreased flood risk.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is recommended that for clarity the measure is reworded to 'Develop and implement a risk based reactive and cyclical maintenance regime'.

Measure 5 – Develop a risk based programme for improving existing infrastructure
This measure builds on Measures 3 and 4 by using a proactive risk-based approach to improve existing drainage infrastructure. Improving drainage infrastructure will include upgrading assets that are failing and upgrading assets to deal with larger future flows from climate change. This will have significant effects in reducing future flood risk and impacts and consequences for human health, infrastructure, property and businesses. It will also have benefits in terms of protecting biodiversity, historic assts and water quality from the effects of flooding. Long term as more assets are improved the benefits will increase.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

5.4.7 Initial Draft LFRMS Outcome 7

Measure 1 – Do nothing
It has been assumed that in the do nothing option economic and social benefits would be prioritised over environmental issues when making flood management decisions. Therefore, flood risk may be reduced in the short and medium term using unsustainable methods but at climate change increases frequency and severity of flood events unsustainable methods will not be as effective as reducing and managing flood risk. Also unsustainable flood management could cause long term environmental impacts that could worsen flood risk in the future. There will be positive and negative effects on biodiversity, landscape and cultural heritage. Positive effects are likely from reduced flood risk and negative effects are likely from prioritisation of social and economic issues over environmental issues, resulting in negative environmental effects.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently environmental issues are given consideration as well as economic and social issues. This is likely to have a minor positive effect on water quality biodiversity, landscape and soils as flood management decision will take environmental effects into consideration. Currently historic assets are not given as significant priority as other environmental issues, social and economic issues. Therefore, a score of neutral has been determined. The current approach will help reduce flood risk for humans, properties, infrastructure and businesses.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits
Consideration of environmental issues as well as economic and social issues is likely to have a minor positive effect on water quality biodiversity, landscape and soils as flood management decision will take

environmental effects into consideration. It is assumed that historic assets would be given equal weight with other environmental issues. This approach will help reduce flood risk for humans, properties, infrastructure and businesses.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Embed policies from other local basin management plans, catchment flood management plans, local environmental policies and European protected sites into flood risk management procedures and programmes
This measure is unlikely to affect biodiversity, landscape, historic assets, soils and human health. Taking other plans into account may have minor benefits in terms in a clearer understanding of the wider picture of flood risk and cross-boundary effects. This will help plan flood management strategies for the local area.

SEA Recommendation – This measure will produce some minor positive effects and could be included in the LFRMS. However, other measures may provide greater benefits.

5.4.8 Initial Draft LFRMS Outcome 8

Measure 1 – Use traditional approaches to drainage
Traditional drainage approaches are likely to become updated in the future and less efficient and effective than other solutions. Using only traditional approaches is likely to lead to increased future flood risk resulting in negative effects on humans, property, infrastructure, businesses, water quality, biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Adopt soft engineering including SuDS
Implementing soft engineering approaches including SuDS can have benefits over just using traditional solutions in the majority of cases. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also help plan and adapt for future climate change effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Keeping up-to-date with new and innovative technologies for flood defence and flood management
The assessment has assumed that this measure is to keep up-to-date and implement where appropriate new and innovative technologies. New and innovative technologies are being continuously developed. However, it is likely that significant new and innovative technologies will not be developed until some time into the future. Therefore, larger benefits are likely to be realised in the medium and long term. It is likely that new and innovative technologies will make flood defences more efficient and effective, reducing flood risk and adapting to climate change. This would have benefits for human health, property, infrastructure, businesses, water quality, biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits
This measure is about incorporating multiple benefits into flood management schemes. Incorporation of new or enhanced habitat, landscaping, use of local materials, creation of amenity area will have benefits for biodiversity, water quality, landscape, climate change and human health. Creation of new wetland, for example, will help reduce flood risk and benefit the environment and society.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 5 – Develop and implement a policy of de-culverting
The de-culverting policy will have a presumption against culverting. This is likely to have positive effects as culverts can get blocked or collapse causing flooding. A reduction in culverting will reduce this risk and have minor positive effects in terms of reduced flood risk and effects for humans, water quality and historic assets. It will also allow waterways to be open having positive effects for biodiversity and landscape.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

5.4.9 Initial Draft LFRMS Outcome 9

Measure 1 – Do Nothing
If staff don't have the skills, knowledge and equipment to provide effective flood management then flood risk is likely to increase. The most significant effects are likely to be seen in the medium and long term when an accumulation of increased frequency and severity of flood events from climate change together with a lack of understanding and knowledge in how to deal with this will result in significant negative effects on humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as Usual
Currently the flood risk management team keep abreast of the latest news, legislation and techniques in the industry, and employ new staff members where a shortage is identified. This current situation is likely to have short, medium and long terms benefits for on humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets because the team will understand the current issues relating to flood risk and how to deal with them. However, there are barriers that hinder the team such as funding for additional staff, bureaucracy, and severe flood events requiring a large amount of resources which take staff aware from other work.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that larger benefits could be achieved through inclusion of other measures with more positive effects.

Measure 3 – Provide appropriate staffing levels to deliver the requirements of the Act
The Act places additional duties on the LLFA and in order that the quality of flood protection and response does not decrease with the extra workload additional members of staff will be required. Having additional staff will ensure that all the requirements of the Act are implemented effectively, allow staff to develop flood risk mapping and asset management systems to increase the efficiency and effectiveness of responses, and allow staff time to read up on new innovations and attend conferences. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Invest in appropriate software and hardware
Having the appropriate software and hardware for a task is essential for effective flood management. Often there are financial barriers to achieving this. This measure would ensure that appropriate software and hardware was available to the flood management team. This would allow them to conduct their work more efficiently and effectively, provide a consistent method and recording system, and manage data and interpretation to better understand flood risk. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 5 – Outsource specialist skills to deliver specific projects
Some skills are very specialist and the flood management team may not have the technical knowledge and expertise in these areas. Employing a specialist to provide support, advice and delivery of specific projects is important to ensure projects are designed and implemented successfully. Using a specialist during project design and development can have significant future benefits in terms of innovation, operational life and reliability, success of the project in protecting people and assets from flooding, and minimisation of negative environmental effects.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 6 – Provide support, training and networks of staff across the risk management authorities
This measure will help ensure that knowledge is shared between the risk management authorities to help better understand flood risk. Appropriate training is important so that staff can do their job effectively. This in turn should help understanding and reduction of flood risk which will have benefits for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

5.4.10 Initial Draft LFRMS Outcome 10

Measure 1 – Do Nothing
If funding is not obtained then flood protection projects cannot be implemented. In the short term this is likely to have minor negative effects on water quality, biodiversity, landscapes, historic assets and soils as flood events will go unmanaged. In the future, as the frequency and severity of flood events increases due to climate change the effects of flood damage will worsen. If flood management programmes and projects are not implemented, then flood risk and severity of flooding will increase. This is likely to have significant medium and long term negative effects on human health, key assets, infrastructure, properties and businesses.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as Usual
Currently funding is obtained from internal and external sources and projects are implemented based on risk, priority and costs. There is a limit to current funding and so many flood management programmes and projects are not implemented. In the short term a few new flood management projects are likely to be implemented having minor positive effects in terms of protecting humans, assets, infrastructure, property, business , biodiversity, landscape, soils water quality and historic assets from flooding. However, there can also be temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. In the medium and long terms more projects are likely to be implemented resulting in larger cumulative positive and negative effects.

SEA Recommendation –The positive effects associated with this measure are likely to outweigh the negative effects. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes. However, some of the other measures are likely to have larger positive effects and should be taken forward first.

Measure 3 – Identify potential funding sources
Identifying new funding sources should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the

period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 4 – Undertake full lifecycle cost benefit analysis for projects including social and environmental benefits

Undertaking lifecycle benefit analysis is likely to help prioritise projects and ensure that the most cost effective and beneficial project is taken forward. This should help reduce wasting money on projects with few benefits that could be better spent on alternative projects. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Consideration of social and environmental benefits as part of the lifecycle analysis is also likely to reduce negative effects associated with a project and maximise positive effects.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 5 – Investigate opportunities for match funding and grants

Investigating opportunities for match funding and grants should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

6. Conwy LFRMS Development and Assessment

6.1 Development of LFRMS

The Conwy LFRMS contains ten overarching outcomes which follow the guiding principles for flood risk management in Conwy. These outcomes are identified in the Conwy LFRMS as strategic outcomes.

The measures which seek to support these outcomes have been provided below. The reference number applies to which outcome the measure is seeking to support.

Only a very small number of amendments were made to the LFRMS measures between the early internal draft options and the Draft LFRMS for public consultation (December 2012). These changes related to recommendations coming out of SEA Assessment and from internal consultation within CCBC. The amendments have been explained below:

Initial Draft Outcome 1: To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks

1.1	Do Nothing;
1.2	Business as usual;
1.3	Instigate and publicise the process for recording all flooding incidents and where appropriate carry out flooding investigations;
1.4	Develop a consistent approach to registering and recording of flood and drainage assets and make relevant data readily available to all interested parties;
1.5	Asset ownership and responsibility
1.6	Develop a consistent approach to designation of flooding/drainage structures; and
1.7	Develop a county wide flooding and drainage asset model to allow a proactive risk management approach to be taken by the flood authority.

The option of Do Nothing is predicted to have generally negative environmental effects increasing the risk of flooding and erosion over time and therefore was not considered a viable option.

Under the Business as usual option, the general environmental effects tend to be similar to the Do Nothing option, but the effects are delayed over time, therefore it was also removed.

CCBC have already begun to record flood incidents and it was deemed unnecessary to publicise the process of how the flood incidents are recorded. Therefore measure 1.3 above was refined to measure 1.1 below.

Measure 1.4 and 1.5 above were rewritten to provide a more meaningful measure in 1.2 below.

Measure 1.7 above has been written in a clearer way to give more detail in measure 1.6 below.

Following internal consultation with different council department's two new measures have been included. Environment and Technical Services provided 1.5 and Civil Contingencies Unit provided 1.7.

Measures to support Outcome 1 have been refined to the following:

Outcome 1: To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks

1.1	Record all flooding incidents and where appropriate carry out flooding investigations;
1.2	Record all appropriate structures/assets on watercourses so that ownership and responsibility can be identified in the event of a problem with flooding;
1.3	Develop a consistent approach to designation of flooding/drainage structures;
1.4	Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment;
1.5	Develop a standard press statement to be issued following a flood event;
1.6	Develop a county wide map based record of flood risk assets, Flood Investigation Reports, historical flooding and areas at risk of flooding to allow a proactive risk management approach to be taken by the flood authority;
1.7	Create flood hazard and flood risk maps and flood risk management plans for areas in the county known to be at risk of significant flooding;
1.8	Update the Conwy County Flood Risk Assessment.

Initial Draft Outcome 2: Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk

2.1	Do nothing;
2.2	Business as usual;
2.3	Raise public awareness of the impacts of climate change on coastal erosion and flooding;
2.4	Publish a clear public awareness strategy and communicate it (Workshops, public awareness events, publish information on the Council Website, adverts in local press);
2.5	Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents;
2.6	To collaborate with statutory bodies to promote the existing flood warning service and their proposed flooding campaigns;
2.7	Create an integrated county wide real time hydraulic and flood alert map (long term);
2.8	Make public aware of available flood prevention and mitigation measures in the event of flood incidents; and
2.9	Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Measure 2.3 amended to 2.1 below has included the element of the impact of climate change on coastal defences rather than just coastal erosion.

Measure 2.8, above has been written in a clearer way to give more detail in measure 2.6 below.

Measures to support Outcome 2 have been refined to the following:

Outcome 2: Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk

2.1	Raise public awareness of the impacts of climate change on flooding and (failure of) coastal defences;
2.2	Publish a public awareness strategy (Workshops, public awareness events, update and improve the Council Website, adverts in local press) and communicate it;
2.3	Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents;
2.4	To collaborate with statutory bodies to promote the existing flood warning service (EAW) and their proposed flooding campaigns;
2.5	Create an integrated county wide real time hydraulic and flood alert map (long term);
2.6	Make the public aware of available flood prevention and mitigation measures (resistance and resilience) to protect their property and assets; and
2.7	Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood.

Initial Draft Outcome 3: To work together (both FRMA, stakeholders and public) to reduce flood and coastal risks, sharing data and resources to the greatest benefit

3.1	Do nothing;
3.2	Business as usual;
3.3	Identify responsibilities of the riparian owners of managing their assets, through public engagement;
3.4	Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge, data and lessons learnt;
3.5	Develop an effective communication plan to ensure collaborative working and data sharing; and
3.6	Undertake stakeholder engagement, to identify responsibilities of flood risk partners.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Following internal consultation with different council departments a new measure has been included. The Civil Contingencies Unit provided measure 3.5 below as it was considered an important task which needs to be implemented.

Measures to support Outcome 3 have been refined to the following:

Outcome 3: To collaborate with FRMA's, stakeholders and the public to reduce flood and coastal risks, and share data and resources to the greatest benefit

3.1	Identify responsibilities of the riparian owners of managing their assets, through public engagement;
3.2	Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge,

	data and lessons learnt;
3.3	Develop an effective communication plan to ensure collaborative working and data sharing;
3.4	Undertake stakeholder engagement, to identify responsibilities of flood risk partners; and
3.5	Introduce a process to carry out internal and external flood debrief meetings following a flood.

Initial Draft Outcome 4: To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion

4.1	Do nothing;
4.2	Business as usual;
4.3	Identify vulnerable groups within the community, and prepare action plans in the event of flooding;
4.4	Identify areas at greatest risk of flooding, and develop a capital cost investment programme to mitigate against flooding;
4.5	Educate general public on options for protecting their properties through flood prevention options and resilience measures; and
4.6	Establish a post incident support team to assist following a flood event.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Measure 4.5 above was amended to 4.3 below to include flood prevention options resistance as well as resilience.

CCBC have already set up a post incident support team so the measure 4.6 above was altered to reflect this in 4.4 below.

Following internal consultation with different council departments a new measure has been included. The Civil Contingencies Unit provided measure 4.5 below as it was considered an important task which needs to be implemented.

Measures to support Outcome 4 have been refined to the following:

Outcome 4: To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion

4.1	Identify vulnerable groups within the community, and prepare action plans in the event of flooding;
4.2	Identify areas at greatest risk of flooding, and develop a capital cost investment programme to alleviate flooding;
4.3	Educate the general public on options for protecting their properties through flood prevention options and resistance and resilience measures;
4.4	Assist and provide support following a flood event; and
4.5	Develop site specific flood response plans for at high risk communities.

Initial Draft Outcome 5: To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments

5.1	Do nothing;
5.2	Business as usual;
5.3	Develop clear guidance for the Planning Department when assessing planning applications;
5.4	Develop a process with the Planning Department to create clear advise and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments)
5.5	Establish a SuDS Approval Body (SAB)
5.6	Keep the Planning Department informed and up-to-date with flood areas in the County
5.7	Develop policies for effective land use management and enhance development control procedures where appropriate

Outcome 5 and its supporting measures were not changed apart from removing the Do Nothing and Business as usual options for the reasons already provided.

The final Measures to support Outcome 5 are as follows:

Outcome 5: To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments

5.1	Develop clear guidance for the Planning Department when assessing planning applications;
5.2	Develop a process with the Planning Department to create clear advise and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments);
5.3	Establish a SuDS Approval Body (SAB);
5.4	Keep the Planning Department informed and up-to-date with flood areas in the County; and
5.5	Develop policies for effective land use management and enhance development control procedures where appropriate.

Initial Draft Outcome 6: Improve and/or maintain the capacity of existing drainage systems by targeted maintenance

6.1	Do nothing;
6.2	Business as usual;
6.3	Identify and assess condition of existing drainage assets within the County, to prioritise capital investment;
6.4	Develop a risk based reactive and cyclical maintenance regime; and
6.5	Develop a risk based programme for improving existing infrastructure.

Outcome 6 and its supporting measures were not changed apart from removing the Do Nothing and Business as usual options for the reasons already provided.

The final Measures to support Outcome 6 are as follows:

Outcome 6: Improve and/or maintain the capacity of existing drainage systems by targeted maintenance

6.1	Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment;
6.2	Develop a risk based reactive and cyclical maintenance regime; and
6.3	Develop a risk based programme for improving existing infrastructure.

Initial Draft Outcome 7: Take a sustainable approach to flood risks management balancing economic, environmental and social benefits

7.1	Do nothing;
7.2	Business as usual;
7.3	Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits;
7.4	Embed policies from other local basin management plans, catchment flood management plans, local environmental policies and European protected sites into flood risk management procedures and programmes.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Following internal consultation with different council department's measure 7.4 above was removed as it was highlighted that CCBC does not have a catchment flood management plan nor an environment policy for the county, therefore the measure 7.2 below was added as an alternative.

Following internal consultation measure 7.3 below was included.

The final Measures to support Outcome 7 are as follows:

Outcome 7: Take a sustainable approach to flood risks management balancing economic, environmental and social benefits

7.1	Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits;
7.2	Consider the principles of the Conwy Sustainability Strategy in FCERM; and
7.3	Consider the use of attenuation through wetlands to increase the length of flow durations, store flood water, and provide amenity and ecological benefits.

Initial Draft Outcome 8: Increasing approaches that utilise the natural environment in place of traditional solutions

8.1	Use traditional approaches to drainage;

8.2	Adopt soft engineering including SuDS;
8.3	Keeping up-to-date with new and innovative technologies for flood defence and flood management;
8.4	Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits; and
8.5	Develop and implement a policy on de-culverting.

Measure 8.1 above was identified to have the equivalent meaning as Business as usual and was therefore removed.

Following internal consultation with different council department's measure 8.1 below was introduced which has incorporated measure 8.2 above.

CCBC have already written a non-culverting statement so the measure 8.5 above was altered to reflect this in 8.4 below.

The Outcome has been amended to remove 'in place of traditional solutions' as during internal consultation it was decided that in some circumstances it will be appropriate to use traditional solutions.

Measures to support Outcome 8 have been refined to the following:

Outcome 8: Increase approaches that utilise the natural environment

8.1	Adopt natural flood-risk management techniques including SuDS;
8.2	Keeping up-to-date with new and innovative technologies for flood defence and flood management;
8.3	Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits; and
8.4	Continue to implement Conwy's non-culverting statement.

Initial Draft Outcome 9: Ensure the development of skills required to implement effective and innovative flood risk management measures

9.1	Do nothing;
9.2	Business as usual;
9.3	Provide appropriate staffing levels to deliver the requirements of the act;
9.4	Invest in appropriate software and hardware;
9.5	Outsource specialist skills to deliver specific projects, and
9.6	Provide support, training and networks of staff across the risk management authorities.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Measure 9.3 above was amended to 9.1 below to include 'developing staff expertise' as well as 'appropriate staffing levels'.

The final Measures to support Outcome 9 are as follows:

Outcome 9: Ensure the development of skills required to implement effective and innovative flood risk management measures

9.1	Provide appropriate staffing levels and develop staff expertise to deliver the requirements of the act;
9.2	Invest in appropriate software and hardware;
9.3	Outsource specialist skills to deliver specific projects, and
9.4	Collaborate and provide support, training and network of staff across the region.

Initial Draft Outcome 10: Identify projects and programmes which are affordable, maximising capital funding from internal and external sources

10.1	Do nothing;
10.2	Business as usual;
10.3	Identify potential funding sources;
10.4	Undertake full lifecycle cost benefit analysis for projects including social, and environmental benefits; and
10.5	Investigate opportunities for match funding and grants.

The options of Do Nothing and Business as usual were removed for the reasons already provided.

Measure 10.3 above was amended to 10.1 below to include ‘communities and local business’s’ as potential funding sources.

The final Measures to support Outcome 10 are as follows:

Outcome 10: Identify projects and programmes which are affordable, maximising capital funding from internal and external sources

10.1	Identify potential funding sources which may include communities and local business’s;
10.2	Undertake full lifecycle cost benefit analysis for projects including social, and environmental benefits; and
10.3	Investigate opportunities for match funding and grants.

6.2 Assessment of Conwy LFRMS

The methodology for assessing the environmental effects of the LFRMS followed the same assessment methodology as described in Section 5.3. The full assessment results are presented below.

6.2.1 LFRMS Outcome 1 Assessment

		LFRMS Outcome 1: To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks							
		Measure 1.1	Measure 1.2	Measure 1.3	Measure 1.4	Measure 1.5	Measure 1.6	Measure 1.7	Measure 1.8
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT ++ (T)	MT + (T)	MT + (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT ++ (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)	ST 0	ST ++ (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT +++ (T)	MT + (T)	MT + (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT +++ (T)	LT + (T)	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST ++ (T)	ST + (T)	ST ++ (T)	ST + (T)	ST + (T/P)
		MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT ++ (T)	MT 0	MT +++ (T)	MT + (T)	MT + (T/P)
		LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T)	LT 0	LT +++ (T)	LT + (T)	LT + (T/P)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST 0	ST 0	ST 0
		MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT + (T)	MT 0	MT + (T)	MT 0	MT 0
		LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT 0	LT + (T)	LT 0	LT 0
	5. Protect and enhance landscape quality and character across the county.	ST + (T)	ST + (T)	ST + (T)	ST 0	ST 0	ST 0	ST 0	ST 0
		MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT 0	MT 0	MT 0	MT 0	MT 0
		LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT 0	LT + (T)	LT 0	LT 0
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)	ST + (T)	ST + (T/P)
		MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT + (T)	MT 0	MT ++ (T)	MT + (T)	MT + (T/P)
		LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT 0	LT ++ (T)	LT + (T)	LT + (T/P)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)	ST 0	ST + (T)	ST + (T)	ST 0
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT +++ (T)	MT + (T)	MT 0
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT +++ (T)	LT + (T)	LT 0
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)	ST 0	ST ++ (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT +++ (T)	MT + (T)	MT + (T)
		LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T)	LT 0	LT +++ (T)	LT + (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST + (T)	ST + (T)	ST + (T)	ST 0	ST 0	ST + (T)	ST 0	ST 0
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT 0	MT ++ (P)	MT 0	MT 0
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT 0	LT ++ (P)	LT 0	LT 0

Measure 1.1 – Record all flooding incidents and where appropriate carry out flooding investigations;

This measure would ensure that the process for recording flood incidents and carrying out flood investigation was consistent and transparent, allowing data to be used for future flood management. This is likely to result in more effective flood management, identifying responsibility, bringing all useful information together in one place, providing an understanding of the incident, outlining possible causes of flooding and potential

long-term solutions to protect people and their homes from flooding. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage in the future. It will also help plan for future climate change effects.

Measure 1.2 – Record all appropriate structures/assets on watercourses so that ownership and responsibility can be identified in the event of a problem with flooding

This measure would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This measure would also help ensure that everyone knew who owned which assets and what their responsibilities are regarding those assets. This would help reduce flood risk as people are more likely to take ownership and responsibility of looking after their own assets, and also if a flood event occurs there will be no disagreement over whose responsibility it is to take action. However, just because people know they have responsibilities doesn't mean they will carry them out. The measure is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects

Measure 1.3 – Develop a consistent approach to designation of flooding/drainage structures

This measure would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects.

Measure 1.4 – Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment

This option would provide a more proactive active looking at the condition of drainage assets to identify what and when assets will need upgrading to prioritise investment. This is likely to have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses. It is likely to have minor positive effects on biodiversity, water quality, historic assets and climate change adaptation and planning

Measure 1.5 – Develop a standard press statement to be issued following a flood event

This measure will provide information to the public following a flood event. It is likely to have minor positive effects for human health and people will feel they are being kept informed on what is happening. The measure is unlikely to affect water quality, flood risk reduction, biodiversity, landscape, historic assets, climate change or soils.

Measure 1.6 –Develop a county wide map based record of flood risk assets, Flood Investigation Reports, historical flooding and areas at risk of flooding to allow a proactive risk management approach to be taken by the flood authority

This measure is likely to have significant positive effects in terms of better understanding and reducing flood risk and will have a positive impact in terms of protecting human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model making it more accurate. Reduced flood risk will have moderate positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

Measure 1.7 – Create flood hazard and flood risk maps and flood risk management plans for areas in the county known to be at risk of significant flooding

Flood hazard and risk maps and management plans for areas of high flood risk will help identify and prioritise flood management works within areas of significant risk of flooding. This will have minor positive effects in terms of flood risk reduction and resulting benefits for human health, water quality, historic assets, property and businesses.

Measure 1.8 – Update the Conwy County Flood Risk Assessment

This measure is important to understand where flood risk issues and areas are within the County. As a stand alone measure it does not have many positive effects but it will provide information for future flood risk management. There are likely to be minor positive effects in terms of flood reduction and effects on human health, property and businesses.

6.2.2 LFRMS Outcome 2 Assessment

		LFRMS Outcome 2: Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk						
		Measure 2.1	Measure 2.2	Measure 2.3	Measure 2.4	Measure 2.5	Measure 2.6	Measure 2.7
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST ++ (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0	MT 0	MT + (T)	MT 0	MT 0
		LT + (T)	LT + (T)	LT 0	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0	MT 0	MT 0	MT 0	MT 0
		LT + (T/P)	LT + (T/P)	LT 0	LT + (T/P)	LT + (T)	LT + (T/P)	LT + (T/P)
	6. Protect historic assets and their landscapes.	ST + (T/P)	ST + (T/P)	ST + (T)	ST + (T/P)	ST + (T)	ST + (T/P)	ST + (T/P)
		MT + (T/P)	MT + (T/P)	MT + (T)	MT + (T/P)	MT ++ (T)	MT + (T/P)	MT + (T/P)
		LT + (T/P)	LT + (T/P)	LT + (T)	LT + (T/P)	LT ++ (T)	LT + (T/P)	LT + (T/P)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST 0	ST 0	ST 0	ST 0	ST + (T)	ST 0	ST 0
		MT + (T)	MT + (T)	MT 0	MT + (T)	MT +++ (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT 0	LT + (T)	LT +++ (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST ++ (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST 0	ST 0	ST + (T)	ST 0	ST + (T)	ST 0	ST 0
		MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT ++ (P)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT ++ (P)	LT + (T)	LT + (T)

Measure 2.1 – Raise public awareness of the impacts of climate change on flooding and (failure of) coastal defences

Climate change will have significant impacts on coastal erosion and flooding in the future. It is important that people are aware of this so that they can plan for the future and prepare and adapt their homes for future flood risk. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

Measure 2.2 – Publish a public awareness strategy (Workshops, public awareness events, update and improve the Council Website, adverts in local press) and communicate it

Implementing a public awareness strategy through a range of media should engage with a wide variety and geographical distribution of people. The more people that are aware of flood risk and how to deal with it the more benefits will be gained in terms of flood protection. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property, assets and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

Measure 2.3 – Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents

This measure will help ensure that flood support is provided to people in non-emergency situations. The team can provide advice on what to do to prepare and protect assets and property from flooding. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

Measure 2.4 – To collaborate with statutory bodies to promote the existing flood warning service (EAW) and their proposed flooding campaigns

Awareness of flood warning services and flooding campaigns are important to allow people to prepare for a flood event and understand what to do in a flood event. This will have benefits on human health and reducing the impacts and consequences of flooding. It may also have minor positive effects on biodiversity, water quality, landscape and soils. By collaborating, CCBC can utilise staff and expertise from other authorities and help reduce costs to the Council.

Measure 2.5 – Create an integrated county wide real time hydraulic and flood alert map

This measure is likely to have significant positive effects in terms of understanding and raising awareness of flood risk and reducing flood risk and associated impacts on human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model creating a more accurate reflection of flood risk in the County. Reduced flood risk will have positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

Measure 2.6 – Make the public aware of available flood prevention and mitigation measures (resistance and resilience) to protect their property and assets

If the public are aware of the flood prevention options and mitigation measures available to them to reduce flooding and alleviate the effects of flooding then they are more likely to use these to protect themselves, their properties and businesses. This is likely to have positive effects in

terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

Measure 2.7 – Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood

This measure should help people plan and prepare for flooding events which in turn should reduce the impacts on human health, property, businesses, infrastructure and historic assets. The measure is more focused on increasing awareness of what the public can do to stay safe in a flood and in clearing up afterwards than biodiversity and landscape. However, there may be some long term minor positive effects.

6.2.3 LFRMS Outcome 3 Assessment

		LFRMS Outcome 3: To collaborate with FRMA's, stakeholders and the public to reduce flood and coastal risks, and share data and resources to the greatest benefit				
		Measure 3.1	Measure 3.2	Measure 3.3	Measure 3.4	Measure 3.5
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0
		MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT 0
		LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT 0
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST + (T)
		MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T)	ST ++ (T)	ST ++ (T)	ST + (T)	ST + (T)
		MT + (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST 0	ST 0	ST 0	ST + (T)	ST 0
		MT 0	MT 0	MT 0	MT + (T)	MT 0
		LT 0	LT + (T)	LT + (T)	LT + (T)	LT 0
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0	MT 0	MT 0
		LT 0	LT + (T/P)	LT + (T/P)	LT + (T/P)	LT 0
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST 0
		MT + (T)	MT + (T/P)	MT + (T/P)	MT + (T/P)	MT 0
		LT + (T)	LT + (T/P)	LT + (T/P)	LT + (T/P)	LT 0
	7. Educate, manage, plan and adapt for the effects of climate change.	ST 0	ST 0	ST 0	ST + (T)	ST + (T)
		MT 0	MT + (T)	MT + (T)	MT ++ (T)	MT + (T)
		LT 0	LT + (T)	LT + (T)	LT ++ (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST + (T)
		MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST + (T)	ST 0	ST 0	ST + (T)	ST 0
		MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT 0
		LT ++ (T)	LT + (T)	LT + (T)	LT + (T)	LT 0

Measure 3.1 – Identify responsibilities of the riparian owners of managing their assets, through public engagement

This measure would ensure that riparian owners understood their responsibilities of managing their assets. This would slightly help to reduce flood risk as owners should fully understand what they are required to do. However, just because people know they have responsibilities doesn't mean they will carry them out. Therefore, there are likely to be minor positive effects in terms of reducing flood risk and impacts on humans, infrastructure, property, businesses, historic assets and soils. There are unlikely to be effects on biodiversity and landscape.

Measure 3.2 – Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge, data and lessons learnt

This measure will ensure that CCBC continue to participate in sharing knowledge, data and lessons learnt. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

Measure 3.3 – Develop an effective communication plan to ensure collaborative working and data sharing

This measure will help ensure continued and effective communication to share data and work together to address flood issues. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

Measure 3.4 – Undertake stakeholder engagement, to identify responsibilities of flood risk partners

Ensuring flood risk partners are aware of, and understand, their responsibilities is important for effective and collaborative flood management. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

Measure 3.5 – Introduce a process to carry out internal and external flood debrief meetings following a flood

This measure will help to communicate lessons learnt for flood events which should help improve responses to future flooding events. This is likely to have positive effect in terms of flood risk reduction and human health through keeping people informed.

6.2.4 LFRMS Outcome 4 Assessment

		LFRMS Objective 4: To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion				
		Measure 4.1	Measure 4.2	Measure 4.3	Measure 4.4	Measure 4.5
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST 0	ST 0	ST + (T)	ST + (T)	ST 0
		MT 0	MT D	MT + T)	MT +(T)	MT 0
		LT 0	LT D	LT + (T)	LT + (T)	LT 0
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within the County.	ST + (T)	ST +(T)	ST++(T)	ST 0	ST 0
		MT +(T)	MT++(T)	MT++(T)	MT++(T)	M + (T)
		LT + (T)	LT++ (T)	LT++ (T)	LT 0	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST++(T)	ST + (T)	ST++(T)	ST++(T)	ST++(T)
		MT++(T)	MT++(T)	MT++(T)	MT++(T)	MT++(T)
		LT++ (T)	LT++ (T)	LT++ (T)	LT++ (T)	LT++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the County.	ST 0	ST (P/T) - +	ST 0	ST 0	ST 0
		MT 0	MT(P/T) - +	MT 0	MT 0	MT 0
		LT 0	LT (P/T) - +	LT + (T)	LT 0	LT 0
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST (P/T) - +	ST 0	ST 0	ST 0
		MT 0	MT (P/T) - +	MT 0	MT 0	MT 0
		LT 0	LT (P/T) - +	LT + (T)	LT 0	LT 0
	6. Protect historic assets and their landscapes.	ST 0	ST (P/T) - +	ST + (T)	ST 0	ST 0
		MT 0	MT(P/T)	MT + (T)	MT 0	MT 0

			- +			
		LT 0	LT (P/T) - +	LT + (T)	LT 0	LT 0
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST + (T)	ST 0	ST 0	ST + (T)
		MT + (T)	MT++(T)	MT + (T)	MT 0	MT + (T)
		LT + (T)	LT++ (T)	LT + (T)	LT 0	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST + (T)	ST++(T)	ST + (T)	ST + (T)
		MT + (T)	MT++(T)	M ++ (T)	MT + (T)	MT + (T)
		LT + (T)	LT ++(T)	LT++ (T)	LT + (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST 0	ST (P/T) - +	ST 0	ST 0	ST 0
		MT 0	MT P/T) - +	MT + (T)	MT 0	MT 0
		LT 0	LT (P/T) - +	LT + (T)	LT 0	LT 0

Measure 4.1 – Identify vulnerable groups within the community, and prepare action plans in the event of flooding

This measure is aimed at the protection of vulnerable groups within the community from flooding. Therefore, there will be positive effects in terms of human health and flood reduction but only for certain groups and areas. It is unlikely that there would be any effects on biodiversity, water quality, landscape, historic assets or soils.

Measure 4.2 – Identify areas at greatest risk of flooding, and develop a capital cost investment programme to alleviate flooding

Identifying high flood risk areas will allow investment to be prioritised and targeted at the most appropriate areas. A capital cost investment programme is likely to result in construction of flood alleviation schemes. This will have positive effects in terms of reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Effects on water quality will depend on the type or flood defence scheme implemented. For example, creation of a wetland or reedbed will have positive effect on water quality. However, other defence works could affect water flows or could have potential for spillages and contamination during construction.

Measure 4.3 – Educate the general public on options for protecting their properties through flood prevention options and resistance and resilience measures

If the public are aware of the flood prevention options and resilience measures available to them to reduce flooding effects then they are more likely to use these to protect themselves and their properties and businesses. This is likely to have positive effects in terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

Measure 4.4 – Assist and provide support following a flood event

Although this measure is likely to have limited benefits it is important for people's peace of mind to know that there is someone they can call to get advice and support following a flood incident. The support team may also be able to advise people what do to next time there is a flood. This could help reduce impacts and consequences for property and businesses. It may also help protect water quality as advice could be provided on where to store fuels, oils etc so they don't pollute the water during a flooding incident.

Measure 4.5 – Develop site specific flood response plans for at high risk communities

This measure would allow specific tailored flood response plans to be developed for high risk communities. This will be important so that residents in high risk areas know what they should do in the event of a flood and how to prepare for it. This will have positive effects for flood risk reduction and reducing impacts and consequences on human health, property, infrastructure and businesses.

6.2.5 LFRMS Outcome 5 Assessment

		LFRMS Outcome 5: To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments				
		Measure 5.1	Measure 5.2	Measure 5.3	Measure 5.4	Measure 5.5
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD Outcomes.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT +(T)	LT ++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST + (T)	ST + (T)	ST ++ (T)	ST 0	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT ++ (T)
	5. Protect and enhance landscape quality and character across the county.	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT 0	MT + (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT 0	LT ++ (T)
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT 0	MT + (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT 0	LT ++ (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT + (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST ++ (T)	ST ++ (T)	ST + (T)	ST + (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST 0	ST + (T/P)
		MT + (T/P)	MT + (T/P)	MT + (T/P)	MT 0	MT + (T/P)
		LT++(T/P)	LT++(T/P)	LT+ (T/P)	LT 0	LT++(T/P)

Measure 5.1 – Develop clear guidance for the Planning Department when assessing planning applications

This measure would provide clear guidance to the Planning Department on how to deal with planning applications in flood risk areas and what standards should be set. This should help ensure development is not permitted in inappropriate locations such as floodplains or areas at high risk of flooding. It would also provide a consistent approach for determining all planning applications. The measure is likely to have positive effects in terms of reducing flood risk and assets at risk of flooding. Thus, having positive effects through protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage. It will also help plan and adapt for future climate change effects through discouraging building in appropriate places such as floodplains which may be needed in the future for flood water storage.

Measure 5.2 – Develop a process with the Planning Department to create clear advise and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments)

This measure would help ensure that developers design new developments with appropriate drainage and with consideration of flood risk issues. It would also encourage developers to incorporate appropriate SuDS into designs and plan for future climate change effects. The measure is likely to have positive effects in terms of preventing further areas of the County becoming at risk from flooding and lead to the protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage.

Measure 5.3 – Establish a SuDS Approval Body (SAB)

Establishing a SuDS Approval Body (SAB) should move SuDS higher up the agenda and encourage more implementation of SuDS in developments as flood management techniques. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also assist in planning and adapting for future climate change effects.

Measure 5.4 – Keep the Planning Department informed and up-to-date with flood areas in the County

This measure will help the planning department determine where new development should be appropriately placed to avoid flood risk areas. This should help reduce the numbers of development on floodplains or in high flood risk areas. This is likely to have positive effects in terms of flood reduction, human health and protection of infrastructure, property, businesses and water quality. It will also help contribute to future climate change planning and adaptation. The measure is concerned with development in relation to flood risk and is unlikely to have impacts on biodiversity, landscape, historic assets and soils.

Measure 5.5 – Develop policies for effective land use management and enhance development control procedures where appropriate

This measure would provide a clear and consistent approach to land use management and development control procedures in relation to development and flood risk. This would help planners to effectively plan new developments away from high flood risk areas and incorporate spatial development policies. This is likely to have positive effects in terms of flood risk reduction and benefits for humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from protection from flooding effects.

6.2.6 LFRMS Outcome 6 Assessment

		LFRMS Outcome 6: Improve and/or maintain the capacity of existing drainage systems by targeted maintenance		
		Measure 6.1	Measure 6.2	Measure 6.3
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT +++(T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT +++(T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0
		LT + (T)	LT + (T)	LT + (T)
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT ++ (T)	MT ++ (T)	MT +++(T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0
		LT + (T)	LT + (T)	LT + (T)

Measure 6.1 – Identify and assess the condition of existing drainage assets within the County, to prioritise capital investment

This option would provide a more proactive active looking at the condition of drainage assets to identify what and when assets will need upgrading to prioritise investment. This is likely to have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses. It is likely to have minor positive effects on biodiversity, water quality, historic assets and climate change adaptation and planning.

Measure 6.2 – Develop a risk based reactive and cyclical maintenance regime

This measure builds on Measure 2 by ensuring a prescribed and regular maintenance regime was in place. This would have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses, and water quality. It is likely to have minor positive effects on biodiversity and historic assets as a result of decreased flood risk.

Measure 6.3 – Develop a risk based programme for improving existing infrastructure

This measure builds on Measures 3 and 4 by using a proactive risk-based approach to improve existing drainage infrastructure. Improving drainage infrastructure will include upgrading assets that are failing and upgrading assets to deal with larger future flows from climate change. This will have significant effects in reducing future flood risk and impacts and consequences for human health, infrastructure, property and businesses. It will also have benefits in terms of protecting biodiversity, historic assts and water quality from the effects of flooding. Long term as more assets are improved the benefits will increase.

6.2.7 LFRMS Outcome 7 Assessment

		LFRMS Objective 7: Take a sustainable approach to flood risk management balancing economic, environmental and social benefits		
		Measure 7.1	Measure 7.2	Measure 7.3
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST + (T)	ST ++ (T)
		MT + (T)	MT + (T)	MT ++ (T)
		LT + (T)	LT + (T)	LT +++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST + (T)	ST + (T)	ST ++ (T)
		MT + (T)	MT + (T)	MT ++ (T)
		LT + (T)	LT + (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T)	ST + (T)	ST ++ (T)
		MT + (T)	MT + (T)	MT ++ (T)
		LT + (T)	LT + (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT ++ (T)
		LT + (T)	LT + (T)	LT ++ (T)
	5. Protect and enhance landscape quality and character across the county.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST + (T)	ST ++ (T)
		MT + (T)	MT + (T)	MT ++ (T)
		LT + (T)	LT + (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST + (T/P)	ST + (T/P)	ST ++ (T/P)
		MT + (T/P)	MT + (T/P)	MT ++ (T/P)
		LT + (T/P)	LT + (T/P)	LT +++ (T/P)

Measure 7.1 – Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits

Consideration of environmental issues as well as economic and social issues is likely to have a minor positive effect on water quality biodiversity, landscape and soils as flood management decision will take environmental effects into consideration. It is assumed that historic assets would be given equal weight with other environmental issues. This approach will help reduce flood risk for humans, properties, infrastructure and businesses.

Measure 7.2 – Consider the principles of the Conwy Sustainability Strategy in FCERM

Implementing the principles of the Sustainability Strategy in flood risk management will help make flood management measures more sustainable. This will have minor positive effects in terms of water quality, biodiversity, pollution, human health and historic assets.

Measure 7.3 – Consider the use of attenuation through wetlands to increase the length of flow durations, store flood water, and provide amenity and ecological benefits

This measure is likely to have moderate positive effects for biodiversity through habitat creation such as wetlands. This will also have moderate and significant positive effects on water quality from reduced pollutants entering water bodies. Creation of wetlands areas may also have minor positive effects on improving the landscape character and quality. Increasing length of flow durations and creating flood water storage will also help to reduce flood risk and the impacts on consequences on humans, property, businesses, infrastructure and historic assets.

6.2.8 LFRMS Outcome 8 Assessment

		LFRMS Outcome 8: Increasing approaches that utilise the natural environment			
		Measure 8.1	Measure 8.2	Measure 8.3	Measure 8.4
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT + (T)	MT + (T)	MT + (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST ++ (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT +(T)	LT ++ (T)	LT + (T)	LT + (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST ++ (T)	ST + (T)	ST + (T)	ST + (T)
		MT ++ (T)	MT + (T)	MT + (T)	MT + (T)
		LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	6. Protect historic assets and their landscapes.	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT + (T)	MT + (T)	MT 0	MT + (T)
		LT + (T)	LT ++ (T)	LT 0	LT + (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST 0	ST + (T)	ST 0
		MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST + (T/P)
		MT + (T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)
		LT + (T/P)	LT ++ (T/P)	LT + (T/P)	LT + (T/P)

Measure 8.1 – Adopt natural flood-risk management techniques including SuDS

Implementing natural flood risk management techniques such as SuDS can have benefits over just using traditional solutions in the majority of cases. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also help plan and adapt for future climate change effects.

Measure 8.2 – Keeping up-to-date with new and innovative technologies for flood defence and flood management

The assessment has assumed that this measure is to keep up-to-date and implement where appropriate new and innovative technologies. New and innovative technologies are being continuously developed. However, it is likely that significant new and innovative technologies will not be developed until some time into the future. Therefore, larger benefits are likely to be realised in the medium and long term. It is likely that new and innovative technologies will make flood defences more efficient and effective, reducing flood risk and adapting to climate change. This would have benefits for human health, property, infrastructure, businesses, water quality, biodiversity, landscape, historic assets and soils.

Measure 8.3 – Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits

This measure is about incorporating multiple benefits into flood management schemes. Incorporation of new or enhanced habitat, landscaping, use of local materials, creation of amenity area will have benefits for biodiversity, water quality, landscape, climate change and human health. Creation of new wetland, for example, will help reduce flood risk and benefit the environment and society.

Measure 8.4 – Continue to implement Conwy's non-culverting statement

The non-culverting statement has a presumption against culverting. This is likely to have positive effects as culverts can get blocked or collapse causing flooding. A reduction in culverting will reduce this risk and have minor positive effects in terms of reduced flood risk and effects for humans, water quality and historic assets. It will also allow waterways to be open having positive effects for biodiversity and landscape.

6.2.9 LFRMS Outcome 9 Assessment

		LFRMS Outcome 9: Ensure the development of skills required to implement effective and innovative flood risk management measures			
		Measure 9.1	Measure 9.2	Measure 9.3	Measure 9.4
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST +	ST +	ST +	ST +
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST +	ST +	ST + (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	5. Protect and enhance landscape quality and character across the county.	ST +	ST +	ST +	ST +
		MT ++ (T)	MT ++	MT ++	MT ++
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	6. Protect historic assets and their landscapes.	ST +	ST +	ST +	ST +
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST +	ST +	ST +	ST +
		MT ++	MT ++	MT +++	MT ++
		LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST +	ST +	ST +	ST +
		MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++
		LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)

Measure 9.1 – Provide appropriate staffing levels and develop staff expertise to deliver the requirements of the Act

The Act places additional duties on the LLFA and in order that the quality of flood protection and response does not decrease with the extra workload additional members of staff will be required. Having additional staff will ensure that all the requirements of the Act are implemented effectively, allow staff to develop flood risk mapping and asset management systems to increase the efficiency and effectiveness of responses, and allow staff time to read up on new innovations and attend conferences. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

Measure 9.2 – Invest in appropriate software and hardware

Having the appropriate software and hardware for a task is essential for effective flood management. Often there are financial barriers to achieving this. This measure would ensure that appropriate software and hardware was available to the flood management team. This would allow them to conduct their work more efficiently and effectively, provide a consistent method and recording system, and manage data and interpretation to better understand flood risk. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

Measure 9.3 – Outsource specialist skills to deliver specific projects

Some skills are very specialist and the flood management team may not have the technical knowledge and expertise in these areas. Employing a specialist to provide support, advice and delivery of specific projects is important to ensure projects are designed and implemented successfully. Using a specialist during project design and development can have significant future benefits in terms of innovation, operational life and reliability, success of the project in protecting people and assets from flooding, and minimisation of negative environmental effects.

Measure 9.4 – Collaborate and provide support, training and network of staff across the region

This measure will help ensure that knowledge is shared between the risk management authorities to help better understand flood risk. Appropriate training is important so that staff can do their job effectively. This in turn should help understanding and reduction of flood risk which will have benefits for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

6.2.10 LFRMS Outcome 10 Assessment

		LFRMS Objective 10: Identify projects and programmes which are affordable, maximising capital funding from internal and external sources		
		Measure 10.1	Measure 10.2	Measure 10.3
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST + MT +++ (T) LT +++ (T)	ST + MT +++ (T) LT +++ (T)	ST + MT +++ (T) LT +++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	5. Protect and enhance landscape quality and character across the county.	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	6. Protect historic assets and their landscapes.	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++

Measure 10.1 – Identify potential funding sources which may include communities and local businesses

Identifying new funding sources should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

Measure 10.2 – Undertake full lifecycle cost benefit analysis for projects including social, and environmental benefits

Undertaking lifecycle benefit analysis is likely to help prioritise projects and ensure that the most cost effective and beneficial project is taken forward. This should help reduce wasting money on projects with few benefits that could be better spent on alternative projects. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Consideration of social and environmental benefits as part of the lifecycle analysis is also likely to reduce negative effects associated with a project and maximise positive effects.

Measure 10.3 – Investigate opportunities for match funding and grants

Investigating opportunities for match funding and grants should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

6.3 Cumulative Assessment

The SEA Directive required that a cumulative assessment of the effects of the Conwy LFRMS is undertaken. The cumulative effect of the combination of measures under each LFRMS outcome has been assessed against the SEA objectives. Cumulative effects of the LFRMS are mainly positive as the measure all contribute to achieving the outcome and providing benefits in terms of flood risk reduction.

Figure 6.1: Cumulative Assessment

LFRMS Outcomes and Measures	SEA Objectives 1	2	3	4	5	6	7	8	9	Commentary
LFRMS Outcome 1 – Measures 1.1-1.8	++	+++	+++	++	+	++	+++	+++	++	All the measures will contribute to increasing understanding of local flood and coastal risks. This will have cumulative benefits, making flood management more effective and efficient resulting in flood reduction benefits for biodiversity, water quality, human health, property, infrastructure, businesses, historic assets, soils and landscape. Understanding will also aid climate change planning and adaptation.
LFRMS Outcome 2 – Measures 2.1-2.7	+	+++	+++	+	+	++	+	+++	++	All the measures will contribute to increasing individual and community awareness and preparedness for flood and coastal erosion events and have cumulative positive effects, especially in terms of reducing consequences and impacts for human health, property, infrastructure and business..
LFRMS Outcome 3 – Measures 3.1-3.5	+	++	++	++	+	+	+	++	+	The measures will allow collaboration with FRMA's, stakeholders and the public. The cumulative effect of the measures will improve collaboration.
LFRMS Outcome 4 – Measures 4.1-4.5	++	++	+++	- ++	- +	- ++	++	+++	- +	Cumulative effects of the measures will be mainly positive through flood reduction. However, there will be cumulative negative effects which are likely to be temporary in nature during construction of schemes.
LFRMS Outcome 5 – Measures 5.1-5.5	++	++	++	++	++	++	++	++	++	All the measures will contribute to ensuring planning decision are properly informed by flood risk issues.
LFRMS Outcome 6 – Measures 6.1-6.3	++	+++	+++	+	+	+	++	+++	+	The cumulative effects of the measures will result in positive effects especially in terms of improving water quality and reducing flooding from drains.
LFRMS Outcome 7 – Measures 7.1-7.3	+++	++	++	++	+	+	+	++	+++	The measure will have positive cumulative effects on the SEA objectives.
LFRMS Outcome 8 – Measures 8.1-8.4	+	++	++	++	+	+	+	++	+	The measures will contribute to providing the necessary skills for implementing flood risk management tasks effectively.
LFRMS Outcome 9 – Measures 9.1-9.4	++	+++	+++	++	++	++	+++	+++	++	The cumulative effects of the measure will result in positive effects.
LFRMS Outcome 10 – Measures 10.1-10.3	+++	+++	+++	- - +++	- - +++	- - +++	++	+++	- - +++	The measure will have significant positive cumulative effects in terms of flood reduction and resulting benefits for human health, assets, property and businesses. However, there will be cumulative negative effects which are likely to be temporary in nature during construction of schemes.

7. Mitigation and Monitoring

7.1 Mitigation and Enhancement Measures

The options/measures assessment provided SEA Recommendations for taking options/measures forward into the LFRMS, and refining options to maximise positive effects such as amalgamating measures and suggesting additional or change or wording to measures. These recommendation are presented in Section 5.4 and were taken into consideration (with other factors) when determining the preferred LFRMS.

Due to the nature of the LFRMS and the recommendations made during the options assessment the majority of the LFRMS measures were assessed as having positive effects. Therefore, identification of mitigation measures is limited. Opportunities to maximise positive effects have also been considered. Table 7.1 sets out mitigation and enhancement measures that have been developed for LFRMS.

Table 7.1: Mitigation and Enhancement Measures

LFRMS Outcome and Measure	Issue / Potential Effect	Suggested Mitigation and Enhancement Measures
Outcome 4, Measure 4.2	A capital cost investment programme is likely to result in construction of flood alleviation schemes. As well as positive effects in terms of reducing flood risk there is potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works.	Negative effects are likely to be minimised through the planning process and legislation and therefore specific mitigation measures are not required in the LFRMS. Future scheme mitigation could include: • Undertake a feasibility study for the scheme looking at the most appropriate location and scheme type that balances social, economic and environmental factors; • Undertake an appropriate environmental assessment of the scheme (e.g. EIA or similar) to look in details at the environmental effects and specific mitigation; • Undertake WRAP (Waste Resources Action Programme) workshop during design of the scheme to help design out waste; • Develop a Construction Environmental Management Plan (CEMP) to minimise effects on the environment during construction; and • Develop a Site Waste Management Plan (SWMP) to encourage re-use and recycling of materials.
Outcome 10, Measure 10.1, 10.2, 10.3	Identifying new funding sources is likely to result in more programmes and schemes being implemented. As well as positive effects in terms of reducing flood risk there is potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works.	

7.2 Monitoring Proposals

Monitoring the negative effects of implementing the LFRMS is an essential ongoing element of the SEA process. Monitoring helps ensure that the identified SEA objectives are being achieved, allows early identification of unforeseen adverse effects and this appropriate remedial action can be taken. Monitoring will be an important requirement to measure performance and ensure the LFRMS is being successfully implemented. The DCLG guidance states that it is inappropriate to monitor everything and monitoring proposals should be focused on the following areas:

- Indicate a likely breach of international, national or local legislation, recognised guidelines or standards;
- May give rise to irreversible damage, with a view to identifying trends before such damage occurs; and

- Were subject to uncertainty in the SEA and where monitoring would enable prevention or mitigation measures to be taken.

Due to the high level nature of the LFRMS and the positive results of the assessment, requirements and feasibility of monitoring is limited. However, although negative effects were not identified it is considered that the LFRMS should still undergo monitoring to ensure that the implementation of the strategy is as predicted in this SEA. Therefore, a range of indicators have been suggested below for monitoring the effects of the LFRMS (see Table 7.2). This monitoring will be incorporated within the annual action plans that will supplement the LFRMS. It should be noted that not all indicators will be feasible to monitor straight away due to resources and baseline gaps. However, these indicators should be considered for future monitoring.

Table 7.2: Monitoring Proposals

Monitoring Proposal - Indicators
• Number of residential and non-residential properties at risk of flooding;
• Number of new developments permitted in areas of flood risk;
• Number of flood defences schemes implemented;
• Number of SuDS implemented;
• Number and severity of flooding incidents in the Conwy County and their source.
• Number of flood events leading to transport disruption;
• Number of awareness raising activities and events undertaken;
• Number of flood related public enquiries
• Area of habitat created (type, and area) or lost as a result of SuDS and flood defence works;
• Populations of priority species lost or increased through flood defence works
• Area of important landscape at risk from flooding;
• No significant adverse landscape effects from flooding related development in sensitive landscape;
• Positive (or negative) visual impact of flood defence schemes located within outstanding areas of landscape quality or significance
• Number of historic assets at risk of flooding;
• Number of listed buildings on the ‘at risk’ register at risk from flooding.
• Number of educational activities (exhibitions, workshops, leaflets, questionnaires, advertising) undertaken.
• Number and severity of incidents leading to disruption or damage to service provision;
• Number of residential and non-residential properties at risk of flooding across the Conwy County;
• Number of power, waste and telecommunication assets at risk of flooding;
• Number of critical services at risk of flooding; and
• Transport infrastructure at risk from flooding.
• Area of agricultural land at risk of flooding;
• Area of agricultural land lost due to the need for flood defence;

Monitoring Proposal - Indicators
• Number of pollution incidents arising from flooding

7.3 Links to Other Tiers of Plans, Programmes and the Project Level

The Conwy LFRMS supports several local, regional and national plans and programmes. The LFRMS will have a direct link to flood risk management strategies but will also have indirect links to plans relating health and well-being, housing, economy, transport and the environment.

The Conwy LFRMS has been assessed at a high strategic policy level. Any specific schemes that are proposed and implemented as a result of LFRMS will be subject to the formal planning process and may require an Environmental Impact Assessment under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (as amended)[15]. Requirements for EIA will be determined on a scheme by scheme basis once the scheme is at the stage to be taken forward.

[15] Her Majesty's Government (2011) Town and Country Planning – The Town and Country Planning (Environmental Impact Assessment) Regulations 2011

8. Conclusions of the SEA

8.1 Conclusions and Difference the SEA Process has made to the LFRMS

The SEA undertaken for the Conwy LFRMS has helped ensure that those options/measures with significant negative effects that could not be mitigated were rejected at the options selection stage and not taken forward into the LFRMS. The process also helped to refine options/measures to maximise beneficial effects. Due to the nature of the LFRMS most of the options/measures and the preferred strategy itself have positive effects. The main positive effects identified were flood risk reduction resulting is protection of people, property, infrastructure, businesses, water quality, historic assets, and biodiversity from flood damage. The only potential negative effects identified during the assessment stage were where measures may lead to future structural flood defence works/schemes. These effects are likely to be temporary and mitigated through best site practices, legislation, and the planning process.

8.2 Next Steps in the SEA Process

8.2.1 Remaining Stages of the SEA Process

This Environmental Report shows the results of Stages A to C of the SEA process. The next stage of the process is Stage D which involves consulting upon the draft LFRMS and draft Environmental Report with statutory consultees, stakeholders and the public and making any necessary amendments and updates to the documents. Following adoption of the LFRMS an SEA Statement is produced. Stage E 'Monitoring' will be carried out annually by CCBC following adoption of the LFRMS.

8.2.2 Stage D: Consulting on the draft Strategy and the Environmental Report

Task D1: Consulting on the draft Strategy and Environmental Report

As required by the SEA Regulations, consultation and participation by key stakeholders including the public will take place to ensure a robust Strategy consultation. The SEA Regulations do not state a specific time period for consultation but states that 'authorities shall be given an early and effective opportunity within appropriate time frames to express their opinion'. It is proposed that the consultation period is six weeks. It is proposed that relevant authorities/stakeholders are provided with the draft Strategy and Environmental Report. The findings of the consultation responses will be taken into account in the decision-making process and documented.

Task D2: Assessment of significant changes

Any significant alterations to the Strategy as a result of the consultation in Stage D1 will be assessed in terms of their environmental implications and influence on the revision of the Strategy. The final Environmental Report will need to be amended as necessary to reflect any changes.

Task D3: Decision making and providing information

Information in the Environmental Report and responses to consultation will be taken into account during the preparation of the Strategy before it is adopted. Following adoption, a short statement will be produced which outlines how the SEA process has influenced the development of the Conwy LFRMS, how consultation comments were taken into consideration and how the Strategy will be monitored. This

summary will provide enough information to make it clear how the Strategy was changed (if at all) as a result of the SEA process and consultation.

8.2.3 Completion of Stage E

Stage E ‘Monitoring implementation of the plan’ of the SEA process will be carried out by CCBC. It is likely that monitoring of the Strategy will be incorporated with the Council’s annual monitoring process.

Appendices

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Appendix A. Draft Environmental Report & Scoping Consultation Results

Scoping Consultee Details

Consultee	Contact	Contact Details	Response Method & Date
CCBC			
Environment Agency Wales (EAW)	Mrs Deborah Hemsworth Planning Liaison Officer	Tel: 01248484068 E: debbie.hemsworth@environment-agency.gov.uk Address: Llwyn Brain, Ffordd Penlan, Parc Menai, Gwynedd, Bangor, LL57 4DE	Emailed letter dated 15th August 2012
Cadw	Richard Kevern Casework Team Leader	Tel: 01443336098 E: richard.kevern@wales.gsi.gov.uk	Email with attachment dated the 30th of August 2012
Countryside Council for Wales (CCW)	Theresa Kudelska	E: T.Kudelska@ccw.gov.uk	Email with attachment dated 12th September 2012

CCBC SEA Scoping Report Consultation Responses

Consultee	Consultee Comments	CCBC Response
Environment Agency Wales (EAW)	**Introduction** We note in the Introduction that you state "the LFRMS must address potential flood risk arising from local sources within the boundaries of the local authority area. These are defined in the Act as: surface water run-off, groundwater and ordinary watercourses (including lakes and ponds)". We note it has been acknowledged further on in the document that flooding from different sources can result in cumulative effects, but we would suggest there should be a reference to this within the Introduction. The LFRMS must accord with the National Flood and Coastal Erosion Management Strategy which is being developed by ourselves . In the main, this deals with flood risk from main rivers, the sea and reservoirs. As such, the interaction of these aspects of flooding on the local sources must still be considered within the LFRMS.	The introduction has been updated to include cumulative effects and interactions with other sources in accordance with the National Flood and Coastal Erosion Management Strategy
	Figure 4.1 We are not aware of any plans or programmes which have been omitted from Appendix A. However, we note that the Water Resources Act 1991 does not appear on Figure 4.1. Has this been assessed and determined as not relevant? We would also point out that, although UKCP09 has been referred to in paragraph 5.4, Climatic Factors, it has not been included in Fig 4.1	Water Resources Act 1991 was an omission from Figure 4.1 and has now been reviewed and included in Figure 4.1 and Appendix A. The UKCP09 has also been added to Figure 4.1 and Appendix A.

	Table 6.1 We would advise that, in Tables 6.1, the SEA topic Water should be changed to Water Quality as the key issues, opportunities and assessment criteria all relate to quality issues. It would then follow, that Water in table 7.1 should also be amended to Water Quality.	As the chapter covers all water issues, we feel that the SEA topic heading is more appropriate as it is all encompassing.
	We would point out that, on page 41 under the SEA topic Biodiversity, Fauna and Flora, there is a spelling mistake in the last point under Key Issues and Opportunities. "Sporning" should be spelt "spawning".	The spelling mistake has been corrected
	Table 7.1 In Table 7.1, SEA Framework, under the Topic Water, the last Indicator is given as the "number of pollution incidents following flood events". Although we do record all known pollution incidents, we do not routinely monitor for incidents which could be linked to flood events. It may, therefore, be difficult to actually obtain an accurate number of such incidents.	Noted. If the indicator is taken forward into the monitoring programme (following the results of the assessment) it will be reviewed and revised if necessary
	The topic Flood Risk includes the "number of residential and non-residential properties at risk of flooding". The suitability of this indicator should be given further consideration, to ensure that it is possible to properly reflect the impacts of the LFRMS in isolation. Would it be possible to tell if the impact had been as a result of the LFRMS and not another factor?	This indicator has been amended to 'number of residential and non-residential properties at risk of flooding from local sources'. The indicator is meant to measure the number of properties at risk of flooding from local sources and whether this number goes down as the measures in the LFRMS are implemented. It may be possible for other factors to influence flood risk, but this is true for most indicators. If the indicator is taken forward into the monitoring programme (following the results of the assessment) it will be reviewed and revised if necessary
	Under the topic, Biodiversity, it may be possible for us to provide you with data in respect of the third indicator, "area of protected or LBAP habitat damaged through flooding". However, it is unlikely we would be able to give provide information relating to "the number of flood incidents that have resulted in death of protected or LBAP species".	Noted. If the indicator is taken forward into the monitoring programme (following the results of the assessment) it will be reviewed and revised if necessary

	Under the topic, Climatic Factors, the second Indicator is given as "predicted future flood risk with climate change". This does not indicate what is to be measured. Do you intend to measure the increase in the area of land predicted to flood after a stated length of time?	This indicator is to measure the level of future flood risk taking into account climate change effects
	We recommend that our updated Local Evidence Packs are utilized for future assessments. They can be viewed on our website http://www.infobasecymru.net.	Noted and will be considered for future assessments
Countryside Council or Wales (CCW)	**Section 1.2** As well as the aims listed in section 2.1, the aim of a scoping report is to present information about the relationship of the plan or programme with other relevant plans and programmes.	Agreed. The Scoping Report is not being updated, scoping consultation comments have been addressed in the Environmental Report. This task was undertaken as part of the plans and programme review in the scoping report and will also be presented in the Environmental Report
	It may also be relevant to point out that the scope seeks to establish the environmental protection objectives at international, European, national and local levels which are relevant to the plan or programme and how those objectives and any environmental concerns should be taken into account during its' preparation.	Agreed. The Scoping Report is not being updated, scoping consultation comments have been addressed in the Environmental Report. This task was undertaken as part of the plans and programme review in the scoping report and will also be presented in the Environmental Report
	As well as establishing the baseline environmental information for Conwy, the scope should also outline the likely evolution of Conwy's environment without implementation of the LFRMS (the 'no-action' alternative or business as usual alternative).	Agreed. The Scoping Report is not being updated, scoping consultation comments have been addressed in the Environmental Report. This task was presented in the scoping report and will also be presented in the Environmental Report. The assessment appraises a Do Nothing option and a Business as Usual option and the results will be presented in the Environmental Report.
	Section 1.3 Habitat Regulations Assessment As the Conservation of Habitats and Species Regulations 2010 have recently been amended reference to them should be altered to 'Conservation of Habitats and Species Regulations 2012 (as amended)'.	The Conservation of Habitats and Species Regulations has been updated

	Reference should also be made to pSPAs and cSACs.	Reference has been that Natura 2000 sites also cover pSPA and cSAC
	Given the nature of the strategy and the likely potential for significant adverse effects on the integrity of European Sites, it is suggested that Habitats Regulation Assessment will be required rather than "maybe" required, as stated in the text.	The strategy is a high level policy document that will not detail specific flood risk areas or flood management schemes. Therefore, until the HRA screening has been undertaken it cannot be determined whether a HRA will be required or not.
	When drawing up the Habitat Regulations Assessment (HRA) for this strategy it may be of assistance to refer to the current guidance produced by the CCW in relation to HRAs which is available at: http://www.ccgc.gov.uk/landscape--wildlife/managing-land-and-sea/environmental-assessment/habitatsregulations-assessment.aspx The guidance document entitled Guidance for Plan Making Authorities in Wales: The Appraisal of Plans under the Habitats Directive found in the resource section of this page is likely to be of particular relevance to the SEA process	Noted and will be considered during the HRA and SEA processes
	Section 1.4 Limitations of the Scoping Exercise CCW welcomes the intention for CCBC to up-date the baseline dataset throughout the assessment process and to minimise any gaps in information.	No action required
	Section 2.2 SEA Process and Stages In addition to the guidance published by the Office of the Deputy Prime Minister relating to the Strategic Environmental Assessment Directive it is recommended that you also refer to the SEA guidance published by the Countryside Council for Wales which is available on the Countryside council for Wales's (CCW) website at: http://www.ccgc.gov.uk/landscape--wildlife/managing-land-and-sea/environmental-assessment/strategicenvironmental-assess.aspx	Noted and guidance taken into account during the preparation of the Environmental Report

	The SEA process identifies a number of environmental topics that must be considered within the assessment process and CCW have published a series of guidance notes for SEA topics to help plan makers and SEA practitioners. The topics covered include: SEA Topic: Air SEA Topic: Biodiversity SEA Topic: Climate Change SEA Topic: Cultural Heritage SEA Topic: Landscape SEA Topic: Material Assets SEA Topic: Soil SEA Topic: Water	Noted and guidance taken into account during the preparation of the Environmental Report
	It should also be noted that additional guidance on SEA topics has been produced by the Environment Agency and links to it and other useful sources of information about the SEA process are available at the web address referred to above.	Noted and guidance taken into account during the preparation of the Environmental Report
	Section 2.3 SEA Stage A- Scoping While CCW understand that the monitoring outlined in Stage 3 will be carried out as part of the LFRMS annual monitoring, preparations for monitoring will need to be considered in the course of preparing the LFRMS.	Monitoring will be considered as part of the LFRMS and SEA process. Stage B6 of the SEA process will develop an outline monitoring programme for the LFRMS. Monitoring will based on the outcomes of the assessment where uncertainties and adverse effects are identified
	Section 3.1 Need to consider whether coastal/marine flooding issues will be included within this LFRMS.	Noted and this will be included in the Strategy document.
	Section 4.1 Please see comments relating to Appendix A below which are also relevant to Figure 4.1.	We have reviewed the relevant plans and programmes.
	Figure 4.1: The following PPPs (some still in development), need to be considered within this Review process. *Neighbouring Authorities PPS:* Gwynedd Local Flood Risk Management Plan Denbighshire Local Flood Risk Management Plan *National (UK and Wales):* Better Woodlands for Wales (Forestry Commission, 2009) Natural Environment Framework 'A Living Wales' (2011) Civil Contingencies Act (2004)	The three national plans have been reviewed and added to Figure 4.1 and Appendix A. It has not been possible to review the Gwynedd LFRMS and Denbighshire LFRMS as these are still in development

	Section 5.1 Baseline Information Please see comments above in relation to Section 2.2, which refer to CCW's Guidance Topic papers. This series of guidance notes for SEA topics include information about identifying sources of baseline data and examples of how to present this data.	Noted and guidance taken into account during the preparation of the Environmental Report
	Annex 1(f) should also present information which shows that the interrelationships between environmental topics have been considered.	Noted and guidance taken into account during the preparation of the Environmental Report
	Section 5.2 Air Quality CCW agree that the impact of the LFRMP is unlikely to impact on air quality and the decision to scope air quality out of the SEA. However this section should have given some reference to the likely impact that air quality in Conwy has on protected sites (i.e. SAC, SSSI etc) as the air quality targets for some of these sites are considerably more precautionary than those highlighted in this section. Please see the APIS website which provides the most up to date information about air quality (www.apis.ac.uk) and it's impact on protected sites.	Comment will be added to identify impacts of air quality on protected sites
	The presentation of radon emissions is of little relevance to the plan under scrutiny. What might be more useful would be details of diffuse air pollution issues/impacts on habitats especially potential indirect effects on water quality. It may also be helpful to have presented any information available on air pollution/water quality causal pathways (intensive agriculture, agricultural run off etc) and also consider further the potential air quality effects derived along A55.	We feel that radon emissions are important as gasses interact with the fluctuation of groundwater levels
	Section 5.3 Water A lot of information presented in this section is generic and in places, of marginal relevance to the plan under scrutiny. In sections 5.3.1, 5.3.2 and 5.3.3 in which the water courses/rivers/estuaries and the coast of Conwy are discussed it would be helpful to provide further information e.g. from TAN 15 maps/EA flood maps etc in regards to flood hazard. It may also be helpful to include further information about ordinary water courses.	TAN 15 plans relate to combined flooding hazards but do not differentiate between the types of flooding. In addition the plans are often inaccurate and do not provide sufficent local detail. The PFRA for Conwy provides a better indication of local flood risk from ordinary watercourses, groundwater and surface runoff and as such this has been used the baseline data source.
	CCW welcome and support the use of maps in section 5.3.1, 5.3.2 and 5.3.3.	No action required

	There are set conditions that need to be in place for the Conwy to flood and these should be described. If would be useful to describe the river 'type' in the context of flooding i.e. what particular flood hazards are associate with the Conwy(i.e. heavy rain in uplands, high tides which affect the area up to Trefriw, prevailing winds etc). It is also recommended that document acknowledges that the Conwy has a well developed flood plain and identify features/issues that might compromise the Conwy Flood Plain to 'store'/process flood waters.	Additional information will be added to the document to reflect the comment.
	Section 5.3.3 It is not clear what figure 5.3 represents, it is recommended that a key be included.	A key and labels of the coastal waters has been added to the Figure
	It is recommended that maps illustrating the relationship between protected sites, fisheries/recreational interests, water bodies and flood risk be included.	We do not consider this to be appropriate due to the high level nature of the document, however a sentence will be added to reflect the impact of storm water on coastal water quality.
	Section 5.3.5 The LFRMS has the potential to cause issues with water quality by not adequately dealing with flood risk issues in areas such as waste water treatment works and also at industrial site where harmful chemicals/ fuel etc are stored and could be released if these areas were to flood. A consideration of this in relation to the current flood risk within Conwy should be included (it may be helpful to present this in a map). It should be noted that different water bodies will have differing resilience to pollution and this should be considered further within the scope.	We agree in context however we do not feel that this is appropriate due to the high level nature of the document.
	Section 5.3.7 CCW welcome the inclusion of the flood risk map.	No action required
	5.3.7.1: See comments above in relation to 5.3.1.	See above
	The scope should consider that flood alleviation measures may impact on natural functions and biodiversity and are likely to require EIA (at project level) in their own right, also HRA (project level) where there is the potential to adversely affect European Sites (alone and in combination).	Agreed flood alleviation schemes may have an impact on biodiversity however as stated these will be identified through the planning procedures (HRA and EIA).

	Flooding It may be helpful to examine the positive impact that flooding could have on biodiversity and protected sites though existing flooding, controlled flooding of area and the creation of flood defences both in terms of protecting areas but also the creation of flood defence measures which could benefit biodiversity (such as planting woodland or creation of wetlands etc).	Comment will be added to reflect the opportunities.
	The text needs to show a greater understanding of the difference between hazard and risk and an awareness that in reducing the risk of floods occurring there may be a potential to increase the magnitude/severity of flooding (albeit at a reduced frequency).	This will be clarified
	Water Quality and Water Resources See comment in relation to water quality in Section 5.3.5 above. The installation of some flood defence measures have the capacity to affect the flow of rivers and this may in turn affect the ecological functionality of a water course, also it could act in combination with existing water quality issues.	We agree in context however we do not feel that this is appropriate due to the high level nature of the document. and specific schemes and locations will not be identified in the strategy
	Climate Change Climate change may adversely affect some species and habitat and this should be examined in this section.	Agreed but this is a high level document and the information is too detailed
	Measures which may improve this situation in terms of the impact on biodiversity include improving connectivity and permeability of the landscape in ecological terms. Flood defence measures could potentially contribute to or may detract from this connectivity and it is recommended that some consideration of this be included in this section.	
	The potential for increased frequency/magnitude of storm surges should be discussed.	A comment will be added to further explain this
	It is also recommended that further consideration of climatic factors in terms of resilience of infrastructure/transport etc to withstand climate changes should be included.	A comment will be added to further explain this
	Section 5.5 Soils It would be helpful if this section considered the wider function of soil in terms of flood alleviation, carbon storage and soil's ecological functions. There is also little consideration of the link between soil and general water quality issues including loss of N and P from agricultural soil, turbidity, suspended sediment.	A comment will be added to further explain this
	See comments above on importance of the Conwy Flood Plain.	See comment on this issue above

	Section 5.6 Biodiversity, Flora, Fauna Need to consider the potential effects of flood defences on foraging habitats etc for bats and other mobile species.	This will added to the report and will also be further considered in the HRA
	Section 5.7 Landscape CCW welcome the references to landscape quality. A figure should be included that indicates the location of landscapes on the Register of Landscapes of Historic Importance.	Text in the baseline information covers landscapes on the Register of Landscapes of Historic Importance
	An additional opportunity from the LFRMS would be the protection of areas and monuments which would be sensitive to flooding.	This additional opportunity has been added to the Landscape section
	Section 5.10 Material AssetsThis section would be improved if it also presented information about the potential vulnerability of material assets to flood hazard and/or climate change effects (e.g. how much housing/transport etc lies within TAN 15/EA Flood Risk areas).	Flood hazard maps have not yet been produced by CCBC and the document is high level so not go into specific of areas and assets at risk
	Section 5.10.5 In terms of critical infrastructure some consideration of the impact on telecommunications and energy transmission needs to be included	This has been included in the material assets section.
	Section 5.11 In reference to air quality one of the major contributions to reducing air quality issues in the UK in recent years has been the tighter regulation of large oil/gas/coal fired power stations and oil refineries as they are major contributors to background levels of NOx and SOx.	Comment to be added to reflect contribution from power stations
	Section 6 Key Environmental Issues Table 6.1: Air Quality: Please refer to previous comments relating to air quality above. CCW agree with the decision to scope out air quality however it would have been helpful have included further information regarding any potential issues relating to diffuse air pollution and habitat/water quality	We do not consider this to be appropriate due to the high level nature of the document.
	Water: This section mainly focuses on water quality with little reference to water resources, it is recommended that the final bullet point in this row be reworded to clarify what is meant by “better water resources” and that this point is elaborated upon.	Agreed and the comments will be integrated into the Environmental Report
	Need to add potential effects on water quality of bathing waters/beaches as a result of run off from combined drainage systems as surface water flooding and the associated water quality issues caused by it will not be confined to terrestrial water courses.	This will be added to the Environmental Report

	Climatic Factors: Please include some consideration of storm surges and the potential coastal flooding events which could act in combination with the flooding dealt with by the LFRMS. Further consideration of the need to climate proof/increase climate change resilience of essential infrastructure should be included.	The existing comments will be expanded to include the points made.
	Soil: Please see previous comments in relation to soil it is recommended that this section include further consideration of potential effects on soils' wider functions or potential for soils to be used as flood amelioration. There is no consideration of function of Conwy Flood Plain.	Agreed and the comments will be integrated into the Environmental Report
	Biodiversity/Flora/Fauna: Further consideration of the effects of flooding on quality of coastal and estuary habitats/species should be included both in terms of direct physical damage and impact on water quality.	Agreed and the comments will be integrated into the Environmental Report
	There is a typo please amend sporning to spawning.	Typo amended
	Landscape: It would be helpful to refer to the importance of traditional 'seaside' landscape/townscapes to Conwy's economy (i.e. flood defence structures along Llandudno West shore/North Shore and Colwyn Bay being case in point)	Agreed and the comments will be integrated into the Environmental Report
	Section 7 Table 7.1: Water: An additional objective is needed in respect of ecological function of water courses and water bodies including consideration of water goods/services.	We feel that this is already covered under the assessment criteria
	There is a strong emphasis on water quality but need to consider water quality in a wider context (for example the need to consider water quality in relation to recreation).	An additional assessment criteria will be added to the Population and Human Health Objective
	There should be assessment criteria that relates to the potential impact on water resources.	An additional assessment criteria will be added to the Material Assets Objective. We feel that this issue is important and will be added to the key issues table.
	Flood Risk: An additional objective is required in respect of coastal flooding e.g. from storm surges.	Additional assessment criteria to be added under the flood risk objective, relating to the combination of local and other flooding sources

	Please see comments above in respect of the Conwy Flood Plain and specific flooding issues on the River Conwy.	An assessment criteria will be added to address the effect of the strategy on the flood plain
	The number of SuDs implemented or the number of flood defence schemes implemented may not adequately measure the impact of the LFRMS. It may be better to also measure the number of properties, infrastructure or the area of land that were at risk from flood against the area/number of land/properties/infrastructure that have a reduced risk of flooding once these measures have been implemented.	It is not currently feasible to monitor this suggested indicator but it may be in future cycles of the strategy
	It is recommended that the criteria include some consideration of the potential for marine flooding and/or potential need to climate proof infrastructure against increased frequency of flood events (marine and terrestrial).	Please refer to the flood risk comment above.
	Biodiversity: The indicator, “Area and number of statutory and non-statutory ecological sites at risk from flooding” needs further clarification as some areas of the sites may benefit from a certain degree of flooding. In this context you need to be clear which protected sites or areas of protected sites you are referring to in this criteria.	Agree and further clarification will be provided.
	It is not clear how the second indicator in this row will be measured as it is not clear if monitoring of this kind takes place. This indicator would only be useful when measured against a baseline (i.e. before the LFRMS) and it is not clear where this data would come from. It is recommended that you revise this criteria to something that can be measured or explain where the data is going to come from. It is important that this data would be robust enough to use as an indicator.	If the indicator is taken forward into the monitoring programme (following the results of the assessment) it will be reviewed and revised if necessary
	The fourth indicator is the “number of SuDs and flood defence works that have lead to habitat creation. In this case it may also be helpful to quantify the area of habitat created, the type of habitat created and how this relates to ecological targets	Text to be amended to include area and type of habitat.
	It should be noted that in some situations the aim may not be to ‘protect ecological sites from flooding’.	An assessment criteria will be added to address the positive effects of flooding on ecological sites e.g. wetlands
	It may be helpful to cross ref the Shoreline Management Plans and consider coastal squeeze and possible marine flooding issues.	Information on coastal squeeze is not available for the area. The SMP has been reviewed as part of the plans and programme review and is included in the report. Marine flooding issues are now covered in the new assessment criteria under flood risk
	Landscape: Please define what is meant by an “area of important landscape”.	This will be reworded

	Further consideration of the impact that flood alleviation/protection measures may have in terms of Shoreline Management Plans. Rather than just the number of schemes located within areas of outstanding areas of landscape it is necessary to quantify the impact in some way as flood alleviation measures could benefit as well as detract from the quality of landscape in these areas.	Limited relevance in terms of the SMP. The following indicator will be added; No significant adverse landscape effects from flooding-related development in sensitive landscape.
	Soil: Please refer to previous comments relating to soil, it is recommended that the criteria and indicators be revised to reflect the broader function of soil.	It is not feasible to currently monitor this issue due to resources and lack of baseline. This will be reviewed in the next cycle of the strategy if required
	Section 7.2 Table 7.2 It is recommended that an SEA objective relating to water resources as well as water quality be included.	An additional objective will not be added. However, impacts on water resources will be considered through addition of an assessment criteria under material assets
	Also it is recommended that the objective relating to soil better reflect its broader function.	See previous comments on soil
	Section 9 The outline of the approach to the SEA process is in line with current guidance and CCW welcomes this.	No action required
	Appendix A Plans and Programme Review Please refer to the CCW Topic Guidance Notes outlined above which provide lists of relevant plans and policies which may need to be considered in addition to the ones listed in Appendix A.	Noted and guidance taken into account during the preparation of the Environmental Report
	Below is a list of additional plans polices or programmes which CCW recommend are included, this is not an exhaustive list and it is recommended that further consideration is given to the wider effect of implementing the LFRMS. *Neighbouring Authorities PPS:* Gwynedd Local Flood Risk Management Plan Denbighshire Local Flood Risk Management Plan *National (UK and Wales):* Better Woodlands for Wales (Forestry Commission, 2009) Natural Environment Framework 'A Living Wales' (2011) Civil Contingencies Act (2004)	The three national plans have been reviewed and added to Figure 4.1 and Appendix A. It has not been possible to review the Gwynedd LFRMS and Denbighshire LFRMS as these are still in development
Cadw	In general, barring specific comments below, the scoping report appears to be	No action required

	reasonably comprehensive and lays out an appropriate strategy for evaluation.	
	The scoping report notes the need to consider impact on Cultural Heritage (architectural and archaeological heritage) and provides a reasonable summary of baseline information in section 5.8. In general this is satisfactory although you will need to consider whether there is a need to include in this section reference and explanation of non-statutory registered historic landscapes of historic interest (referred to briefly in 5.7). All historic landscapes have been subject to detailed characterisation work – available in hard copy and electronic format from Clwyd Powys Archaeological Trust.	To avoid duplication of information landscapes of historic interest will be covered in the Landscape section. A further sentence has been added about the Register of Landscapes of Historic Interest in Wales. The historic landscape characterisation work undertaken by Clwyd Powys Archaeological Trust and Gwynedd Archaeological Trust have been reviewed. It is considered too much detail to include in the baseline but will be taken into consideration when assessing the potential effects of the LFRMS and options
	It is important to recognise that in addition to designated historic assets, there are also substantial numbers of undesignated historic assets within the study area with regional and local importance. Some categories of monuments can be particularly vulnerable to flood/flood management actions including bridges, harbours, WWII defensive structures and coastal/river-side monuments. There is a need to develop strategies which will enable sites at risk to be identified and protected through appropriate mitigation	A section on undesignated historic assets and archaeology has been added to the Cultural Heritage baseline. The LFRMS is a high level policy document that will not identify flood risk areas and sites. However, it will help ensure that flood risk is reduced and that the natural and built environment is protected. In the future area specific management plans may be developed which will consider heritage assets.
	A general comment on the Key Environmental Issues is that the document is less focussed on opportunities than on issues/risks. There may be opportunities for synergy between a reduction in the flood potential of some areas and the protection of historic features, for example historic monuments are vulnerable to damage from water erosion so actions which reduce the rate of water flow can be beneficial.	Opportunities have been developed under each of topic headings, and these are considered sufficient. The opportunity under cultural heritage has been re-worded in a more positive way and the example given has been included

	5.8.1 - Change "Welsh Assembly" to Welsh Government – and refer to Cadw as the historic environment service of the Welsh Government	Welsh Assembly has been changed to Welsh Government, and the reference to Cadw has been changed
	5.8.2 - Scheduled ancient monuments are monuments of national importance – designated by Cadw, the historic environment service of the Welsh Government in accordance with the Ancient Monuments and Archaeological Areas Act, 1979. As noted, they can be diverse in form and nature and many include areas of buried (sub-surface) archaeological remains. Cadw undertakes a process of regular condition surveys of all scheduled ancient monuments on a 10-year rotation.	Noted. No action required

Environmental Report Consultee Details

Consultee	Contact	Contact Details	Response Method & Date
CCBC			
Environment Agency Wales (EAW)	Mrs Deborah Hemsworth Planning Liaison Officer	Tel: 01248484068 E: debbie.hemsworth@environment-agency.gov.uk Address: Llwyn Brain, Ffordd Penlan, Parc Menai, Gwynedd, Bangor, LL57 4DE	Emailed letter dated 16th January 2012
Cadw	Richard Kevern Casework Team Leader	Tel: 01443336098 E: richard.kevern@wales.gsi.gov.uk	No response received
Countryside Council for Wales (CCW)	Thomos Hughes	Tel: 01248385529 E: T.Hughes@ccw.gov.uk	Email with attachment dated 14th January 2013

Consultee	Consultee Comments	CCBC Response
Environment Agency Wales (EAW)	We consider the SEA to be a useful and comprehensive document and it has demonstrated the usefulness of your LFRMS as, almost exclusively, any effects arising as a result of implementation of the LFRMS are likely to be advantageous. It has also highlighted the few occasions when the effects produced could be negative, ie in Chapter 6, page 58/59 with measure 4.2 and on page 71/72 with measures 10.1, 10.2 and 10.3. These slight negative effects should be identified and minimised through the planning process wherever possible.	
	Section 6.3 - clearly indicates that negative impacts are also likely to occur during the construction phase. Any contractors undertaking flood defence works must ensure that such impacts are kept to a minimum and appropriate mitigation measures are in place.	Noted: No response required
	We note the suggested mitigation and enhancement measures identified in Table 7.2 and agree that such measures will help reduce negative impacts. We would query however, on the twelfth point “No significant adverse landscape effects from flooding related development in sensitive landscape”, should this read “Number of significant adverse landscape effects ….”.	The report has been amended to reflect the changes.
Countryside Council for Wales (CCW)	1.1: CCW notes that responsibility for the consideration of flood risks and hazards in respect of the sea (marine flooding) are ‘deferred’ to the Environment Agency. In our previous comments on the scoping document for this assessment process, CCW suggested that consideration needed to be given within this assessment process and the LFRMS itself, to the effects of coastal and tidal processes on surface water flooding in Conwy. It is disappointing that these comments have not been taken into consideration. CCW would suggest that flood hazard and risks in Conwy are strongly related to marine influences and that these issues should have been considered by this Strategy.	Consideration was given to the effects of coastal and tidal during the compilation of the environmental report. Following the Scoping comments additional text was included in the report to place more emphasis on combined effects from marine flooding. Additional comments have also been included in this report to identify the tidal flood hazard risks in the county.

Consultee	Consultee Comments	CCBC Response
	1.4 Legislative Background Paragraph 1: Reference should be made to the updated 2009 “Birds Directive” 147/EC on the conservation of wild birds, which superseded the stated 1979 Birds Directive 79/409/EEC. Reference should also be made to the consolidated Conservation of Habitats and Species Regulations 2010 (as amended) which superseded and revoked the stated “The Conservation (Natural Habitats, &c Regulations 1994)”. The Conservation of Habitats and Species Regulations 2010 have been amended twice (in 2011 and 2012). The 2012 Amendment Regulations (amongst other matters) now also transpose most (if not all) of the updated 2009 Birds Directive to UK Law.	The text has been updated to reflect the comments. Additional clarification has been provided within the HRA.
	3.1: See comments above on 1.1 regarding the need for this assessment process and the LFRMS itself to take into account the influence of marine and tidal processes on surface water flooding.	Please refer to response above. The text within this section of the report is taken from the WG guidance
	3.2.2: Clarification would be welcomed as to what might constitute ‘sustainable flood risk management’.	Sustainable in this instance refers to the using drainage solutions (SuDS) to replicate natural drainage systems using cost effective solutions with low environmental impact.
	Table 4.1: Reference should be made to CCW’s comments on the scoping stage of this assessment.	The text within the table has been updated to reflect the comments from CCW during the Scoping Stage.
	Water: It is disappointing that no explicit reference or consideration appears to have been given to the effects of surface water flooding on coastal and bathing water quality.	An indicator was included within Table 4.2 on the request of CCW at the Scoping Stage of the report.
	Biodiversity, Flora and Fauna: Reference should be made to the potential for flood alleviation/defence measures to restrict or prevent the movement of migratory and mobile wildlife species between habitats.	A bullet point has been added within Table 4.1 to reflect the comment.

Appendix B. Plans and Programmes Review

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	INTERNATIONAL & EUROPEAN	
EU Biodiversity Strategy to 2020: Our life insurance, our natural capital (2011)	Strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets and 20 actions to help Europe reach its goal. The six targets cover: • Full implementation of EU nature legislation to protect biodiversity; • Better protection for ecosystems, and more use of green infrastructure; • More sustainable agriculture and forestry; • Better management of fish stocks; • Tighter controls on invasive alien species; and • A bigger EU contribution to averting global biodiversity loss. The strategy is in line with two commitments made by EU leaders in March 2010. The first is the 2020 headline target: *"Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss"*; the second is the 2050 vision: *"By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided."*	There are several European, national and local designated sites of nature conservation in Conwy County. Flooding and construction of defence structures can affect these sites. The LFRMS should aim to protect these areas and where possible contribute to biodiversity. The LFRMS should promote biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity.
EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC)	The main aim of this Directive is to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. While the Directive makes a contribution to the general objective of sustainable development; it ensures the conservation of a wide range of rare, threatened or endemic species, including around 450 animals and 500 plants. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right. The Directive provides for a ban on the downgrading of breeding and resting places for certain strictly protected animal species. Exceptions to the strict protection rules can be granted under very specific conditions. The Habitats Directive also establishes the EU wide Natura 2000 ecological network of protected areas. For these areas it provides a high level of safeguards against potentially damaging developments. Together with the Birds Directive, the Habitats Directive forms the backbone of EU nature protection legislation.	There are several Natura 2000 sites in Conwy County. The LFRMS should aim to protect these areas and where possible contribute to their biodiversity.
EC Directive on the Conservation of Wild Birds (2009/147/EC)	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended). This Directive ensures far-reaching protection for all of Europe's wild birds, identifying 194 species and sub-species among them as particularly threatened and in need of special conservation measures. There are a number of components to this scheme: • Member States are required to designate Special Protection Areas (SPAs) for 194 particularly threatened species and all migratory bird species. SPAs are scientifically identified areas critical for the survival of the targeted species, such as wetlands. They are part of the Natura 2000 ecological network set up under the Habitats Directive 92/43/EEC; • A second component bans activities that directly threaten birds, such as the deliberate killing or capture of birds, the destruction of their nests and taking of their eggs, and associated activities such as trading in live or dead birds (with a few exceptions); and • A third component establishes rules that limit the number of bird species that can be hunted (82 species and sub-species) and the periods during which they can be hunted. It also defines hunting methods which are permitted (e.g. non-selective hunting is banned).	There are several SPAs within Conwy County and other areas that are important for birds. The LFRMS should aim to protect these areas, and flood defence projects should not threaten bird species.
Ramsar Convention on wetlands of	Provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The aim is *"the conservation and wise use of all wetlands through local and national actions and*	There are no designated Ramsar sites but there is wetland habitat

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
International Importance (1971)	*international cooperation, as a contribution towards achieving sustainable development throughout the world".* The Convention uses a broad definition of the types of wetlands covered, including lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans.	within Conwy. The LFRMS should aim to protect these areas.
EC Marine Strategy Framework Directive (2008/56/EEC)	The aim of the Marine Strategy Framework Directive is to protect more effectively the marine environment across Europe. It aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. The Directive enshrines in a legislative framework the ecosystem approach to the management of human activities having an impact on the marine environment, integrating the concepts of environmental protection and sustainable use.	The LFRMS isn't directly concerned with flooding from marine waters. However, flood management activities inland can have knock-on effects for marine water but in terms of ecology and pollution. The LFRMS should take holistic approach and consider wider effects.
EC Water Framework Directive (2000/60/EEC)	The WFD has the following key aim: • Expanding the scope of water protection to all waters, surface waters and groundwater; • Achieving "good status" for all waters by a set deadline; • Water management based on river basins; • "Combined approach" of emission limit values and quality standards; • Getting the prices right; • Getting the citizen involved more closely; and • Streamlining legislation. There are a number of objectives in respect of which the quality of water is protected. The key ones at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015.	The LFRMS will aim to enhance rather than diminish the status of aquatic environments (e.g. Sustainable urban Drainage Systems – SuDS). Through its SEA, the LFRMS will consider potential effects arising from its implementation on surface waters and ground waters across Conwy and will avoid/mitigate where appropriate. A separate WFD compliance assessment will not be carried out as part of the LFRMS. Instead this will be captured in the SEA with the assessment of the SEA objective for water quality and resources. This should ensure the objectives, requirements and targets of the WFD have been considered and complied within the LFRMS.
Freshwater Fish Directive (2006/44/EC)	The Freshwater Fish Directive is to be repealed in 2013 by the EC Water Framework Directive. The EC Freshwater Fish Directive (2006/44/EC) was originally adopted on 18 July 1978 but consolidated in 2006. The Directive seeks to protect those fresh water bodies identified by Member States as waters suitable for sustaining fish populations. For those waters it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters.	The LFRMS should ensure that flood risk management does not adversely affect fish habitats and stocks.
Groundwater Directive (2006/118/EC)	This new directive establishes a regime which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. The directive establishes quality criteria that takes account local characteristics and allows for further improvements to be made based on monitoring data and new scientific knowledge.	One of the primary aims of the LFRMS is to reduce and manage flood risk from groundwater. This

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	The directive thus represents a proportionate and scientifically sound response to the requirements of the Water Framework Directive (WFD) as it relates to assessments on chemical status of groundwater and the identification and reversal of significant and sustained upward trends in pollutant concentrations. Member States will have to establish the standards at the most appropriate level and take into account local or regional conditions. The groundwater directive complements the Water Framework Directive. It requires: • Groundwater quality standards to be established by the end of 2008; • Pollution trend studies to be carried out by using existing data and data which is mandatory by the Water Framework Directive (referred to as "baseline level" data obtained in 2007-2008); • Pollution trends to be reversed so that environmental objectives are achieved by 2015 by using the measures set out in the WFD; • Measures to prevent or limit inputs of pollutants into groundwater to be operational so that WFD environmental objectives can be achieved by 2015; • Reviews of technical provisions of the directive to be carried out in 2013 and every six years thereafter; and • Compliance with good chemical status criteria (based on EU standards of nitrates and pesticides and on threshold values established by Member States).	should contribute to improving groundwater quality.
EC Directive on Bathing Water (76/160/EEC)	The overall objective of the Directive remains the protection of public health whilst bathing, but the revised Directive (into force 2006) also offers an opportunity to improve management practices at bathing waters and to standardise the information provided to bathers across Europe and aims to set more stringent water quality standards and also puts a stronger emphasis on beach management and public information.	The LFRMS isn't directly concerned with bathing waters. However, flood management activities inland can have knock-on effects for bathing water quality. The LFRMS should take holistic approach and consider wider effects.
EC Drinking Water Directive (98/83/EC)	The Drinking Water Directive sets out the following objectives: • Sets quality standards for drinking water quality at the tap (microbiological, chemical and organoleptic parameters) and the general obligation that drinking water must be wholesome and clean; • Obliges Member States to regular monitoring of drinking water quality and to provide to consumers adequate and up-to-date information on their drinking water quality; and • Member States may exempt water supplies serving less than 50 persons or providing less than 10 m^3 of drinking water per day as an average and water in food-processing undertakings where the quality of water cannot affect the wholesomeness of the foodstuff in its finished form.	The LFRMS should take into account the requirements of the directive and help ensure flooding does not impact on drinking water supply or quality.
EU Directive 2007/60/EC on the Assessment and Management of Flood Risks	Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires Member States to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.	The LFRMS will complement the aims and requirements of the directive. It will aim to reduce and manage flood risk in Conwy County.
Kyoto Protocol on Climate Change 1997	The protocol was ratified in 2004. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. The Kyoto Protocol requires the EU to cut its greenhouse gas emissions to 8% below 1990 levels by 2008-2012.	The LFRMS will plan for potential future flooding impacts caused by climate change across the county.

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
		It will contain policies for raising public awareness of flood risk.
EU Strategy on Climate Change	This document sets out concrete steps to limit the effects of climate change and to reduce the risk of massive and irreversible disruptions to the planet. The EU and its Member States have confirmed their target to limit the global average temperature increase to 2°Celsius compared with pr e-industrial levels, the point beyond which the impact of climatic change is believed to increase dramatically.	The LFRMS will plan for potential future flooding impacts caused by climate change across Conwy County. It will contain policies for raising public awareness of flood risk.
EU Air Quality Directive (2008/50/EC)	It establishes ambitious, cost-effective targets for improving human health and environmental quality up to 2020. The EU objective on air quality is *"to achieve levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment."*	The LFRMS is unlikely to affect air quality. However, large scale defence works could have temporary effects. Therefore, the LFRMS should take the requirements of the directive into consideration.
The European Landscape Convention (2004)	Also known as the Florence Convention, - promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues.	Conwy County contains landscapes categorised as outstanding. Through its SEA, the LFRMS will consider potential effects arising from its implementation on the character and special features of these areas.
Charter for the Protection and Management of Archaeological Heritage (1990)	The charter lays down principles relating to the different aspects of archaeological heritage management. These include the responsibilities of public authorities and legislators, principles relating to the professional performance of the processes of inventorisation, survey, excavation, documentation, research, maintenance, conservation, preservation, reconstruction, information, presentation, public access and use of the heritage, and the qualification of professionals involved in the protection of the archaeological heritage. The Charter states that policies for the protection of archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental and educational policies.	Conwy County has rich heritage. The LFRMS should aim to help protect this heritage, both from flooding, and from defence works which affect the fabric or setting of an archaeological asset. Through its SEA, the LFRMS will consider potential effects arising from its implementation on archaeological assets and their setting.
UNESCO Convention concerning the Protection of the World Cultural and National Heritage 1972	The Convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List. The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. By signing the Convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The States Parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning programmes, set up staff and services at their sites, undertake scientific and technical conservation research and adopt measures which give this heritage a function in the day-to-day life of the community.	Conwy County has rich heritage. The LFRMS should aim to help protect this heritage, both from flooding, and from defence works which affect the fabric or setting of a heritage asset. Through its SEA, the LFRMS will consider potential effects arising from its implementation on heritage assets

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
		and their setting.
Convention for the Protection of Architectural Heritage of Europe (2009)	The aim of this Convention is to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study. Sources are considered to be elements of the archaeological heritage all remains and objects and any other traces of mankind from past epochs, the preservation and study of which help to retrace the history of mankind and its relation with the natural environment, for which excavations or discoveries and other methods of research into mankind and the related environment are the main sources of information, and which are located in any area within the jurisdiction of the Parties. The archaeological heritage shall include structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water.	Conwy County has rich heritage. The LFRMS should aim to help protect this heritage, both from flooding, and from defence works which affect the fabric or setting of a heritage asset. Through its SEA, the LFRMS will consider potential effects arising from its implementation on heritage assets and their setting.
Mainstreaming Sustainable Development into EU Policies (2009) including Johannesburg Declaration on Sustainable Development (2002) and EU Sustainable Development Strategy (2006)	The Renewed EU Sustainable Development Strategy (2006) deals in an integrated way with economic, environmental and social issues and lists the following seven key challenges: 1. Climate change and clean energy; 2. Sustainable transport; 3. Sustainable consumption and production; 4. Conservation and management of natural resources; 5. Public health; 6. Social inclusion, demography and migration; and 7. Global poverty.	The principles of sustainable development will be embedded into the LFRMS through consideration of SuDS, climate change, public health and biodiversity. The SEA will ensure that all aspects of sustainability (environmental, social and economic) are considered within the LFRMS.
NATIONAL (UK & WALES)		
Wales Spatial Plan 2008	The broad 20 year agenda and overall role, purpose and principles of the Wales Spatial Plan are: • Making sure that decisions are taken with regard to their impact beyond the immediate sectoral or administrative boundaries and that the core values of sustainable development govern everything we do; • Setting the context for local and community planning; • Influencing where money is spent by the Welsh Assembly Government through an understanding of the roles of and interactions between places; and • Providing a clear evidence base for the public, private and third sectors to develop policy and action. It is a principle of the Wales Spatial Plan that development should be sustainable. Sustainable development is about improving wellbeing and quality of life by integrating social, economic and environmental objectives in the context of more efficient use of natural resources.	The LFRMS will promote a more sustainable approach to managing flood risk, by describing how the implementation of SuDS will be managed across the local authority and providing a holistic approach to flood risk management.
Planning Policy Wales (Edition 4, February 2011)	This document contains current land use planning policy for Wales. It provides the policy framework for the effective preparation of local planning authorities' development plans. This is supplemented by 21 topic based Technical Advice Notes (TANs). Chapter 13.2 contains guidance on flood risk and climate change, Chapter 13.3 on development plans and flood risk, and chapter 13.4 on development control and flood risk. Planning Policy for Wales recognises that all development on land within the flood plain of a watercourse, or drained via a culvert, or on low lying land adjacent to tidal waters, is at some risk of flooding and whilst flood risk can be reduced by using mitigation measures it can never be completely eliminated.	LFRMS will promote the planning principles in Planning Policy Wales where applicable - especially in relation to flood risk and development. LFRMS will encourage appropriate development in flood risk areas

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	It also states that rapid flows due to failure of defences pose a greater risk to life than a steady rise in water level, and land protected by tidal defences is extremely vulnerable in the event of a breach due to the speed and depth of flooding. Flooding as a hazard therefore involves the consideration of the potential consequences of flooding, as well as the likelihood of an event occurring. Meeting the Assembly Government's objectives for sustainable development requires action through the planning system to move away from flood defence and the mitigation of the consequences of new development in areas of flood hazard towards a more positive avoidance of development in areas defined as being of flood hazard. Local planning authorities should take a strategic approach to flood risk and consider the catchment as a whole. Planning Policy Wales states that Local Authorities should bear in mind that the continued construction of hard engineered flood defences to protect development in defined areas of flood hazard is unlikely to be sustainable in the long term. A sustainable approach to flooding will therefore involve the avoidance of development in flood hazard areas and, where possible or practical, the encouragement of managed retreat, the creation of wash-lands and flood plain restoration.	across Conwy County by ensuring that (a) planning decisions are properly informed of flood risk issues; and (b) future impact of planning on flood risk is considered across the county. Through its SEA, the LFRMS will also consider potential impacts arising from its implementation on human health, environment, cultural heritage, climate change, economic activity and accessibility and will avoid/mitigate where appropriate.
Rural Development Plan for Wales 2007-2013	The Rural Development Plan covers four areas of activity. These are: • Agriculture and forestry; • Environment and countryside; • Quality of life in rural areas; and • Locally based approaches to rural development. A key measure is to tackle overgrazing that can result in soil erosion, soil compaction and contributes to increased risk of flooding. One of the objectives is to: Reduce Wales' contribution to climate change by protecting and enhancing carbon sinks, managing flood risks and water resources, reducing consumption of non-renewable resources and encouraging use of renewable energy. Top tier scheme and separated targeted measures could include: the possibility of flood prevention through allowing the flooding of agricultural land where this would also be beneficial to particular species – for example curlew or lapwing.	The LFRMS will compliment the objective of the Rural Development Plan to manage flood risk. Through its SEA, the LFRMS will also consider potential impacts arising from its implementation on human health, environment, cultural heritage, climate change, economic activity and accessibility and will avoid/mitigate where appropriate
Minerals Planning Policy Wales	Minerals Planning Policy Wales sets out the land use planning policy guidance of the National Assembly for Wales in relation to mineral extraction and related development in Wales, which includes all minerals and substances in, on or under land extracted either by underground or surface working. The overriding objective is to provide a sustainable pattern of mineral extraction by adhering to 5 key principles: • Provide mineral resources to meet society's needs and to safeguard resources from sterilisation; • Protect areas of importance to natural or built heritage; • Limit the environmental impact of mineral extraction; • Achieve high standard restoration and beneficial after-use; and • Encourage efficient and appropriate use of minerals and the re-use and recycling of suitable materials.	The LFRMS should take the Minerals Planning Policy into consideration when developing flood management options.
Technical Advice Note 5 – Nature Conservation and Planning (2009)	This Technical Advice Note provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. Key principles of positive planning for nature conservation include (amongst others): • Integrate nature conservation into all planning decisions looking for development to deliver social, economic and environmental objectives together over time; • Ensure that the UK's international and national obligations for site, species and habitat protection are fully met in all	Conwy contains many protected habitats and species. The LFRMS should comply with policies outlined in this TAN. The LFRMS should promote

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	planning decisions; • Look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally; and • Help to ensure that development does not damage, or restrict access to, or the study of, geological sites and features or impede the evolution of natural processes and systems especially on rivers and the coast.	biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity, and protecting ecological areas from flooding.
Wildlife and Countryside Act 1981	The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals. The Act requires surveying authorities to maintain up to date definitive maps and statements, for the purpose of clarifying public rights of way.	The LFRMS should promote biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity, and protecting ecological areas from flooding.
The Conservation of Habitats and Species Regulations (2010) (amended 2011)	The Conservation of Habitats and Species Regulations 2010 apply in the terrestrial environment and in territorial waters out to 12 nautical miles. The EU Habitats and Wild Birds Directives are transposed in UK offshore waters by separate regulations. The new regulations do not make any substantive changes to existing policies and procedures other than the establishment of the Marine Management Organisation (MMO). The MMO takes on certain licensing functions from Natural England to ensure consistency with the approach in the Marine and Coastal Access Act 2009. The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species.	Conwy County contains many protected habitats and species. The LFRMS should comply with the Regulations. The LFRMS should promote biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity, and protecting ecological areas from flooding.
Environment Strategy for Wales (2006) and State of the Environment (2011)	Environment Strategy for Wales is the Welsh Assembly Government's long term strategy for the environment of Wales, setting the strategic direction for the next 20 years. It is supported by a series of regularly updated action plans and a policy map setting out the key actions that will be taken to deliver the outcomes in the Strategy. The purpose of the Strategy is to provide the framework within which to achieve an environment which is clean, healthy, biologically diverse and valued by the people of Wales. By 2026, the aim is to see the distinctive Welsh environment thriving and contributing to the economic and social wellbeing and health of all of the people of Wales. The Strategy contains a chapter on flood and coastal erosion risk management. The Strategy recognises that flood and coastal erosion risk poses a significant threat to quality of life. It states that given the expected increase in flood risk due to climate change impacts, we recognise that we need to move away from our traditional flood defence approach and focus on managing the risks and consequences of flooding and coastal erosion. The State of the Environment report provides an annual summary of the latest information on the indicators monitoring progress against the Environment Strategy. Indicators being measured and their status in relation to flood risk include: • 31a: Annual cost of damage due to flooding – trend shows a clear improvement from 2005-2011; • 31b: Probability of flooding of assets at risk – baseline only began in 2010, no trends available; • 31c: Percentage of new development permitted in the floodplain – stable/no clear trend from 2003-2011; • 32a: Level of us of Floodline – baseline only began in 2011, no trends available; • 32b: Households registered for flood warnings as a percentage of total number of households at risk of flooding – trend shows a clear improvement from 2005-2011; and	The LFRMS should promote biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity, and protecting ecological areas from flooding.

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	• 32c: Percentage of people aware of flood risk – stable/no clear trend from 2006-2011.	
The Countryside and Rights of Way (CROW) Act 2000	The Act was introduced in 2000 with the intention to give greater freedom for people to explore open countryside and contains provisions to introduce a new statutory right of access for open-air recreation to mountain, moor, heath, down and registered common land. It also includes a power to extend the right to coastal land by order, and enables landowners voluntarily to dedicate irrevocably any land to public access.	The LFRMS should compliment the Act though reduce and managing flood risk which may affect access.
The Natural Environment and Communities Act 2006 (NERC Act)	The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. It is about conserving and enhancing places and nature and helping people to enjoy them – taking a wider view, pursuing environmental management which encompasses access and recreation, and aiming where possible to achieve economic and social outcomes alongside conservation goals.	The LFRMS will compliment the NERC Act by reducing and managing flood risk which could damage places and nature, and hinder access and recreation.
The Register of Welsh Historic Landscapes (CCW 1995)	In partnership with Cadw and the International Council of Monuments and Sites (ICOMOS UK) CCW has compiled a Register of Landscapes of Historic Interest in Wales. The Register comes in two volumes and describes 58 landscapes in Wales that are of outstanding or special historic interest. Conwy contains several landscapes classified as outstanding including: Great Orme, Western Hiraethog – Marginal Land; Kinmel Park, Gloddaeth, Bodnant, Caer Rhun Hall – Designed; Conwy, Llandudno – nucleated settlement.	Conwy contains several historic landscapes. The LFRMS should aim to protect these landscapes and their special character and features from flood damage and inappropriate defence works.
The Wales Transport Strategy (2008)	The Strategy states that transport accounts for around 14 per cent of greenhouse gas emissions in Wales. Of this, road transport is the greatest contributor, with more than 90 per cent of emissions. Overall, road traffic growth appears to be slowing down, but is expected to continue to grow for the foreseeable future. The Strategy's main focus is about ensuring access to areas, services, employments and goods through the transport network and also about ensuring an efficient, reliable and sustainable transport network	Ensuring access for residents and visitors to key services and goods, and ensuring the transport network is efficient and reliable are key priorities that could be hindered by flood risk. Flooding of key transport infrastructure can also result in lost revenue. Transport is a significant contributor to climate change and resulting increased flood risk. The LFRMS should consider policies to protect key transport infrastructure.
Climate Change Act 2008	In 2008 the UK Government passed the Climate Change Act. It was the first legislation in the world to create a legally binding framework to tackle climate change. The Act sets the legally binding target of an 80% cut in greenhouse gas emissions by 2050, and sets a carbon budgeting system that caps emissions over five year periods. It also provides UK governments with powers regarding preparing for climate change impacts. The two key aims of the Act are to: • Improve carbon management, helping the transition towards a low-carbon economy in the UK; and • Demonstrate UK leadership internationally, signalling commitment to taking our share of responsibility for reducing global emissions in the context of developing international negotiations.	Climate change effects can increase flood risk. The LFRMS should take into account future climate change projectors in its analysis of flood risk.
Climate Change Strategy for Wales (2010)	The Climate Change Strategy and associated Delivery Plans sets out Wales' commitments and the areas where action will be taken, and partnership working, to reduce greenhouse gas emissions and enable effective adaptation in Wales. The targets for Wales as outlined in the Strategy are: • Reduce greenhouse gas emissions by 3% per year from 2011 in areas of devolved competence, against a baseline of	Climate change effects can increase flood risk. The LFRMS should take into account future climate change projectors in its analysis of flood risk.

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	average emissions between 2006-10; • Achieve at least a 40% reduction in greenhouse gas emissions in Wales by 2020 against a 1990 baseline; • The 3% target will include all 'direct' greenhouse gas emissions in Wales except those from heavy industry and power generation, but including emissions from electricity use in Wales by end-user; and • We have set target ranges for sectoral emissions reduction.	
A Low Carbon Revolution – The Welsh Assembly Government Energy Policy Statement (2010)	Some of the main aims outlined in the strategy include: • A significant proportion of energy to be generated locally or domestically; • To promote the optimum use of offshore wind around the coast of Wales in order to deliver a further 15 kWh/d/p of capacity by 2015/16; • To capture at least 10% (8 kWh/d/p) of the potential tidal stream and wave energy off the Welsh coastline by 2025; • To have 4.5 kWh/d/p of installed onshore wind generation capacity by 2015/2017; • To support small scale hydro and geothermal schemes where they are environmentally acceptable in order to generate at least 1 kWh/d/p; • To deliver by 2020 up to 6 kWh/d/p in Wales of electricity from biomass – 50% indigenous/50% imported – and a heat potential of 2-2.5 kWh/d/p in Wales; • That any new fossil fuel plants should be carbon capture ready with fully developed plans for carbon capture and storage; and that these plants maximise efficiency through use of waste heat and co-firing where appropriate; and • To maximise the short and long-term benefits for Wales' economy and society of the move to a low carbon energy system.	Climate change effects can increase flood risk. The LFRMS should take into account future climate change projectors in its analysis of flood risk.
Air Quality (Wales) Regulations 2000 and Air Quality (amendment) (Wales) Regulations 2002	The Air Quality (Wales) Regulations 2000 ("the 2000 Regulations") set the air quality objectives for Wales and prescribe the periods within which they must be achieved. The 2002 Regulations amend the 2000 Regulations. They introduce a second air quality objective for benzene and alter the air quality objective for carbon monoxide.	The LFRMS is unlikely to affect air quality. However, large scale defence works could have temporary effects. Therefore, the LFRMS should take the requirements of the Regulations into consideration.
Air Quality Standards (Wales) Regulations 2010	The 2010 Regulations brought into force the requirements of the European Directive 2008/50/EC on ambient air quality and cleaner air for Europe.	The LFRMS is unlikely to affect air quality. However, large scale defence works could have temporary effects. Therefore, the LFRMS should take the requirements of the Regulations into consideration.
Flood and Water Management Act (2010)	The Flood and Water Management Act 2010 requires flood and coastal erosion risk management authorities (Environment Agency, local authorities, internal drainage boards, sewerage companies and highways authorities (that did not previously have such a duty) to aim to contribute towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. The Act also requires the Secretary of State to issue guidance on how those authorities are to discharge their duty, including guidance about the meaning of sustainable development.	Primary reason for LFRMS is to adhere to Flood and Water Management Act. To fulfil the local authority's role as a Lead Local Flood Authority the LFRMS will set out how CBCC will implement their duties under the Act, whilst contributing towards the achievement of sustainable

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		development.
Flood Risk Regulations 2009	The purpose of the Regulations is to transpose the EC Floods Directive (Directive 2007/60/EC on the assessment and management of flood risks) into UK law and to implement its provisions. In particular, it places duties on the Environment Agency and local authorities to prepare flood risk assessments, flood risk maps and flood risk management plans.	Provisions resulting from the Regulations such as PFRA, flood risk maps etc will be used as the basis for the LRMS.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003	The Regulations transpose the EC WFD in UK law. They will help implement the WFD requirement in England and Wales. They aim to protect and enhance the quality of: • Surface freshwater (including lakes, streams and rivers); • Groundwaters; • Groundwater dependant ecosystems; • Estuaries; and • Coastal waters out to one mile from low-water.	The LFRMS will aim to enhance rather than diminish the status of aquatic environments. Through its SEA, the LFRMS will consider potential effects arising from its implementation on surface waters and ground waters across Conwy County and will avoid/mitigate where appropriate. A separate WFD compliance assessment will not be carried out as part of the LFRMS. Instead this will be captured in the SEA with the assessment of the SEA objective for water quality and resources. This should ensure the objectives, requirements and targets of the WFD have been considered and complied within the LFRMS.
Groundwater Protection: Policy and Practice (GP3)	Groundwater is important. It supplies about one third of mains drinking water in England and around three per cent in Wales. It also supports numerous private supplies. But pollution and demands for water puts the resource under pressure. GP3 describes how the EA manage and protect groundwater now and for the future. GP3 identifies that in most Welsh aquifers, recharge is thought to greatly exceed abstraction, but in some areas (such as the sandstone in the Vale of Clwyd) groundwater appears to be at or near its abstraction limit. The Environment Agency's core groundwater policy is: *"To protect and manage groundwater resources for present and future generations in ways that are appropriate for the risks that we identify*". Nine themes support this policy, with number four being: reducing flood risk. GP3 states that groundwater flooding is a significant but localised issue and in recent years, there has been considerable concern about the risk of flooding from groundwater. Groundwater flooding is a problem partly because it happens very infrequently. Memories or information about previous floods may have been lost. Developments may have taken place in areas susceptible to the break-out of new springs or the appearance of lakes fed by groundwater. These 'new' groundwater features can flood property and land for many weeks because of the large storage potential of groundwater. Rising groundwater can also inundate sewers. This can cause serious problems for sewage treatment works, overloading their flow capacity and polluting surface water. The EA use a series of guiding principles to ensure a consistent approach to the assessment and management of	One of the primary aims of the LFRMS is to reduce and manage flood risk from groundwater. This should contribute to improving groundwater quality

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	groundwater. These are: • To secure the proper use of water resources for all purposes, including environmental need. • To protect the environment by: – Identifying a minimum flow or groundwater level below which abstraction may be curtailed or flows augmented, – Protecting flow and water-level variability across the full range of seasonal regimes from low to high water flow/level conditions, – protecting the critical aspects of the water environment including, where relevant, habitats that are dependent upon river flows or water levels, and – recognising that some watercourses or wetlands are more sensitive than others to the impact of flow or level changes. • To ensure no reduction in existing protected rights; • To protect the interests of other legitimate water users; • To take account of existing and future local requirements that are currently not considered. These could be protecting or changing flows from rivers into estuaries in order to provide protection for the estuarine environment; and • To take account of water quality considerations throughout the catchment in both surface waters and groundwater.	
Water for People and the Environment – Water Resources Strategy for England and Wales (2009)	The vision set out in the Strategy is - Enough water for people and the environment, "*Management and use of water that is environmentally, socially and economically sustainable, providing the right amount of water for people, agriculture, commerce and industry, and an improved water-related environment*." Key themes and aims of the strategy are: • Adapting to and mitigating climate change – The EA is able to manage water resources and protect the water environment in the face of climate change; • A better water environment – species and habitat that depend on water are restored, protected, improved and valued; • Sustainable planning and management of water resources – good water management contributes to sustainable development by supporting people and the economy in an improved environment; and • Water and the water environment are valued – people value water and enjoy their water environment and how it contributes to their quality of life.	The LFRMS will support the Strategy by helping to reduce and manage flood risk for communities and taking into account climate change effects.
Land Drainage Act 1991 and 1994	The Land Drainage Act 1991 requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded. The riparian owner must accept the natural flow from upstream but need not carry out work to cater for increased flows resulting from some types of works carried out upstream, for example a new housing development. If a riparian owner fails to carry out his responsibilities under the Land Drainage Act, or if anyone else causes a watercourse to become blocked or obstructed, the County and District Councils have powers of enforcement by serving a notice under the Act. If this is ignored, the Council concerned may carry out the necessary itself and then recharge the person responsible for the full cost incurred. The District Council normally implements these powers but the County Council will deal with problems that affect the highway. The person responsible may also be prosecuted for nuisance under the Public Health Act 1936. The 1994 Act amends the Land Drainage Act of 1991 in relation to the functions of internal drainage boards and local authorities.	The LFRMS will comply with the duties and powers resulting from this Act.
National Strategy for Flood and Coastal Erosion Risk Management in Wales	Prepared under the terms of the Flood and Water Management Act 2010 the National Strategy sets four overarching objectives for the management of flood and coastal erosion risk in Wales: • Reducing the consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;	This is the National Strategy that all LFRMS will be based on. The objectives in the national strategy should be reflected in the LFRMS.

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(2011)	• 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; and • Prioritising investment in the most at risk communities. The Strategy states that currently around 357,000 properties in Wales, or one in six properties, are at risk of flooding from rivers, the sea and surface water. There are however other sources of flood risk including: the failure of dams; the failure of defence structures; canal breaches; groundwater and other water sources; and sewer flooding.	
Technical Advice Note 14 – Coastal Planning (1998)	Specific issues in relation to the coastal zone can that should be addressed include: • Proposals for Development; — The nature of the ground conditions and physical processes, and the potential need for remedial and defence works, — Likely effects on physical and biological processes along the coast, — The potential effects on mineral, water and conservation resources, as well as high quality agricultural land, — Any potential visual; impact from both land sea. • Nature and Landscape Conservation; — The role of physical and biological processes in creating, maintaining and altering features of nature and landscape conservation value, — The effects of statutory and other nature and landscape conservation policies in the coastal zone, with may not always be contiguous with the low water mark, — The importance of the integrity and special features of Marine Nature Reserves, candidate marine SACs and coastal SACs, Special Protection Areas and Ramsar sites. • Recreation; — The primary role of physical processes in creating, maintaining and altering recreation resources such as beaches and sand dunes, — The effects of recreational facilities on the stability of coastal geomorphology. • On shore; — The risks to nay form of development associated with the physical processes and problem ground conditions, — The likely impact of any development on the geomorphological processes and features, and on the important features of the littoral and sub-littoral zones, — Off-shore, in the intertidal zone, and the maritime fringe, the sediment budget of the physical system, and — The sensitivity of the overall coastal environment to natural change or human influences.	Although the LFRMS will not directly cover coastal flood risk, it will take it into account when developing flood management policy. Flood management activities inland can have knock-on effects for coastal flooding. There is also potential for in-combination effects from a combination of flood sources. The LFRMS should take holistic approach and consider wider effects
Technical Advice Note 15 – Development and Flood Risk (2004)	This TAN provides technical guidance which supplements the policy set out in Planning Policy Wales in relation to development and flooding. It advises on development and flood risk as this relates to sustainability principles, and provides a framework within which risks arising from both river and coastal flooding, and from additional run-off from development in any location, can be assessed. The general approach of PPW, supported by the TAN, is to advise caution in respect of new development in areas at high	The LFRMS should support the principles set out in the TAN by helping to reduce and manage flood risk.

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	risk of flooding by setting out a precautionary framework to guide planning decisions.	
Welsh Coastal Tourism Strategy (Draft Final Report 2007)	The purpose of the Coastal Tourism Strategy is to identify a clear way forward for the development of Coastal Tourism, which realises and builds on the economic potential of the coastline of Wales whilst respecting its environmental quality and recognising the importance of achieving community benefits. Strategic aims: • To encourage economic, social and environmental benefits for coastal communities; • To improve the quality of the visitor experience; • To achieve an integrated approach to the development and management if coastal tourism; and • Coastal tourism is a year round industry.	Tourism is extremely important to Conwy ounty's economy. Incidents of flooding can affect tourism. The LFRMS will compliment the Tourism Action Plan by helping to reduce and manage flood risk.
Economic Renewal: A New Direction (2010) and Implementation Update (2011)	The vision for economic renewal is of a Welsh economy built upon the strengths and skills of its people and natural environment; recognised at home and abroad as confident, creative and ambitious; a great place to live and work. There are five priorities: 1. Investing in high quality and sustainable infrastructure; 2. Making Wales a more attractive place to do business; 3. Broadening and deepening the skills base; 4. Encouraging innovation; and 5. Targeting the business support we offer.	Flooding can affect the economy in many ways. The LFRMS will support the economic renewal plan by reducing and managing flood risk which may cause economic implications.
Wales Fisheries Strategy (2008)	The Wales Fisheries Strategy is the Welsh Assembly Government's long term strategy for the management and development of fisheries in Wales across all sectors of aquaculture, commercial fisheries, and recreational fisheries for 2020. The vision of the Wales Fisheries Strategy is to: *'Support the development of viable and sustainable fisheries in Wales as an integral part of coherent policies for safeguarding the environment'* In achieving this vision a number of goals have been identified applicable to all fisheries sectors to be achieved by 2020, as indicators of the success of the Strategy: • **Environment** – fisheries developed and managed in a sustainable way contributing positively to environmental policies of Wales; • **Healthy fish stocks** – development and management of fisheries at sustainable levels as a part of healthy and productive ecosystems; • **Positive community role** – recognition of fisheries as a positive contribution to the communities of Wales; • **Economic contribution** – maximising the economic importance and contribution of fisheries to the development of the 'Wales' brand on a Wales/UK/EU/International level; and • **Partnership working** – to further the partnership working already established between policy makers, stakeholders, and delivery agents for fisheries and establish this joint role as custodians for the future. The Strategy recognises the impacts that flooding can have on the well-being and habitats of fisheries.	Flooding and flood defences can effects harbours and marinas, impacting on commercial and recreational fishing. Certain defences may also affect the habitat and population of fish species. In developing flood management policy, the LFRMS should have regard to potential effects on fish species and populations.
Salmon and Freshwater Fisheries Act 1975	Both recreational and commercial fishermen must follow this law in catching salmon and other freshwater fish. The act encompasses fishing regulation, as well as illegal obstruction of migratory pathways and prohibited modes of destroying fish. The act allows the salmon to maintain an environmentally stable population and support the fishing industry.	In developing flood management policy, the LFRMS should have regard to potential effects on fish species and populations.
National Eel	The eel fishery is the most valuable commercial inland fishery in England and Wales, providing significant benefits to the	Flood management may have effects

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Management Strategy	rural economy. Eels have been exploited for thousands of years, initially through subsistence fisheries, and now by commercial fisheries supplying a wider market. They are used at all life stages, from glass eel and elver to yellow and silver eel. The fisheries are seasonal and most participants supplement their income from other sources. Catch returns are unreliable and better information is obtained from export records. Elver catches in England and Wales are believed to be about ten tonnes and those of yellow and silver eels to be a few hundred tonnes. Glass eel and elver fishing in England and Wales occurs in tidal reaches. Fishing effort varies according to market-led demand, and the number of dip net licenses issued varied between about 1,000 during the 1980s, reaching a peak of 2,500 in 1998 and dropping to 1,900 in 1999. Sales in 2000 onwards indicate that this downward trend is continuing. Catches of glass eel in the UK, or at least the quantities exported from England and Wales, have remained relatively stable. Prices can fluctuate widely, with annual average values exhibiting a three- to four-fold difference during the 1990s. Licenses to fish for eels are issued on demand and, although some controls on the use and type of instruments are available through byelaws, there is no power to restrict the number of fishing units. In England and Wales, legislation and regulations are inadequate to give proper protection to stock and fishery. The eel has never attracted the recreational interest enjoyed by salmonid or coarse fish, although large eels are valued by specimen angling interests. As a consequence, there is limited awareness and understanding of the eel, despite the fact that the elver fishery is probably the most valuable commercial freshwater fishery in England and Wales.	upon eel habitats and populations. In developing flood management policy, the LFRMS should have regard to potential effects on eel species and populations.
Sea Trout and Salmon Fisheries Strategy 2008 – 2012	The Strategy sets outs key results for achievement by 2021. These are: • Self-sustaining sea trout and salmon in abundance in more rivers; • Economic and social benefits optimised for sea trout and salmon fisheries; and • Widespread and positive partnerships, producing benefits. To achieve these results the Strategy sets out 16 specific aims. Aim 1 is to improve environmental conditions and increase the availability of good habitat. A set of measures and targets are also presented in the Strategy. One of the targets is: 76% of rivers outside the 'at risk' category for 2013.	In developing flood management policy, the LFRMS should have regard to potential effects on fish species and populations.
National Trout and Grayling Fisheries Strategy (2003)	The strategy is founded on the Agency's duty to maintain, improve and develop fisheries within the overall aim of contributing to sustainable development. The aim of the strategy is to conserve and improve wild stocks of trout, sea trout, char and grayling, while enhancing the environment for all types of fisheries for these species in England and Wales. It also aims to enhance the social and economic benefits derived from these fisheries. Policies are included to help ensure the conservation of wild stocks of trout and grayling. These relate to three main areas: • Exploitation; • Stocking; and • Habitat. Policy 22: We will work with others to monitor, protect and improve the physical, chemical and biological quality of trout, char and grayling habitat, including work with Government to ensure that impacts on fisheries are fully considered in the development of new policies and grant schemes relating to land use. Policy 24: Obstructions - For any new structures, where the Agency's consent is required, these must be designed to enable fish migration. Policy 26: We will work with others to monitor, protect and improve the appearance of fisheries, consistent with our duties in relation to flood defence, conservation, recreation and other functions.	In developing flood management policy, the LFRMS should have regard to potential effects on fish species and populations.
Merchant Shipping Act 1995	The Act establishes requirements and procedures of merchant shipping. The Merchant Shipping (Pollution) Act 2006 amended section 178(1) of the Act. It restricts claims to being enforced within three years of the damage occurring.	The LFRMS should have regards for the provision of the Act.

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Waste Strategy 2009 – 2050: Towards Zero Waste	The aim of the Strategy is to move towards a 'zero waste' approach. Two key milestones are proposed: • By 2025: A high recycling society of a least 70% recycling across all sectors, and diverting waste from landfill sites; and • By 2050: Zero waste, so products and services are designed with waste prevention in mind. This will help the economy and create jobs.	Flooding of waste facilities has the potential to cause pollution and human health issues. Through the SEA, the LFRMS will consider potential effects arising from its implementation on human health from pollution issues.
The UK's shared framework for sustainable development (2005)	As a result of the consultation, the priority areas for immediate action, shared across the UK are: • **Sustainable Consumption and Production** – Sustainable consumption and production is about achieving more with less. This means not only looking at how goods and services are produced, but also the impacts of products and materials across their whole lifecycle and building on people's awareness of social and environmental concerns. This includes reducing the inefficient use of resources, which is a drag on the economy, so helping boost business competitiveness and to break the link between economic growth and environmental degradation; • **Climate Change and Energy** –The effects of a changing climate can already be seen. Temperatures and sea levels are rising, ice and snow cover are declining, and the consequences could be catastrophic for the natural world and society. Scientific evidence points to the release of greenhouse gases – such as carbon dioxide and methane – into the atmosphere by human activity as the primary cause of climatic change. We will seek to secure a profound change in the way we generate and use energy, and in other activities that release these gases. We must set a good example and will encourage others to follow it; • **Natural Resource Protection and Environmental Enhancement** – Natural resources are vital to our existence and that of communities throughout the world. We need a better understanding of environmental limits, environmental enhancement and recovery where the environment is most degraded to ensure a decent environment for everyone, and a more integrated policy framework; and • **Sustainable Communities** – Our aim is to create sustainable communities that embody the principles of sustainable development at the local level. This will involve working to give communities more power and say in the decisions that affect them; and working in partnership at the right level to get things done. The UK uses the same principles of engagement, partnership, and programmes of aid in order to tackle poverty and environmental degradation and to ensure good governance in overseas communities.	The principles of sustainable development will be embedded into the LFRMS through consideration of SuDS, climate change, public health and biodiversity. The SEA will ensure that all aspects of sustainability (environmental, social and economic) are considered within the LFRMS.
The Sustainable Development Scheme of the Welsh Assembly Government – One Wales: One Planet (2009)	The Scheme is set out into five key themes, each with a vision and headline indicator: • **Sustainable Resource Use** – Within the lifetime of a generation we want to see Wales using only it fair share of the earth's resources. Headline indicators: Wales' Ecological Footprint; • **Sustaining the Environment** – Wales has health, functioning ecosystems that are biologically diverse and productive and managed sustainably. Headline indicator: % of Biodiversity Action Plan habitats and species recorded as stable or increasing; • **A Sustainable Economy** – A resilient and sustainable economy for Wales that is able to develop whilst establishing, then reducing, its use of natural resources and reducing its contribution to climate change. Headline indicator: Gross Value Added (GVA) and GVA per head; • **A Sustainable Society** – Safe, sustainable, attractive communities in which people live and work, have access to services, and enjoy good health and can play their full roles as citizens. Headline indicator: % of the population in low income households; and	The principles of sustainable development will be embedded into the LFRMS through consideration of SuDS, climate change, public health and biodiversity. The SEA will ensure that all aspects of sustainability (environmental, social and economic) are considered within the LFRMS.

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	• **The Wellbeing of Wales** – A fair, just and bilingual Wales, in which citizens of all ages and backgrounds are empowered to determine their own lives, shape their communities and achieve their full potential. Headline indicator: Wellbeing Wales. In order to achieve these visions some of the targets set out include: • Reduce by 80-90% use of carbon-based energy, resulting in a similar reduction in greenhouse gas emissions; • All new buildings to be zero carbon buildings; • Produce as much electricity from renewable sources by 2025 as we consume; • Moving towards becoming a zero waste nation; • Achieving 70% recycling across all sectors and diverting waste from landfill by 2025; • Organise the way we live and work so we can travel less by car wherever possible; and • Source more of our food locally and in season.	
TAN 6: Planning for Sustainable Rural Communities (2010)	The TAN provides guidance on how the planning system can contribute to: • **Sustainable rural economies** - the TAN states that the diversification of the rural economy should be supported both traditional rural industries and new enterprises. There should be identification of a range of suitable sites for future employment use and where possible these should be located within or adjacent to settlements • Sustainable rural housing – the TAN states that should be sufficient land to meet market and affordable housing needs across the authority's area. In rural areas where there constraints consideration should be given to prioritising affordable housing, especially in smaller villages. • **Sustainable rural services** – the TAN states that to ensure communities are sustainable in the long term rural residents need to have reasonable access to essential local services. Development should consider the availability of services. A positive approach should be adopted for proposals designed to improve the viability, accessibility or community value of existing services and facilities. • **Sustainable agriculture** – The TAN states that the Welsh Assembly Government's objective is a sustainable and profitable future for farming families and businesses through the production and processing of farm products while safeguarding the environment, animal health and welfare, adapting to climate change and mitigating its impacts, while contributing to the vitality and prosperity of our rural communities. Development should consider the quality of agricultural land, the best and most versatile land falls into grades 1, 2 and 3a.	Flooding of agricultural land can have significant implications for the livelihoods of rural residents. The LFRMS should support the TAN by helping reduce and manage flood risk. Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health, environment, cultural heritage and economic activity and will avoid/mitigate where appropriate.
TAN 13: Tourism (1997)	The Wales Tourist Board has responsibility for promoting and developing tourism in Wales. It makes a major contribution to the Welsh economy, provides employment in a wide variety of occupations and can bring benefits to local economies and communities in urban and rural areas. The TAN recognises that the demand for holiday and touring caravan sites has concentrated on the most popular holiday areas, particularly the coast, although there is increasing demand inland. The TAN states that as a rule sites should not be allowed immediately by the sea but should be set back a short distance inland.	Tourism is extremely important to Conwy's economy. Incidents of flooding can affect tourism. The LFRMS will compliment the Tourism TAN by helping to reduce and manage flood risk.
TAN 18: Transport (2007)	TAN 18 recognises the link between land use planning and the transport network. It also recognises that transport contributes significantly to climate change, and encourages reducing the need to travel and providing greater choice of means of transport other than the private car. The TAN also states that relative accessibility should be maximised rather than ensuring everyone can travel everywhere.	Ensuring access for residents and visitors to key services and goods, and ensuring the transport network is efficient and reliable are key priorities that could be hindered by flood risk. Flooding of key transport infrastructure can also result in lost revenue.

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
		Transport is a significant contributor to climate change and resulting increased flood risk. The LFRMS should consider policies to protect key transport infrastructure
TAN 21: Waste (2001)	TAN 21 is intended to facilitate the introduction of a comprehensive, integrated and sustainable land use planning framework for waste management in Wales. It sets out principles for sustainable waste management: • Proximity principle and self-sufficiency; and • Waste hierarchy of reduction, re-use, recovery (composting & recycling), recovery (energy from waste), disposal.	Flooding of waste facilities has the potential to cause pollution and human health issues. Through the SEA, the LFRMS will consider potential effects arising from its implementation on human health from pollution issues.
National Parks and Access to the Countryside Act 1949	The Act provided the framework for the creation of National Parks and Areas of Outstanding Natural Beauty in England and Wales, and also addressed public rights of way and access to open land.	Through its SEA, the LFRMS will consider potential effects arising from its implementation on the character and special features of landscape areas.
Environment Agency Sustainable Drainage Systems	The document recognises that many existing drainage systems are damaging the environment and are not sustainable in the long term. Techniques to reduce these effects have been developed and are collectively referred to as Sustainable Drainage Systems. The document states that natural drainage patterns are disrupted as land is developed. In most cases, the amount of impermeable cover will increase as a result of development. Traditional drainage systems are designed to remove rainfall from these impervious surfaces as quickly as possible. This causes higher flow rates for shorter periods and can result in flooding further downstream. Balancing ponds, underground storage tanks or similar measures are often required to compensate for this. SUDS offer a combination of benefits that conventional drainage systems do not provide, or instance, in relation to flood risk, SUDS may protect people and property from flooding, now and in the future. Examples of SUDS include: green roofs, permeable pavements, rainwater harvesting, infiltration trenches, infiltration basins, filter drains, swales, filter strips, detention basins, retention ponds, wetlands etc.	The LFRMS should support the EA document. Measures to reduce and manage flood risk may include policies on implementation of SuDS.
Contaminated Land (Wales) Regulations 2006 and amended 2012	These regulations set out provisions relating to the identification and remediation of contaminated land, identifies sites requiring regulation as 'special sites' and adds land contaminated by radioactive substances to this classification.	Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health and ecological harm from pollution issues.
Environmental Protection Act 1990	The Environmental Protection Act 1990 establishes in England, Scotland and Wales businesses' legal responsibilities for the duty of care for waste, contaminated land and statutory nuisance.	Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health and ecological harm from pollution issues.
Water Resources Act 1991	The Water Resources Act 1991 (WRA) regulates water resources, water quality and pollution, and flood defence. Part II of the Act provides the general structure for the management of water resources. Part III then explains the standards expected	

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	for controlled waters, and what is considered as water pollution. Part IV then provides information on mitigation through flood defence. The Act governs the quality and quantity of water by outlining the functions of the Environment Agency. The WRA sets out offences relating to water, discharge consents, and possible defences to the offences. The Environment Agency has the power to bring criminal charges against people or companies responsible for crimes concerning water.	
UK Climate Projections (UKCP09)	The UK Climate Projections (UKCP09) give climate information for the UK up to the end of this century. Projections of future changes to our climate are provided, based on simulations from climate models. The purpose of providing information on the possible future climate is to help those needing to plan how they will adapt to help society and the natural environment to cope with a changing climate. The Projections show three different scenarios representing High, Medium and Low greenhouse gas scenarios – this can help to demonstrate the importance of reducing our greenhouse gas emissions (mitigation). According to the UKCP09, Wales is predicted to experience changes in temperature, rainfall and sea level as a consequence of climate change. These changes are predicted to occur under all three emissions scenarios. The general trend for this region is warmer and drier summers and warmer and wetter winters.	
Civil Contingencies Act 2004	The Civil Contingencies Act 2004 establishes a coherent framework for emergency planning and response ranging from local to national level. The Act repeals the Civil Defence Act 1948 and the Civil Defence Act (Northern Ireland) 1950. Part 1 of the Act creates a new concept of an “emergency”. This term is broadly defined. It includes events which would have engaged the existing civil defence legislation (war or attack by a foreign power). It also includes terrorism which poses a threat of serious damage to the security of the United Kingdom and events which threaten serious damage to human welfare in a place in the United Kingdom or to the environment of a place in the United Kingdom (this can include major flooding events). The Act imposes a series of duties on local bodies in England and Wales, Scotland and Northern Ireland (to be known as “Category 1 responders”). These duties include the duty to assess the risk of an emergency occurring and to maintain plans for the purposes of responding to an emergency. The Act repeals the Emergency Powers Act 1920 and the Emergency Powers Act (Northern Ireland) 1926. It confers a power on Her Majesty (or in certain very limited circumstances, a senior Minister of the Crown) to make regulations if an “emergency” has occurred or is about to occur.	
A Living Wales – A new framework for our environment, our countryside and our seas (2010)	The principles of the new framework are: • To secure sustainable and integrated management of land and water by making the long-term health of ecosystems and the services they provide central to decision making; and, by doing this; and • To make optimum use of our finite land and water resources and ensure Wales’ natural and cultural capital assets are maintained and enhanced. In order for this to be turned into action on the ground, it will need to be expressed in national, regional and local priorities and tools. We following next key steps have been identified: • Developing a stronger evidence base for our ecosystems so that we have a better basis for decisions that fully reflect risks, opportunities and limits.	

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	• Ensuring that our dependence on the natural environment and the value of ecosystems, and their services, are fully reflected in the decisions that we make as government and society. • Updating our regulatory and management approaches to deliver the new approach. • Redesigning our partnership mechanisms around the new approach. • Refreshing our institutional arrangements for regulating the environment and delivering improvements to ensure that they support an integrated, sustainable approach.	
Woodlands for Wales – Welsh Government strategy for Welsh woodlands and trees (2009)	The Welsh Government Woodlands for Wales strategy sets out a 50 year plan for developing and using Welsh woodlands and trees to bring maximum benefit to the people of Wales. Woodlands for Wales outlines: • How we could increase the woodland cover in Welsh towns and cities; and, • How we could make our woodlands much more diverse by planting a wider range of tree species that are more resilient to the changing climate. The Woodlands for Wales strategy has four key themes. These are: **Responding to climate change** - The effects of climate change can be eased by woodlands and trees. The strategy sets out ambitious plans to help Wales reduce its greenhouse gas emissions. **Woodlands for people** - Wales' woodlands provide a wide range of opportunities for people from all walks of life to enjoy their woodlands as places of recreation and learning out of doors. Woodlands are excellent places to become more active and healthier. They can be ideal locations to develop community projects. **A competitive and integrated forest sector** - The strategy sets out how we can develop innovative and skilled industries and maintain levels of timber production in line with the Welsh Governments efforts to promote and increase demand for this renewable resource. **Environmental quality** - The development of our woodlands and trees will also help us to make a positive contribution to biodiversity, landscapes and heritage. It will assist us in reducing other environmental pressures. The Woodlands for Wales Action Plan was published in March 2010. It sets out what needs to happen over the next five years to make progress towards achieving the outcomes of Woodlands for Wales.	
REGIONAL		
North Wales Regional Planning Guidance 2002	Key guidance set out includes: • Policies and proposals in Unitary Development Plans should aim to enhance the economic prospects of the coastal area whilst protecting and enhancing its biodiversity, natural character and quality of the landscape and built environment. In this way the true value of the coast to the people who live, work and enjoy it can be realised. and • As a guiding principle only development which requires a coastal location should be so located. Development on the coast should be considered in the context of the capacity of the coast and maritime waters to absorb change and any risks which may arise from erosion, flooding or pollution. The document also provides high level guidance on increasing tourism and associated facilities, employment and retail sites and facilities and housing sites.	The LFRMS will promote a more sustainable and holistic approach to managing flood risk. Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health, environment, cultural heritage and economic activity and will avoid/mitigate where appropriate.
Second Draft North West Wales Spatial Development Strategy	This Strategy outlines how the broad policies and goals of the Wales Spatial Plan (2008) will be progressed and successfully achieved in North West Wales by influencing future financial planning, local policies, programmes and initiatives.	Flood management described in the LFRMS should support the policies outlined in the Spatial Development

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(2008)	The fundamental approach to be adopted in the spatial development of North West Wales is based upon designations of areas. One such area is the North Wales Coast Primary Hub, the core area includes the settlements of Llandudno, Conwy and Colwyn Bay. The immediate area of influence extends to Llanrwst (South), Penmaenmawr (West), Abergele (East). Wider influence on area extending along the Conwy Valley to Southern Secondary Hub. The approach for this area is: facilitation and management of physical development and economic growth. Key priorities include: focus on the office economy, a continued emphasis on tourism (including business tourism based around the new conference facilities at Venue Cymru and an enhanced role for the area as a gateway to the National Park), the potential of the area as a distribution centre, and an enhanced retail offer, as well as building on existing strengths in respect of growth sectors, notably geoscience and marine engineering and services. Objectives cover: • **Places: spatial development** - Emphasis on interventions for development of existing and new employment, leisure and retail facilities; increase provision of accessible, affordable and diverse housing; adaptation and mitigating against implications of climate change, in particular long term flood risk; • **Places: infrastructure development** - Emphasis on interventions for enhancing freight capacity on the region's rail infrastructure; redevelop strategic sites; • **People: skills development** - Emphasis on interventions for empowering communities, commissioning education and training; respond to the high level of economic inactivity tailored to the needs of individuals; and • **People: economy and prosperity** - Emphasis on interventions for improving the region's business environment by developing suitable sites and premises, ICT infrastructure and appropriate business support and training; promote high quality, year-round tourism.	Strategy. The LFRMS will encourage appropriate development across Conwy County. It will inform planning decisions about potential flood risk issues as such ensure that spatial planning supports flood risk management policies and plans. The LFRMS will promote a more sustainable and holistic approach to managing flood risk. Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health, environment, cultural heritage and economic activity and will avoid/mitigate where appropriate.
North Wales Tourism Strategy 2010 - 2015	The Strategy states that tourism is vitally important to the North Wales economy. Tourism generates £1.8bn for the North Wales economy each year, supports an estimated 37,500 jobs and is a lifeline for numerous small businesses. There is potential for further growth. This strategy sets out how North Wales can achieve its potential and is a blueprint to guide action over the next five years. The strategic objectives and key priorities outlined in the Strategy are as follows. **1. Projecting our distinctive strengths** - Key priorities are becoming more market driven, creating a stronger impact and providing inspiring information; **2. Investing in product excellence** - Key priorities are providing quality accommodation, diverse attractions and excellent activities; **3. Providing an outstanding experience** - Key priorities are creating well-managed places, enriching experiences, efficient transport and skilled people; and **4. Working together in partnership** - Key priorities are getting better recognition for tourism, establishing effective organisation and relying on sound evidence.	Tourism is extremely important to Conwy's economy. Incidents of flooding can affect tourism. The LFRMS will compliment the Tourism Strategy by helping to reduce and manage flood risk.
North Wales Regional Waste Plan 2003-2013	Using 1995 as a base year the statutory targets set by the EU Landfill Directive include: • By 2012 no more than 50% of the biodegradable municipal waste BMW generated can be landfilled; and • By 2020 no more than 35% of the BMW generated can be landfilled. The Plan shows the future capacity requirements for waste facilities. In Conwy County these are: • Material recovery facility for primary source segregation = 51,804 m^3; • Open windrow composting plant = 6,635 m^3;	Flooding of waste facilities has the potential to cause pollution and human health issues. Through the SEA, the LFRMS will consider potential effects arising from its implementation on human health

<table>
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<tr><td></td><td>
• Municipal solid waste composting plant = 13,269 m^3;
• In-vessel composting plant = 13,269 m^3;
• Mechanical biological treatment plant = 52,960;
• Energy from waste plant = 21,920 m^3;
• Facility for processing or re-use of inert waste = 209,030 m^3;
• Landfill = 60,024 m^3;
• Materials recovery facility for non-inert waste = 1,836 m^3;
• Energy from waste plant for non-inert waste = 612 m^3;
• Anaerobic digestion plant = 612 m^3;
• Civic amenity site = 3,000 m^3;
• Other transfer facilities = 52,000 m^3; and
• TOTAL = 486,970 m^3.
</td><td>from pollution issues.</td></tr>
<tr><td>North Wales Regional Transport Plan (2009)</td><td>
The RTS had found that car ownership is higher in North Wales than in Wales as a whole.
Key schemes described in the RTS that may affect the Conwy County Borough include:
• Hubs Concept (across North Wales) – hubs at existing settlements will be developed to include facilities for park and ride, park and share, car hire including car clubs and real time transport information;
• A547 Tollbar to A55 improvement - this is an improved direct link from Tir Llwyd Industrial Park to the A55, supporting accessibility for HGVs and public transport;
• Kinmel Bay - improved cycle / walking links to strategic employment site at Tir Llwyd industrial park;
• Gors Road, Towyn - this scheme is an improvement of a road which was used as a relief road for Towyn particularly when flooding occurred in the past. As well as catering for the possible effects of climate change and future flooding, it would improve walking and cycling links to rural areas with a proper standard of footway and shared use cycling. It would provide extra links to Ysbyty Glan Clwyd, the main hospital in the area;
• Colwyn Bay Interchange - this scheme includes improvement to parking and interchange facilities to the front of Colwyn Bay railway station. People without access to cars will have improved access to alternative modes of transport;
• The A548 - Kinmel Bay to Abergele cycle facility. This scheme would provide a direct link from Towyn to Abergele offering a shared use route to gain access to schools, shops and leisure facilities.
</td><td>Ensuring access for residents and visitors to key services and goods, and ensuring the transport network is efficient and reliable are key priorities that could be hindered by flood risk. Flooding of key transport infrastructure can also result in lost revenue.

Transport is a significant contributor to climate change and resulting increased flood risk.

The LFRMS should consider policies to protect key transport infrastructure</td></tr>
<tr><td>Shoreline Management Plan 21: St Ann's Head to Great Ormes Head (West of Wales)</td><td>
Only a small part of the Conwy County Borough lies within the West of Wales SMP, this is in Llanfairfechan. Existing defences include: some small sections of embankment at Glan-y-Mor Elias, with a sea wall and groynes to the western end of Llanfairfechan, running through to the sea wall and groyne system along the main Llanfairfechan promenade, providing a section of 4 km of defence. This area of protection runs into the main defence of the railway and A55.

The SMP divides the coast into management areas. Llanfairfechan is in Management Area 46 (MA46) 'Traeth Lafan and Llanfairfechan'. Within this management area there are three policy units each with different policies for future management. These are:

<table>
<tr><th colspan="2" rowspan="2">Policy Unit</th><th colspan="4">Policy Plan</th></tr>
<tr><th>2025</th><th>2055</th><th>2105</th><th>Comment</th></tr>
<tr><td>6.1</td><td>Afon Ogwen to Madryn</td><td>NAI</td><td>NAI</td><td>NAI</td><td></td></tr>
</table>
</td><td>Although the LFRMS will not directly cover coastal flood risk it will take into account currently management policies set out in the SMP.</td></tr>
</table>

<table>
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<tr><td></td><td>
<table>
<tr><td>6.2</td><td>Afon Aber</td><td>MR</td><td>MR</td><td>HTL</td><td>Adapt defences to maintain natural sediment drift with long term intent to protect transport route from potential flooding</td></tr>
<tr><td>6.3</td><td>Llanfairfechan</td><td>HTL</td><td>HTL</td><td>MR</td><td>Maintain defences with long term aim to adjust to a more favourable alignment</td></tr>
<tr><td colspan="6">Key:
HTL = Hold the Line
A = Advance the Line
NAI = No Active Intervention
MR = Managed Realignment</td></tr>
</table>

In assessing erosion and recession in the future allowance has been made for sea level rise which is shown briefly in the following the table.
<table>
<tr><th>Location</th><th>NAI Base Rate (m/yr)</th><th>Notes</th><th>100yr. Erosion range (m)</th></tr>
<tr><td>Llanfairfechan</td><td>0.2</td><td>Following failure of defences</td><td>25 – 70</td></tr>
</table>

The intent of the plan for MA46 is to allow the natural development of the shoreline over much of the frontage. There would be increasing flood risk to properties in the long term with sea level rise. It is uncertain whether this could be managed by local resilience measures and it is anticipated properties may be lost. This will need to be reassessed as improved information on sea level rise is collated. The main risks in the area are at Afon Aber, at Llanfairfechan and to the area immediately to the west. This also links through to risk to the A55 and the railway. The intent of the plan is to sustain the main transport links but with the aim to realign defences in the Afon Aber area to achieve this.
At Llanfairfechan, the intent is to continue to mange the frontage, sustain the seafront of the town and provide protection to the transport routes behind. With sea level rise, the CFMP has identified increased risk of tidal locking and has recommended looking at improvement to fluvial defence in the area. At the coast, the intent of the SMP would be to maintain defence in the short to medium term but with a longer term intent to look at realignment of the actual defence line to provide a more sustainable management approach in the future.</td><td></td></tr>
<tr><td>Shoreline Management Plan 22: Great Ormes Head to Scotland (North West England & North West Wales)</td><td>The north-west coast in SMP 22, also known as Cell 11 is sub-divided in areas. The Conwy County Borough coastline lies within sub-cell 11a: Great Orme’s Head to Southport Pier. The sub-cell is further divided into policy locations. Those within the County Borough are as follows:
• 11a 1: Great Orme to Little Orme;
• 11a 2: Little Orme to the Clwyd Estuary; and
• 11a 3: Clwyd Estuary.

11a 1: Great Orme to Little Orme
The long term plan is to manage coastal flooding and erosion risks to the town of Llandudno by continuing to maintain the present line of defences. The natural rocky headlands of the Great Orme and Little Orme will change little and so will continue to provide a natural sheltering effect to the Llandudno beach frontage.
By reducing flood risk to Llandudno whilst allowing natural processes to continue on the neighbouring headlands, the majority of objectives are met, however there remains the potential for coastal squeeze against the hard defences of Llandudno, although this impact can be mitigated against through the inclusion of beach recharge in the future management plan and the creation of intertidal habitats elsewhere in the Shoreline Management Plan region if necessary. The policy</td><td>Although the LFRMS will not directly cover coastal flood risk it will take into account currently management policies set out in the SMP.</td></tr>
</table>

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recommendations are robust due to the economic case for continued defence of Llandudno.

Location (Policy Unit)		Policy and Approach (from 2010)			
		0 – 20 years	20 – 50 years	50 – 100 years	Comments
1.1	Great Ormes Head	No active intervention	No active intervention	No active intervention	Allows designated cliffs to continue to erode naturally
1.2	Llandudno	Hold the Line	Hold the Line	Hold the Line	By maintaining the seawall, promenade and other defences. Improvements to cliff stabilisation works will be required. Beach recharge will be required to maintain the beach levels
1.3	Little Ormes Head	No active intervention	No active intervention	No active intervention	Allows designated cliffs to continue to erode naturally

11a 2: Little Orme to the Clwyd Estuary

The long term plan is to manage flood and erosion risks to the road and railway that provide the main transport links to the region and properties. There are isolated areas where it may be possible to move the defences back from the current alignment, closer to these assets, although such realignment of the defences could interrupt the longshore movement of sediment, making neighbouring frontages more difficult to defend, and also remove the 'buffer zone' of empty land between the sea and these key assets. The very large area at risk of flooding behind the defences the east of Abergele including Towyn, Kinmel Bay and Pensarn suggests that a more substantial defence system with a second line of defences should be developed to minimise the risks involved with the failure of main defences. An alternative approach to a second line of defences set back behind the main defences could be to advance the line by constructing new defences in front of the existing, for example with tidal energy impoundment lagoons. Full environmental impact assessments would be required for proposals such as tidal lagoons that could change the whole character of the coast.

By reducing flood risk to the extensive flood risk zone the majority of the social objectives are met. However, doing so creates the potential for coastal squeeze against the hard defences and interrupts sediment supply to down drift beaches including both natural and human interests and therefore impacting other objectives elsewhere along the coastline. This negative impact can be potentially mitigated if considered in the design of future defences, the inclusion of beach recharge in the management plan and the creation of compensatory intertidal habitats elsewhere in the Shoreline Management Plan area.

Location (Policy Unit)		Policy and Approach (from 2010)		
		0 – 20 years	20 – 50 years	50 – 100 years
2.1	Little Orme to Rhos on Sea (Penrhyn Bay)	Hold the Line By maintaining and improving / raising the existing defences, including investigating improving the beach control structures to widen the beach	Hold the Line By maintaining and improving / raising the defence system, including beach control	Hold the Line By maintaining and improving / raising and existing defences
2.2	Rhos on Sea to Llanddulas	Hold the Line By maintaining and	Hold the Line By maintaining and	Hold the Line By maintaining and

Plan Title	Plan Description and Key Relevant Objectives/Targets					Implications for the LFRMS and SEA
		(Colwyn Bay)	improving / raising the existing defences. A strategy study needs to be undertaken to confirm the long term economic viability	improving / raising the existing defences, subject to confirmation through the strategy study	improving / raising the existing defences, subject to confirmation through the strategy study	
	2.3	Llanddulas to Clwyd Estuary	Hold the Line	Hold the Line	Hold the Line	
			By maintaining and improving / raising / widening the existing defences and beach. Construction of a second setback line of defences in addition to the main defence would be recommended in parallel with other non-structural measures to further reduce both probability and consequences of flooding to the large flood risk area.			

11a 3: Clwyd Estuary

The long term plan is to continue to manage risk to the towns including Kinmel Bay, Towyn, Rhyl and Prestatyn; however there are potential opportunities for some realignment within the Clwyd Estuary. However, these could considerably alter flows at the mouth together with the local sediment regime so would therefore need to be investigated before any change from the recommended policies was made.

By managing risk to the extensive flood risk zone the majority of the social objectives are met. By also incorporating areas of managed realignment the estuary will be able to resume a more natural form, therefore meeting a number of the natural objectives whilst also creating areas of potential compensatory intertidal habitats to mitigate the effects of holding the line elsewhere in the Shoreline Management Plan area. The economic case supports this being a robust policy recommendation in the short term.

Location (Policy Unit)		**Policy and Approach (from 2010)**		
		0 – 20 years	**20 – 50 years**	**50 – 100 years**
3.1	Hortons Nose to Forydd Railway Bridge	Hold the Line	Hold the Line	Hold the Line
		By maintaining / improving defences and managing dunes as natural defence		
3.2	Forydd Railway Bridge to Rhuddlan Road Bridge Clwyd Estuary west (left) bank	Hold the Line	Managed Realignment	Managed Realignment
		By maintaining defences. Carry out studies to investigate Managed Realignment opportunities to set back defences to create space for habitat creation or flood storage and implement when practicable	By constructing set back or secondary defences, dependant on outcome of further studies	
3.3	Rhuddlan Road Bridge to Forydd Railway Bridge Clwyd estuary East (right) bank	Hold the Line	Managed Realignment	Managed Realignment
		By maintaining defences. Carry out studies to investigate Managed Realignment opportunities to set back defences to create space for habitat creation or flood storage and implement when practicable	By constructing set back defences, dependant on outcome of further studies	
3.4	Forydd Railway	Hold the Line	Hold the Line	Hold the Line

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	Bridge to Forydd Road Bridge: By maintaining / improving defence system, including the Marine Lake frontage	
Conwy and Clwyd Catchment Flood Management Plan (2010)	**Conwy catchment and upland areas** This large area is mainly rural, including a significant area of upland mountainous terrain, with scattered small villages and some larger settlements adjacent to rivers and the coast. Most of the flooding is from the River Conwy and its tributaries. This affects people, property and infrastructure. There are areas of localised tidal flood risk and there has been localised surface water and sewer flooding. There are few flood defences and flood risk across the area as a whole, is relatively low and is not expected to increase significantly in the future. Approximately 360 properties are at risk from the 1% AEP flood event, rising to around 520 properties in the future. Much of this flood risk is dispersed, however some is concentrated in small communities e.g. Dolwyddelan. The vision and preferred policy for the Conwy catchment and upland areas is Policy Option 3 - areas of low to moderate flood risk where we are generally managing existing flood risk effectively. Our vision is to ensure all our actions are appropriate and proportionate to the risks, now and in the future. We will continue to maintain our defences, but it may not be justifiable to replace them or to increase their height in the future. our vision also includes: • Increased emphasis on actions to manage the consequences of flooding; and • Increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves. Actions to implement the policy include: • Review and rationalise our current actions to ensure they are appropriate and targeted to locations of greatest risk, e.g. future risk in Betws-y-Coed and Dolwyddelan; • Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Betws-y-Coed and Dolwyddelan; • Investigate options to improve the flood forecasting and warning service, including campsites; • Seek opportunities to store water or manage run-off to provide flood risk and environmental benefits, e.g. in the upper River Conwy catchment; and • Engage and advise the local communities to encourage people at risk to take action to help themselves. **Conwy Valley** This area covers the rural Conwy Valley and includes the Conwy Valley IDD. The partial conversion of the floodplain to agricultural land in the past, using defences to reduce flooding, has also reduced the flood storage capacity of the river valley. Isolated properties are at risk; some of which could experience significant risk in the future. Agricultural land in the valley is of high value to the local farming community. In the future the valley will be subject to increasing river and tidally influenced flood risk. The Conwy Valley railway will also be exposed to increasing risk in the future. Approximately 120 properties are at risk of flooding from a 1% AEP river flood event, rising to around 140 in the future. During a 0.5% AEP tidal flood event at least 20 properties are at risk, rising to 50 properties in the future. Flood risk is comparatively low and is not expected to increase significantly in the future. Flood risk management activity is currently disproportionately high relative to the broad level of risk.	The LFRMS will contribute to the understanding of the scale and extent of flooding in Conwy County. It will refer to and consider policies described in the catchment management plan that apply to the area. It will involve consultation with councils and partners that share the responsibility of sub-areas within Conwy Council, as well as councils and partners in other sub-areas of the catchment. This consultation process will improve the co-ordination of flood risk management activities across the catchment and will facilitate the agreement of the most effective way to manage flood risk. It will also ensure that the safe-guarding of a particular area from flood risk does not have knock on negative effects in another location.

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	The vision and preferred policy for Conwy Valley is Policy Option 2 – areas of low to moderate flood risk where we can generally reduce existing flood risk management actions. Our vision is to reduce the overall level of flood risk management activity over time. We will follow a risk based approach to rationalise our current activities and target our actions and limited resources to locations of greatest risk. It may not be justifiable to continue to maintain our defences, to replace them or to increase their height in the future. Our vision also includes: • Increased emphasis on actions to manage the consequences of flooding; and • Increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves. Actions to implement the policy include: • Work with our partners to determine how the policy of reducing actions is most appropriately communicated and implemented; • Encourage and support opportunities for farmers to adopt land use and management approaches, which assist in achieving multiple benefits and reconnect the river to its floodplain; • Engage and advise the local community to encourage people at risk to take action to help themselves; • Undertake a review of the Conwy Valley IDD to ensure flood risk management investment is appropriate; • Investigate options to improve flood warning to local communities including to temporary residencies; and • Encourage and support Network Rail to undertake an assessment of their current and future risks to improve the resilience of Conwy Valley railway to flooding. **Rhyl and Kinmel Bay** This area consists of the coastal towns Rhyl, Kinmel Bay, Rhuddlan and Towyn. There are approximately 9.3 kilometres of defence on the River Clwyd. These defences protect against both river and tidal flooding in the Clwyd estuary. There are less than 10 properties currently at risk from the 1% AEP river flood event, rising to around 600 in the future. The majority of this risk is in the lower reaches of the River Gele. Approximately 7,600 properties are currently at risk from the 0.5% AEP tidal flood event, rising to around 9,900 in the future. This risk is primarily for the River Clwyd Estuary. Some locations are potentially exposed to significant risk. Key infrastructure is at risk in the present and future from tidal flooding. Tourism facilities are also numerous and at risk. In 1990, 2,800 properties were affected in Towyn by one of the UK's most significant coastal flood events. The vision and preferred policy for Rhyl and Kinmel Bay is Policy Option 5 – areas of moderate to high flood risk where we can generally take further action to reduce flood risk. This is a heavily urbanised area, with a complex interaction of flood sources. In the future, sea level rise and additional development could considerably increase the flood risks. Defences will continue to have a role in reducing the likelihood of flooding, but will seek a broader range of integrated actions to manage both current and future flood risks. To develop a complementary set of flood risk management actions by all partners at a local community level. These will include: • Increased emphasis on actions to manage the consequences of flooding from all sources; and • Increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves.	

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	Actions to implement the policy include: • Encourage and support our partners to produce local long term plans to manage all sources of flooding at Rhyl and Kinmel Bay; • Flood risk management actions in this area will be informed by the Tidal Clwyd Flood Risk Management Strategy and the North Wales and North West England SMP review; • Engage and advise the local community to encourage people at risk to take action to help themselves; and • Encourage and support owners and operators of important infrastructure, to plan for and manage their current and future flood risks. **Conwy, Llandudno Junction, Llandudno, Mochdre** Mainly an urban area, partially exposed to the coast and estuary of the River Conwy. It includes the towns of Conwy, Llandudno, Llandudno Junction, Mochdre and Colwyn Bay. It also includes the River Ganol IDD. This area is a very important juncture point for road and rail networks. Flooding occurs from the River Conwy and the River Ganol. There is also potential flood risk from the Afon Wydden and Gyffin. Surface water and sewer flooding can be an issue e.g. Llandudno. Approximately 500 properties are currently at risk of flooding from a 1% AEP flood event, rising to around 920 in the future. During a 0.5% AEP tidal flood event approximately 500 properties are at risk, rising to around 6,000 properties in the future. Overtopping of the sea defences along the Conwy estuary could result in widespread disruption to Llandudno Junction and the Ganol Valley The vision and preferred policy for Conwy, Llandudno Junction, Llandudno, Mochdre is Policy Option 4. (see Lanrwst and Trefriw for details of Policy Option 4) Actions to implement the policy include: • Encourage and support our partners to produce local long term plans to manage all sources of flooding, particularly at Ganol Valley and Llandudno Junction; • Engage and advise the local communities to encourage people at risk to take action to help themselves; • Encourage and support studies by partners to identify surface water and sewer flooding issues and management options, particularly at Llandudno; and • Encourage and support owners and operators of important infrastructure, to plan for and manage their current and future flood risks. **Clwyd catchments and upland areas** This large area covers the main upland rural section of the Clwyd Catchment. Flooding mainly occurs from rivers and surface run-off. There are few flood defences. Historically areas have been drained using ‘grips’, shallow ditches cut into upland blanket bog. Approximately 300 properties are currently at risk from a 1% AEP flood event, rising to around 330 in the future. The flood risk is generally dispersed across the large catchment area with a number of local concentrations of risk. Some campsites and other temporary residences are at risk of flooding. Flood risk management activity is currently disproportionately high relative to the broad level of risk. The vision and preferred policy for Clwyd catchments and upland areas is Policy Option 2. (see Conwy Valley for details of Policy Option 2)	

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	Actions to implement the policy include: • Work with our partners to determine how the policy of reducing actions is most appropriately communicated and implemented; • Work with partners to investigate the flood risk in Llanfair Talhaiarn. If appropriate, encourage and support our partners to produce a plan to manage the current and future risks; • Seek opportunities to store water or manage run-off to provide flood risk and environmental benefits, e.g. in the upper catchments; • Engage and advise the local communities to encourage people at risk to take action to help themselves; and • Investigate opportunities to improve the flood warning to local communities, campsites and temporary residences. **Abergele** This area comprises the coastal town of Abergele on the River Gele, a tributary of the River Clwyd. Abergele town is at flood risk from the River Gele. The eastern extremes of the town are also potentially influenced by the Ffynnon-y-Ddol watercourse and the tidal River Clwyd. Existing defences along the River Gele on both banks offer varying standards of protection and the system is part reliant on pumping. Capacity restrictions on some watercourse culverts are known to limit the efficiency of the system at times of high flows. Recent assessment of flood risk, expanding on that of the CFMP analysis suggests present risk is also high. It is estimated in excess of 300 properties are currently at risk in a 1% AEP flood event rising to around 800 properties in the future. The vision and preferred policy for Abergele is Policy Option 4. (see Llanrwst and Trefriw for details of Policy Option 4). Actions to implement the policy include: • Encourage and support our partners to produce local long term plans to manage all sources of flooding at Abergele; • Seek opportunities to reduce flow restrictions and length of culverts over time; • Engage and advise the local community to encourage people at risk to take action to help themselves; • Encourage and support studies by partners to identify surface water and sewer flooding issues and management options; and • Investigate options to improve flood warning for flooding from the River Gele. **Llanrwst and Trefriw** This area includes the communities of Llanrwst and Trefriw on the River Conwy. Flood risk comes from surface water run-off, sewer systems, river flooding from the River Conwy and its tributaries and tidally influenced river flooding. There was significant flooding in 2004 and 2005. In the present 1% AEP river flood event, approximately 320 properties are at risk, increasing to around 370 in the future. A 0.5% AEP tidal event in the future will affect approximately 25 properties. When completed, early in 2010, the 'Conwy Valley Flood Alleviation Scheme' will reduce the likelihood of flooding. There is a significant risk to part of the railway and road network. Temporary residences are also at risk. The vision and preferred policy for Llanrwst and Trefriw is Policy Option 4 – areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change. We will maintain the Conwy Valley flood alleviation scheme into the future. The scheme has been designed so we can potentially incorporate additions to the existing structures in the future. Our vision includes improved integration of	

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	actions by all parties to manage all sources of flood risk. It also includes: • Increased emphasis on actions to manage the consequences of flooding; and • Increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves. Actions to implement the policy include: • Encourage and support our partners to produce local long term plans to manage all sources of flooding at Llanrwst and Trefriw; • Undertake hydraulic modelling of the tributaries through Llanrwstand Trefriw and tidal modelling of Trefriw, to better understand the flood risk. If appropriate, encourage and support our partners to produce a plan to manage the current and future risks; • Investigate options to improve tidal flood warning to Trefriw in the future and to campsites and other temporary residences; • Engage and advise the local communities to encourage people at risk to take action to help themselves; and • Encourage and support Network Rail to undertake an assessment of their current and future risks to improve the resilience of Conwy Valley railway to flooding.	
North West Wales Catchment Flood Management Plan	Within the CFMP area, Llanfairfechan is the only area within the Conwy County Borough. The Afon Ddu passes through Llanfairfechan, following a narrow steep valley down from the foothills of Snowdonia and into the sea. The coastal border is characterised by flat topography. This portion of the river is affected by the tide. Approximately 220 properties are currently at risk from the 1% AEP river flood event, increasing to around 480 in the future. Flooding from the river can be rapid, deep and fast flowing. Surface water and sewer issues have contributed to the flooding of properties in the past. The current scale of flood risk is high and additional risk will result if unmanaged, due to climate change. Extreme flood events could occur at any time, either now or in the future. These have a low likelihood of occurrence but could have serious consequences. The vision and preferred policy for Llanfairfechan is Policy Option 5 - areas of moderate to high flood risk where further action can be taken to reduce flood risk. Managing the likelihood of current flooding is particularly dependent on the maintenance of the main channel flow capacity and the locally engineered river banks. This can be achieved through a complementary set of flood risk management actions by all partners at a local community level. These will include: • A reduction in constrictions to river flows over time; • Reduced reliance on in-channel maintenance to manage the flood risk over time; • Increased emphasis on actions to manage the consequences of flooding from all sources; and • Increased community and individual awareness of their flood risks and adoption of actions both can take to help themselves. Actions to implement the policy include: • Encourage and support our partners to produce local long term plans to manage all sources of flooding at Llanfairfechan. These plans should include an assessment of the consequences of flooding, including from overtopping of defences, and actions to manage these. They should consider future options and investment needs for defences, channel maintenance, emergency planning and response, and development control issues;	The LFRMS will contribute to the understanding of the scale and extent of flooding in Conwy. It will refer to and consider policies described in the catchment management plan that apply to Conwy County. It will involve consultation with councils and partners that share the responsibility of sub-areas within Conwy County, as well as councils and partners in other sub-areas of the catchment. This consultation process will improve the co-ordination of flood risk management activities across the catchment and will facilitate the agreement of the most effective way to manage flood risk. It will also ensure that the safe-guarding of a particular area from flood risk does not have knock on negative effects in another location.

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	• Engage and advise the local community to encourage people at risk to take action to help themselves; • Flood risk management actions will inform and be informed by the West of Wales SMP review, currently being undertaken; and • Investigate potential options for introducing a flood warning area.	
River Basin Management Plan - Western Wales River Basin District (2009) and Consultation Draft River Basin Management Plan - Western Wales River Basin District (2012)	At present, because of pressures (diffuse pollution from agricultural and other rural activities and from historical mines; physical modification of water bodies; point source pollution from water industry sewage works; acidification) and the higher environmental standards required by the Water Framework Directive, only 29% of surface waters are currently classified as good or better ecological status/potential. 51% of assessed surface water bodies are at good biological status now. One of the reasons for not achieving good ecological status or potential can be due to physical modification for flood protection. Key water quality objectives and targets include: • By 2015, 13% of surface waters (rivers, lakes, estuaries and coastal waters) in this river basin district are going to improve for at least one biological, chemical or physical element, measured as part of an assessment of good status according to the Water Framework Directive. This includes an improvement of 900 km of the river network in the river basin district, in relation to fish, phosphate, specific pollutants and other elements; • 36% of surface waters will be at good or better ecological status/potential and 60% of groundwater bodies will be at good status by 2015. In combination 36% of all water bodies will be at good status by 2015. The Environment Agency wants to go further and achieve an additional two per cent improvement to surface waters across England and Wales by 2015; and • The biological parts of how the water environment is assessed – the plant and animal communities – are key indicators. At least 59% of assessed surface waters will be at good or better biological status by 2015. The 2009 RBMP is being reviewed and updated by the Environment Agency and a revised plan is due to be published in December 2015. The Environment Agency are currently undertaking a consultation process to feed into the update of the RBMP.	The LFRMS will implement where possible measures to reduce and manage flood risk that will enhance rather than diminish the status of aquatic ecosystems. Through its SEA, the LFRMS will consider any potential impacts arising from its implementation on water quality and quantity across Conwy County and will avoid/mitigate where appropriate
Conwy Catchment Abstraction Management Strategy (2004)	The main aim of a Catchment Abstraction Management Strategy (CAMS) is to define the resource availability status of a catchment by determining the quantity of water it requires to maintain or improve its riverine environment, and to provide a comprehensive licensing policy to ensure the sustainable management of the surplus. Within the Conwy Catchment is the Afon Conwy. It is the third largest river discharging into the Irish Sea along the North Wales coast. It drains a catchment of 678 km^2, the main drainage channel covering a distance of 55.88 km. The Conwy catchment can be divided into three physio-graphical areas: • The lowlands of alluvium and estuarine silts bordering the river; • The rugged area of Ordovician rocks and high relief to the west of the river; and • The Silurian area of rounded concordant hills to the east of the river. There are eight major public water supply (PWS) abstractions within the Conwy catchment, 22 abstraction licences for domestic purposes, eight for hotels, hostels and public WCs, seven for agricultural and domestic purposes (but not spray irrigation), five for hydro-electric power, four for spray irrigation, three for fish farms, two for agricultural use only and two for conservation purposes.	When developing flood management policies the LFRMS should have regard to implications these may have on water abstraction. The LFRMS should aim to avoid any adverse effects on water abstraction.
Clwyd Catchment Abstraction Management Strategy (2005)	The Clwyd Catchment Abstraction Management Strategy (CAMS) proposes a strategy to protect the river environment from the impact of abstraction at low flows. The Clwyd is the second largest river discharging into the Irish Sea along the North Wales coast, draining a catchment area of approximately 827 km^2. The main river channel arises in the large Clocaenog Forest at a height of 357 m and covers a distance in excess of 46 km. The majority of the 94 abstractions in the Clwyd CAMS area are groundwater abstractions (58), but by far the greater volumes are surface water abstractions (81%). Of these the larger proportion is non-	When developing flood management policies the LFRMS should have regard to implications these may have on water abstraction. The LFRMS should aim to avoid any adverse effects on water abstraction.

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	consumptive, mainly fish farms and one Hydro-electric Power scheme.	
DCWW Surface Water Management Strategy	The Strategy aims to raise awareness of surfacing water flooding and enable engagement with interested bodies, in order to work together to deliver a solution. The long term objective is to have drainage systems in developed areas that, as far as practical, mimic the original greenfield situation. Thereby most surface water is returned to the ground or open water courses at the earliest opportunity. Phase 1 - identified and categorised a range of initiatives that could achieve surface water flow reduction. These were broadly classified the initiatives as: • Engagement; • Charging; • Legislative; and • Technical. Phase 2 - will implement the recommendations of the Phase 1 report and identify additional areas for investigation and investment, to enable delivery of the long-term strategy. Through the application of sustainable urban drainage, the flow reduction strategy will aim to: • Reduce predicted future flooding; • Reduce predicted future incidents of pollution; • Decrease energy costs; • Support conservation and recreational opportunities; • Counter impermeable area creep; and • Be instrumental in minimising the impacts of climate change. The initiatives being developed during Phase 2 of the Surface Water Management Strategy for implementation in the future are: **Engagement:** The greatest potential for the success of the strategy is under the direct control of other parties. Therefore, effective engagement with them is essential to achieve significant flow reduction - to offset the adverse impact on the sewerage network of climate change and increasing urbanisation. **Charging:** Welsh Water currently charges customers for surface water drainage as part of its sewerage services. If customers have their surface water drainage disconnected from the sewer they can benefit from a reduced tariff and lower bills. **Legislative:** The Surface Water Management Strategy fits well with Government Environment Strategy policies on sustainability and climate change. The intention of the Surface Water Strategy is therefore to explore the potential for any legal changes by the Welsh Assembly Government and UK Government that will facilitate a reduction in surface water flows. **Technical:** This will include a review of previous flow reduction and infiltration schemes. Long-term flow monitoring will be explored to identify the benefits this approach can bring, and where it should be done. Rainwater harvesting equipment is to be tried at suitable company buildings and domestic properties. A 'SUDS Showcase Site' is required, that is, a development where people can see, first hand, examples of available devices and systems.	Surface water flooding from sewers is the responsibility of DCWW. However, policies for reducing and managing flood risk in the LFRMS could have significant effects on sewer flooding. The responsibilities of DCWW will be outlined in the LFRMS, and their strategies will be considered in the development of the LFRMS.
DCWW Revised Draft Water Resources Management Plan (2011)	The WRMP demonstrates how Welsh Water plans to balance supply and demand of water over the following 25 years. The key elements of the overall strategy can be summarised as follows: • Regional leakage is expected to fall from 190.45 Ml/d in 2010-11 to 184.08 Ml/d in 2014-15. This strategy is in line with the targets agreed with our economic regulator, Ofwat. As part of the option selection process for addressing supply demand deficits we have considered options involving more reductions in leakage. However, none have been selected	Policies for reducing and managing flood risk in the LFRMS could have effects on DCWW assets. The responsibilities of DCWW will be outlined in the LFRMS, and their

<table>
<tr><th>Plan Title</th><th>Plan Description and Key Relevant Objectives/Targets</th><th>Implications for the LFRMS and SEA</th></tr>
<tr><td></td><td>because of their comparatively high costs;
• The promotion of a wide range of water efficiency activities for both our domestic and business customers. For the period 2010-15 we will continue with our full suite of baseline promotion activities; and
• The installation of water meters at all new properties and those households who opt to be metered under our free meter option scheme. We will continue to meter all new business customers and carry out selective metering on high water use unmeasured business premises.

The area that DCWW serves is split into water resource zones. Details about those relevant to Conwy County Borough are:
<table>
<tr><th>Water Resource Zone Name</th><th>Area (km2)</th><th>Population served (‘000)4</th><th>Water delivered (average, Ml/d)5</th><th>Main source of water</th></tr>
<tr><td>North Eryri Ynys Mon</td><td>1,336</td><td>121</td><td>41</td><td>Reservoir storage</td></tr>
<tr><td>Clwyd Coastal</td><td>152</td><td>80</td><td>22</td><td>Reservoir storage</td></tr>
<tr><td>Dyffryn Conwy</td><td>841</td><td>90</td><td>29</td><td>Reservoir storage</td></tr>
</table></td><td>strategies will be considered in the development of the LFRMS.</td></tr>
<tr><td colspan="3">LOCAL</td></tr>
<tr><td>Conwy Local Development Plan (Revised deposit 2011)</td><td>The LDP has assessed the key factors determining the appropriate level of sustained growth, and will contribute to the delivery of the priority issues and provide for a maximum of up to approximately:
• 6,800 new housing units with a contingency level of up to 7,900 new housing units to reflect natural population change, household size change and net in-migration;
• 3,690 new jobs with a contingency level of up to 4,650 new jobs to reflect natural population change, household size change and net in-migration;
• 1,675 jobs with a contingency level up to 1,925 new jobs to contribute to reducing out commuting levels; and
• 2,200 new affordable housing units.

The Plan focuses the majority of future development in the strategic hub of Conwy, Llandudno, Llandudno Junction and Colwyn Bay and surrounding urban settlements. Over the period of the LDP, the Urban Development Strategy Areas will accommodate approximately 85% of the housing requirement up to 2,022. Approximately 80% of employment requirements (B1, B2 & B8) will also be accommodated in these accessible urban areas predominantly through the consolidation and delivery of commitments and existing allocations in the Llandudno Junction area.

Urban Development Strategy Area
• Llandudno, Llandudno Junction and Conwy = Over the LDP period it is projected that approximately 2,040 (30%) new dwellings will be delivered on PDL and greenfield land within and on the edge of Llandudno, Llandudno Junction and Conwy (this is inclusive of new homes that have already been completed or permitted). To partly meet the employment needs (B1, B2 & B8) within the LDP Area, approximately 10 hectares of employment land is allocated in Llandudno Junction, Llandudno and Conwy.
• Colwyn Bay, Mochdre, Rhos-on-Sea and old Colwyn = over the LDP period, it is projected that approximately 1,700 (25%) new dwellings will be delivered on PDL and greenfield land in these key areas, inclusive of new dwellings that have already been completed or permitted.
• Abergele, Towyn and Kinmel Bay (including Pensarn) = Over the LDP period it is projected that approximately 1,360 (20%) new dwellings will be delivered on previously developed and greenfield land in these key areas, inclusive of new homes that have already been completed or permitted. Approximately 8 hectares of employment land (B1, B2 & B8) will</td><td>Flood management described in the LFRMS should support the policies outlined in the Local Development Plan.

The housing and employment targets set out in the LDP may have impacts for the LFRMS in terms of increasing flood risk.

The LFRMS will encourage appropriate development across Conwy. It will inform planning decisions about potential flood risk issues as such ensure that spatial planning supports flood risk management policies and plans.

The LFRMS will promote a more sustainable and holistic approach to managing flood risk.

Through its SEA, the LFRMS will consider potential effects arising from its implementation on human health, environment, cultural heritage and economic activity and will avoid/mitigate where appropriate.</td></tr>
</table>

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	be allocated in this area. • **Llanfairfechan and Penmaenmawr =** Over the LDP period 340 (5%) of the housing need will be accommodated in these locations, predominantly to meet the affordable housing requirement. **Rural Development Strategy Area** **Main Villages** • Tier 1: Llanddulas, Dwygyfylchi, Llysfaen, Glan Conwy; and • Tier 2: Betws-yn-Rhos, Cerrigydrudion, Dolgarrog*, Eglwysbach, Llanfair Talhaearn, Llangernyw, Llansannan, Tal-y-Bont/Castell* and Trefriw*. Over the LDP period, approximately 15% of the housing and 20% of the employment (B1, B2 & B8) development will be accommodated within Main Villages, Minor Villages and Hamlets, but primarily in the Tier 1 and Tier 2 Main Villages and delivered through completions, commitments, windfall and new allocations. The LDP also sets out key policies for sustainable development, tourism, cultural heritage, the natural environment, community facilities and services, sustainable transport, and minerals and waste.	
Conwy Community Strategy 2004 - 2014	The Strategy is built about five key themes. Under each theme are details of the planned and ongoing work to address key issues in the local community: • Healthy living (establish primary health care centres, smoking cessation service, healthy lifestyles, affordable housing); • Environment (increase the amount of waste recycled, encourage use of leisure facilities); • Learning and Creativity (opportunities for vocational skills, develop on-line learning, establish outreach learning opportunities); • Strong and Safe Communities (reduce anti-social behaviour, reduce burglaries, improve and increase CCTV); and • Prosperity (reduce economic inactivity, increase in registered businesses, learning culture, renewable energy).	The LFRMS will consider human health implications of flood risk. Through the SEA, the LFRMS will consider potential effects arising from its implementation on human health, communities and the economy. The public will be consulted regarding development of the LFRMS and SEA.
Conwy Regeneration Strategy 2005 - 2015	The key themes in the Strategy are: **Economic Improvement** – A growing economy with dynamic businesses providing good jobs and career prospects. *Key planned and ongoing work includes*: supporting growth and development of higher value added businesses; encouraging increased office development; improved tourism. **Cohesive Communities** – Strong, enterprising communities and neighbourhoods which value and support their people and their well-being. *Key planned and ongoing work includes*: targeting regeneration of disadvantaged and rural area; ensuring equality of access; improving access to healthcare; securing land for affordable housing. **Culture and Environment** – Protecting the County's natural environment and heritage, supporting and promoting the Welsh language whilst developing vibrant contemporary arts and culture. *Key planned and ongoing work includes*: growth of watersports; enhancing beach and sea quality through water quality and coastal management; managing nature reserves for conservation and visitor enjoyment. **Improving Infrastructure** – Enabling residents and visitors alike to enjoy a high quality environment and well maintained public spaces. *Key planned and ongoing work includes*: supporting brownfield redevelopment; measures to reduce congestion; improved public transport; improving town centres.	The LFRMS will consider human health and ecological implications of flood risk. Through the SEA, the LFRMS will consider potential effects arising from its implementation on human health, communities, infrastructure, economy, heritage and the environment.

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The Bay Life Initiative – Development Plan 2007-2014	This plan is a result of a joint venture between Conwy CBC and WAG to recognise the current issues facing Colwyn Bay and develop an action plan to improve its future. The plan is very community-focused and has actively engaged with a wide variety of community members from the outset. The vision is for Colwyn Bay to be a town to be proud of, and 'a thriving, attractive and vibrant town that is welcoming, safe and friendly; a place with unique character that people are proud to live in'. A few of the key projects outlined in the Plan include: • **TE1** Improved promenade; • **TE4** Enhance and develop Colwyn; • **B1** Ensure adequate business space is available to support the needs of the community and economy of the town; and • **B3** Develop and promote specialist tourism opportunities.	The LFRMS is a high level strategic strategy. However, large scale development such as the Bay Life Initiative can have potential impacts for flood risk and should be considered.
Colwyn Bay Masterplan (2011)	The masterplan sets out four key areas of proposed intervention: • Area 1: A new town centre; • Area 2: East Colwyn and the Dingle; • Area 3: Eirias Park and Civic Quarter; and • Area 4: Colwyn Bay beach and promenade.	The LFRMS is a high level strategic strategy. However, large scale development such as the Colwyn Bay Masterplan can have potential impacts for flood risk and should be considered.
The Llandudno Junction Masterplan 2009	In September 2007 URBED were appointed by Conwy County Borough Council and the Welsh Assembly Government Department for the Economy & Transport to prepare a Masterplan for Llandudno Junction. The final report was received in April 2009 and was considered by the Communities Overview and Scrutiny Committee on the 23rd September and by Conwy Council Cabinet on the 13th October 2009. The resolution was to support the broad principles of the Masterplan. The masterplan recommendations are: **Tremarl Industrial Estate/Area** – support business on Tremarl Industrial Estate through relocation advice, training and recruitment, young apprentices. **High Street East** – Mixed use development adjacent to the Esso garage site at the eastern end of the High Street. **Youth centre and social club** - Residential development and provision of a new community facility. **Esgyryn -** Identification of area for longer term mixed use development. **Glan-y-Mor -** Identification of site as mixed use quarter comprising refurbishment and build development.	The LFRMS is a high level strategic strategy. However, large scale development such as the Llandudno Junction Masterplan can have potential impacts for flood risk and should be considered.
Conwy Sustainability Strategy (2008)	This strategy states Conwy's position on sustainability and how it will become a key priority for the Council. It is the first one produced by the Council, and details how sustainability will be promoted through Council policies, strategies and services, and raise awareness and support of sustainability in local communities.	The principles of sustainable development will be embedded into the LFRMS through consideration of SuDS, climate change, public health and biodiversity. The SEA will ensure that all aspects of sustainability (environmental, social and economic) are considered within the LFRMS.
Tourism Action Plan 2008 – 2016	The plan outlines three key priorities: • To deliver high, consistent quality and value for money; • Upgrade Conwy's appeal as a business tourism destination; and • Promote the County as a green tourism destination.	Tourism is extremely important to Conwy County's economy. Incidents of flooding can affect tourism. The LFRMS will compliment the Tourism Action Plan by helping to reduce and

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	The plan identifies areas of action to achieve these priorities, including: • To regenerate Colwyn Bay; • To develop the marine image – water sports, marine engineering, berthing and seafood produce; • To retain young people through a greater supply of more affordable housing, attractive leisure activities and a wider spread of employment opportunities; and • To increase employment opportunities in the tourism industry.	manage flood risk.
Conwy Tidal Flood Risk Assessment	The Conwy Tidal Flood Risk Assessment is an innovative and valuable tool for measuring and identifying areas at risk of tidal flooding for the present day and the potential risk for the future, taking into account the effects of Climate Change in both 50 and 100 years time. The Conwy Tidal Flood Risk Assessment offers more accurate guidance, specifically on a local scale, than the development advice maps contained in TAN 15. The model outputs of the CTFRA have been used to produce detailed interactive flood risk maps featuring precise information relating to flood depth, rate of rise, speed of inundation and velocity, in accordance with TAN 15 guidance.	The LFRMS isn't directly concerned with tidal flooding. However, flood management activities inland can have knock-on effects for tidal flood risk. There is also potential for in-combination effects from a combination of flood sources. The LFRMS should take holistic approach and consider wider effects.
Colwyn Bay Coastal Defence Strategy Plan 2006	The development of the strategy plan seeks to: • Determine a way forward for coastal defence provision for next 50 – 100 years; • Define suitable options and an action plan for implementation of a shoreline strategy across the frontage, to be reviewed at regular intervals; • Engender a feeling of ownership and involvement in future management of the coast; and • Provide an appropriate balance between the needs of society and the environment. The strategy identifies issues, constraints and objectives for each management unit identified under CPU units 1 and 2 in the Liverpool Bay Shoreline Management Plan (*note: this can been superseded by the second SMP, Conwy coastline is no longer within in the Liverpool Bay SMP*). The following general requirements were identified for three discreet sections of frontage: **Little Orme to Rhos Point:** • Significant investment over last 15 years: and • General maintenance of existing defences. Minor upgrading perhaps required. **Rhos Point to Old Colwyn:** • General requirement to provide improved coastal defence along entire frontage. **Old Colwyn to Tan Penmaen:** • Recent upgrading of NR maintained defences; and • General maintenance of existing defences. Minor upgrading perhaps required. The strategy identifies four potential schemes which can either be applied across the whole frontage or separately within each unit. The options are as follows: • Improved toe rock defences (as already exists on some sections); • Linear concrete revetment (steps and/or sloping); • Linear rock revetment; and • Beach recharge.	The LFRMS isn't directly concerned with coastal flooding. However, flood management activities inland can have knock-on effects for coastal flooding. There is also potential for in-combination effects from a combination of flood sources. The LFRMS should take holistic approach and consider wider effects
Conwy Quality Environment Strategy	The Quality Environment Partnership launched the Quality Environment Strategy in November 2006 following a series of workshops and presentations held to identify the key environmental issues facing Conwy. The document seeks to deliver	Through its SEA, the LFRMS will consider any potential impacts arising

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
2006 – 2014	the environmental aims of the Conwy Community Strategy and addresses the following themes: **Built Environment** - to sustain a cleaner, healthier and safer environment for the benefit of us; the community, workers and visitors to Conwy; **Clean and Healthy Environment** - to sustain a cleaner, healthier and safer environment for the benefit of us; the community, workers and visitors to Conwy; **Culture and Leisure** - to improve the quality of life of the people of Conwy through the development of high quality and affordable cultural and leisure activities and opportunities, either directly or in partnership with community, voluntary and private sectors across the County Borough; **Housing** - to create the opportunity for residents to live in good quality, affordable housing, and for them to be able to choose where they live and decide whether buying or renting is best for them and their families. Homes across all tenures should be well maintained; energy efficient and safe and the rented sector should be well managed; **Natural Environment** - to conserve and enhance the quality of the natural environment and to promote its public enjoyment and understanding, and thereby to make a positive contribution to people's quality of life; **Transport** - to provide an integrated and safe transport system, which assists economic growth, increases accessibility and promotes social inclusion in a sustainable manner, with a minimum effect on the environment; **Waste Management** - to develop and implement an integrated Waste Strategy for Conwy which will meet the needs, aspirations and ideals of the community and will ensure that Conwy achieves all national and European waste targets and acts as community leader in waste related matters.	from its implementation on human health, environment, cultural heritage and economic activity and will avoid/mitigate where appropriate.
CCBC Local Housing Strategy 2004 - 2009	The Local Housing Strategy is designed to address the issue of housing, and in particular affordable housing, in Conwy. The main land use objectives are as follows: • Increase the supply of affordable homes to meet local needs; • Maximise all planning powers to meet all housing needs with an integrated housing/planning policy (this includes the provision of social housing); • The provision of rural housing; • Develop a gypsy/traveller housing policy; • More effective use of derelict housing locations; • Promote sustainable housing development; • Provide long and short-term housing for more vulnerable members of society; • Provide more move-on accommodation for the homeless; and • Provide more hostel accommodation.	New housing developments can have affects for flood risk in terms of increasing hard standing leading to increased surface run-off and new assets and people at risk. However, there are also opportunities to incorporate flood prevention measures into new developments. The LFRMS will set out policies to help reduce people and properties at risk at flooding.
Conwy Local Biodiversity Action Plan	The Local Biodiversity Action Plan is largely concerned with the conservation and enhancement of all forms of biodiversity in the Plan Area. Biodiversity is defined as the '*variety of life'* and the protection of a variety of species and their habitats is paramount. The plan is split into a number of sections detailing the following Action Plans: • Habitat Action Plans – management plans for specific types of landscapes ranging from coastal sand dunes to urban green space; • Species Action Plans – management plans for important species such as the barn owl and water vole; and • Topic Action Plans – management plan to increase community awareness and involvement. The plan lists the following key objectives in order to achieve the overall aim, which is to maintain and enhance the biodiversity of Conwy County Borough Council: • Protect, maintain and enhance natural populations and distributions of species of local and national importance and maintain their genetic variation;	The LFRMS should aim to protect ecological habitats and species. The LFRMS should promote biodiversity where possible by including policies which promote natural flood defences which may benefit biodiversity. Through the SEA, the LFRMS will consider potential effects arising from

<table>
<tr><th>Plan Title</th><th>Plan Description and Key Relevant Objectives/Targets</th><th>Implications for the LFRMS and SEA</th></tr>
<tr><td></td><td>• Protect, maintain and enhance natural and semi-natural habitats and ecosystems;
• Create new habitats and restore environmentally degraded sites for the benefit of wildlife;
• Ensure that current policies and practices do not harm local biodiversity and natural populations but contribute towards conserving and enhancing them;
• Work positively with farmers and landowners and other interested parties in order to support biodiversity throughout Conwy County Borough, giving advice and assistance as appropriate;
• Raise awareness of biodiversity and its importance amongst the citizens of Conwy County Borough;
• Encourage community involvement in the Conwy LBAP;
• Fully integrate the Conwy LBAP into the UKBAP process;
• Seek funding for biodiversity action in Conwy; and
• Monitor the effectiveness of the LBAP and ensure it remains an up to date working document.</td><td>its implementation on BAP species and habitats.</td></tr>
<tr><td>Conwy and Denbighshire Coastal & Inland Waterways Study & Action Plan (2008)</td><td>The Action Plan concentrates on five components, under each of these components are identified projects. Of relevance for the Conwy County Borough include:<table>
<tr><td>Improved facilities and access to water</td><td>• Beach access and improvements at West Shore Beach, Llandudno
• Improvements to slipways at Colwyn Bay, Llanfairfechan and Rhos on Sea
• Reinvigorate the stretch of River Clwyd between Fforyd Harbour and Rhuddlan, so that it becomes a vibrant recreational channel between the settlements</td></tr>
<tr><td>Provision of additional moorings</td><td>Marina development:
• Fforyd Harbour – 232 berths, 18 visitor berths with ancillary facilities; and
• Llanddulas – creation of a safe haven.</td></tr>
<tr><td>Development of watersports (including fishing)</td><td>• Colwyn Bay watersports centre;
• Adrenaline coast (Penmaenmawr and Llanfairfechan);
• Brenig Lakeland and Forest Adventure Centre – ‘Canada Cymru’ wilderness experience – canoeing, cycling, forest walking, picnics, nature trails – at the northern end of Llyn Brenig. Possible further development of self-catering lo9g cabin accommodation on the lake shore and into the forest;
• Llyn Brenig Boat Services – lake cruises;
• Llyn Aled – development of an outdoor centre and water-based activities; and
• Increase canoe tourism at River Conwy Canoe Trail, and canoe/camping at Llyn Brenig.</td></tr>
<tr><td>Development of marine industries</td><td>• Development at Tir Llwyd (Kinmel Bay); and
• Development at Conwy Quay.</td></tr>
<tr><td>Training and skills development</td><td>• Development of local training opportunities; and
• Apprenticeships in marine technology.</td></tr>
</table></td><td>Through the SEA, the LFRMS will consider potential effects arising from its implementation on coastal and inland waterways. Although it is a high level document it should be aware of water related projects in the Action Plan.</td></tr>
<tr><td>Conwy Contaminated Land Inspection Strategy (2002)</td><td>The Contaminated Land Strategy explains how Conwy County Borough Council intends to identify and inspect land contaminated by former industrial use or activity. The industrial heritage of the Conwy CBC is not characterised by large industrial centres but instead by activity dispersed widely across the Authority area. Potential contaminated land identified near to centres of population will be regarded as a main priority for investigation, focusing on areas most likely to be contaminated by a rational and ordered approach. Land found to be contaminated will require remedial work and this will be carried out by voluntary agreement where possible, but where this cannot be achieved Statutory enforcement powers will be used. Information relating to land which is the subject of Statutory Remediation will be placed on the Public Register</td><td>Flooding in areas of contaminated land can cause pollution. The LFRMS consider areas of contaminated land when developing flood management options.</td></tr>
</table>

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	maintained at the Civic Offices, Colwyn Bay. The underlying aims of the Strategy will be to remove the potential risk of significant harm being caused to existing receptors under the current site use; and ensure that land is remediated to a standard that is suitable for its intended future use.	
Conwy Preliminary Flood Risk Assessment	The purpose of the PFRA was to provide an assessment of potential flood risks, including past and possible future risk of flooding from surface water, groundwater and ordinary watercourses, and identify local flood risk areas. The number of properties at risk of surface water flooding in Conwy is 2,276. 40 PFRA areas have been identified, that is areas above flood risk thresholds: No. people >200; Critical services >1; No. non residential properties >20. No flood risk areas have been identified, that is, areas satisfying the Welsh Assembly Government's criteria of more than 5,000 people considered to be at risk of flooding.	The LFRMS will incorporate the findings of the PFRA. The 40 flood risk areas identified in the PFRA will form the basis for further investigation.
Coastal Flood Risk – Planning Protocol: Pensarn to Kinmel Bay	This protocol has been produced jointly by Environment Agency Wales and Conwy County Borough Council to inform those who are considering submitting planning applications within the coastal flood risk area of the North Wales coast, from Pensarn to Kinmel Bay with specific reference to tidal flood risk and those areas reliant on the current flood defences, about the current and future constraints for new development. This protocol aims to discourage proposals for inappropriate development in this area and thereby avoid unnecessary cost and effort. A number of planning principles have been developed in the protocol including: **a. Vulnerable and New Developments** Within Tidal Flood Zone as designated on the CCBC CTFRA Climate Change Maps: • There will be a presumption against granting permission in respect of Highly Vulnerable development and Emergency Services development; and • Proposals for other forms of development will be evaluated against the requirements of TAN 15 but in the context of identified levels of risk it is highly unlikely that new low vulnerability development will be able to satisfy the requirements of the TAN.	Through the SEA, the LFRMS will consider potential effects arising from its implementation on coastal areas.
Sea Level Rise at Traeth Lafan: A Strategy and Action Plan for Mitigating Impacts of Sea Level Rise from 2010 to 2090 (October 2010)	The purpose of the document is to outline a Strategy (Part I) and an Action Plan (Part II) for responding to the impact of sea level rise on the important biological features of, and human access to, Traeth Lafan and the narrow band of terrestrial coastal strip between the shore and the railway line from the Afon Ogwen in the west to Llanfairfechan Promenade in the east. Traeth Lafan is a site which contains designations including SPA, SAC, SSSI, LNR. The terrestrial strip comprises mainly pasture, and is important locally for biodiversity, and for recreational access. The objectives for habitats, species and access as outlined in the Strategy are: • Saltmarsh – to encourage the natural development of new areas of saltmarsh; • Shingle spit – to mitigate any losses of shingle spit at Glan-y-Mon Elias by allowing or encouraging the formation of splits elsewhere within the area; • Lagoons – to welcome the natural development of new lagoons and where feasible to manage the new and existing lagoons to maximise habitat diversity; • Reedbeds – to mitigate losses of reedbed by encouraging the development of new reedbed in freshwater / brackish situations; • Mudflat – to welcome the natural development of new areas of mudflat to mitigate losses on Lafan Sands; • Roosting waders – to mitigate any losses of roosting habitat by encouraging the formation of alternative disturbance free sites within the area; • Breeding waders – to maintain the existing breeding population of lapwings within the area and increase the population if	Although the Strategy will not directly deal with flooding from sea level rise it should take this into account.

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	possible; • Wales Coastal Path – to relocate the WCP within the area in anticipation of the impact of sea level rise; • Local Access – to maintain existing points of access to the coast within the area, and to enhance the visitor experience by improving infrastructure and information on an ongoing basis; and • Tourism – to enhance the area as a tourist destination through marketing initiatives in tandem with objectives for the WCP and local access.	
OTHER AUTHORITIES		
Denbighshire Unitary Development Plan 1996 – 2011	Policy CPZ8, concerning coastal planning, highlights the need for an environmental assessment in the development of Fforyd Harbour, in order to assess the impact on the landscape and natural coast, nature conservation, features of historic value and any other impact likely to arise from proposed development. Policy HSG1 allows for the provision of 4,100 additional dwellings over the plan period. This includes new allocation sites for 880 dwellings. Policy HSG2 states that this will predominantly be in the main centres of Corwen (low growth), Llangollen, Rhyl, St Asaph, Denbigh, Prestatyn and Ruthin. Policy EMP1 provides 164 ha of employment land, 84 ha of which is newly allocated. Policy EMP2 outlines that these are for Business Use B1, General Industry B2 and Warehousing and Distribution B8 uses only. St Asaph Business Park has its own guidance (Policy EMP3), which restricts use further to B1 and small scale retail, financial and other office, business or local convenience for the needs of the park. Another large allocation is the site at Glasdir, Ruthin. The main employment areas include, amongst others, Rhyl (several sites), St Asaph (2 sites) and Denbigh (2 sites).	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the UDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Denbighshire Deposit Local development Plan 2006 – 2021 (2009)	The LDP strategy provides for 7,500 new dwellings to be developed over the Plan period, and average of around 500 per year. Of the 7,500 dwellings required, approximately 800 have already been built since the start of the plan period (2006), 1,600 already have planning permission or are under construction and a further 3,000 can be accommodated within existing development boundaries. This leaves approximately 2,100 homes to be provided on new sites outside added to this to give an overall 'residual requirement' of approximately 2,600. This will be met through allocations at Bodelwyddan, Corwen, Rhyl, Ruthin, St Asaph and Prestatyn. It is a Local Development Plan objective to provide employment opportunities within the County and reduce the need to commute long distances to improve sustainability. Around 50 hectares of employment land will be allocated in the Local Development Plan. Bodelwyddan has been identified as a Key Strategic Site to meet the needs of Denbighshire in line with the Local Development Plan strategy. This large mixed use site will deliver new housing, employment opportunities, open space and community facilities, creating a sustainable, expanded community.	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the LDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Gwynedd Unitary Development Plan 2001 – 2016	Strategic policy 15 and policy D1 illustrate that land has been safeguarded for employment use in the Bangor Development Catchment Area. Over 55 ha are available (including National Park land) and an additional 4 ha has been allocated in the UDP. Strategic policy 10 states that 782 housing units have been allocated in the Bangor catchment area for the plan period 2001 – 2016, representing 47% of the Gwynedd's full housing land allocations.	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the UDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Gwynedd and Anglesey Joint LDP – Developing the vision,	Gwynedd Council and the Isle of Anglesey County Council are preparing a Joint Local Development Plan (JLDP) that will serve the Anglesey and Gwynedd Local Planning Authority areas. The final adopted version will include the Council's vision and spatial strategy to achieve the development requirements that are already known and those anticipated up to 2026.	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account

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key objectives and strategic options (2011)	The JLDP has now reached the 'Pre-deposit Participation' phase, where emphasis is placed on seeking people's views and ensuring consensus by involving the community and other stakeholders when discussing strategic considerations. A number of options have been put forward for consultation. These include: **Housing Requirements** • Option T1 – sub regional apportionment – 445 housing units annually (270 Gwynedd, 175 Mon); • Option T2 – population and trend growth – 638 housing units annually (370 Gwynedd, 268 Mon); • Option T3 – House building trend growth – 416 housing units annually (196 Gwynedd, 220 Mon); and • Option T4 – economic base growth only – 389 housing units annually (264 Gwynedd, 125 Mon). Various options for the distribution of these housing requirements are proposed in the LDP.	the policies in the LDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Anglesey UDP (unadopted) (2005)	At a meeting held on 1st December 2005, the county council resolved to stop work on the UDP and move to the new Local Development Plan system. Therefore, the UDP was not adopted. Key policies include: PO1 - Provision will be made for the development of employment land totalling 189.06 hectares over the period 2001 - 2016 and employment creating opportunities in suitable locations across the island will be permitted; and PO2 - Provision will be made to sustain communities on Ynys Môn according to their place in a settlement strategy and hierarchy consisting of Main Centres, Secondary Centres, Villages and Countryside Hamlets and Clusters. Open countryside will be protected from harmful development. Provision will be made for the development of 1800 dwellings on Ynys Môn for the period 2001-2016 through a combination of new build and conversion.	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the UDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Ynys Mon Local Plan	The Plan sets out employment and housing requirements for the plan period 1991 – 2001. The requirements set out are quite old and will soon be superseded by the Gwynedd and Anglesey Joint LDP. Therefore, they are not described in this review. The principles set out in policies on sustainability development, transport, nature conservation, coastal development, archaeology, and conservation of buildings are still relevant until the LDP is adopted.	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the Local Plan. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.
Eryri Local Development Plan 2007 – 2022 (2011)	The Eryri Local Development Plan was adopted in July 2011 and replaces the Eryri Local Plan. **Strategic Policy C: Spatial Development Strategy** Spatial development within Snowdonia National Park will be based on the following hierarchy: **Local Service Centres – Dolgellau and Bala** i. Open market housing and affordable housing for local needs; ii. New housing development will be restricted to a range of between 22% and 34% of the overall housing requirement and will be monitored during the Plan period; iii. To support existing or provide new employment opportunities to support the rural economy; iv. Improve existing and provide new facilities to serve local residents to strengthen its role as a local service centre and to support its role as a visitor destination; and v. Retail development located in close proximity to the main retail areas. **Service Settlements** vi. Small scale affordable housing for local needs; vii. New housing development will be restricted to a range of between 9% and 13% of the overall housing requirement and will be monitored during the Plan period;	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the LDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	viii. Small scale employment development to support existing or provide new employment opportunities to support the rural economy; ix. Improve existing and provide new community facilities to serve local residents; x. Strengthen its role as a service settlement serving the settlement and the immediate community; xi. Support its role as a visitor destination; and xii. Retail development within the commercial areas of Harlech, Aberdyfi, Betws y Coed. **Secondary Settlements** xiii. Small scale affordable housing for local needs; xiv. New housing development will be restricted to no more than 53% of the overall housing requirement and will be monitored during the Plan period; xv. Small scale employment development to support existing or provide new employment opportunities to support the rural economy; and xvi. Improve existing and provide new community facilities to serve local residents and strengthen its role in providing services to the rural hinterland. **Smaller Settlements** xvii. Single units of affordable housing for local needs; xviii. New housing development will be restricted to no more than 7% of the overall housing requirement and will be monitored during the Plan period; and xix. Improve existing and provide new community facilities to serve local residents where there are no suitable locations in settlements listed in the settlement hierarchy. **Open countryside** xx. Conversion of rural buildings to support economic uses; xxi. Conversions of rural buildings for affordable housing for local needs; xxii. New housing development through conversion will be restricted to no more than 12% of the overall housing requirement and will be monitored during the Plan period; xxiii. Replacement dwellings; xxiv. Housing relating to an essential need to live in the countryside in line with national planning policy xxv. Other essential community facilities to serve local residents where there are no suitable locations in settlements listed in the settlement hierarchy; and xxvi. Agricultural developments which are sympathetically accommodated in the landscape.	
Flintshire Unitary Development Plan (2011)	The Flintshire UDP was adopted in September 2011. Strategic Aims a. Economy - to create a thriving and sustainable economy providing a wide range of quality employment opportunities for local people; b. Social and welfare - to enable all local residents the opportunity to have access to quality housing, services, shops and leisure, recreational and sports facilities; c. Health - to promote and facilitate the development of a safe and healthy environment; d. Community identity - to preserve community life by limiting development to a level which can be reasonably sustained and assimilated within existing communities; e. Natural environment - to conserve and enhance the natural environment and its diversity - landscape, nature conservation and biodiversity; f. Built environment - to conserve, regenerate and enhance the built and historic environment;	Flood risk management can have cross-boundary effects. Therefore, the LFRMS should take into account the policies in the UDP. Through the SEA, the LFRMS will consider cross-boundary and cumulative effects.

Plan Title	Plan Description and Key Relevant Objectives/Targets	Implications for the LFRMS and SEA
	g. Energy - to stabilise and ultimately reduce non renewable energy consumption and encourage appropriate renewable energy; h. Resources - to make the most prudent and efficient use of resources, including land and buildings, and encourage the use of recycled and secondary rather than primary resources; i. Pollution - to stabilise and ultimately reduce the potential of pollution; j. Waste - to stabilise and ultimately reduce waste generation and disposal utilising waste management measures; k. culture and language - to promote and support a diverse local culture including the protection and development of the Welsh language; l. Transport and access - to integrate new land uses with the existing transport network, and to improve accessibility to varying alternative transport modes other than the car, and to promote the integration of transport modes; m. Tourism - to facilitate appropriate tourism development which meets the needs of visitors without harming the natural and cultural assets on which tourism is based; n. Proximity principle – to apply the proximity principle whereby problems are solved locally rather than passing them on to other places or to future generations; and o. Respect for environmental limits – to ensure that resources are not irrecoverably depleted or the environmental irreversibly damaged. Key strategic policies include: STR3 Employment - The Plan will facilitate a diverse and sustainable economy through: a. The provision of 300 ha of employment land over the Plan period; b. The provision of a range of type and size of employment sites; c. Enabling new employment generating development mainly within or adjoining existing settlements, in principal employment areas, development zones, on allocated sites and suitable brownfield sites and through the sensitive conversion of rural buildings and other appropriate rural diversification initiatives; d. Existing employment sites and buildings being retained, where necessary and practicable, for that use; and e. Appropriate expansion of existing firms and businesses. STR4 Housing - The Plan will seek to provide for the housing needs of the County through: a. The provision of 7,400 new dwellings over the Plan period; b. Distributing new housing across the County based on a settlement hierarchy comprising category A (urban centres), B (semi urban / main villages) and C (rural / small villages); c. The provision of a range of type and size of housing sites including key sites at Flint, Mold, Buckley, Connah's Quay, Penyffordd, Broughton, Mancot; d. The provision of a range of housing including affordable and special needs housing where there is a demonstrable need; and e. Making the most efficient and effective use of housing sites and existing housing stock and facilitating, where appropriate, the residential conversion of existing buildings.	

Appendix C. Baseline Information

C.1. Air Quality

According to the Conwy County Borough Council website there are no Air Quality Management Areas (AQMA's) declared within the Conwy County boundaries. In general air quality in the Conwy County is good, meeting National Air Quality Standards (NAQS).

Air pollution in the County is primarily from road transport and the combustion of fossil fuel, with a small contribution from industrial emissions. Air quality does occasionally deteriorate in areas near busy trunk roads and urban areas (Conwy Local Development Plan (LDP) SEA). In particular, the A55 trunk road is a significant source of nitrogen dioxide and other road traffic based air pollutants. Regular monitoring for nitrogen dioxide is carried out in areas where there is the potential for significant traffic emissions near to housing or other sensitive receptors which may include protected sites (CCBC website).

Secondary pollutants caused by the reaction of chemicals in the air with sunlight or water can occur in locations far from their source, and therefore rural areas may be affected by air pollution. The soil in the County Borough is particularly sensitive to acid rain, due to high rainfall, acid soil, geology and industrial use factors (Conwy LDP SEA).

Conwy County is designated as a radon affected area, as there are locations within it where it is estimated that more than 1% of homes exceed the Government Action Level for Radon (Conwy LDP SEA).

Relation to Conwy LFRMS:

Air quality is unlikely to be effected by the Conwy LFRMS. However, if the LFRMS proposes active intervention such as capital works in certain areas there may be minor temporary effects during construction from plant machinery and construction transportation. Due to the fact that Conwy has no declared AQMAs and the LFRMS is unlikely to have effects on air quality it is proposed to scope out air quality from the SEA.

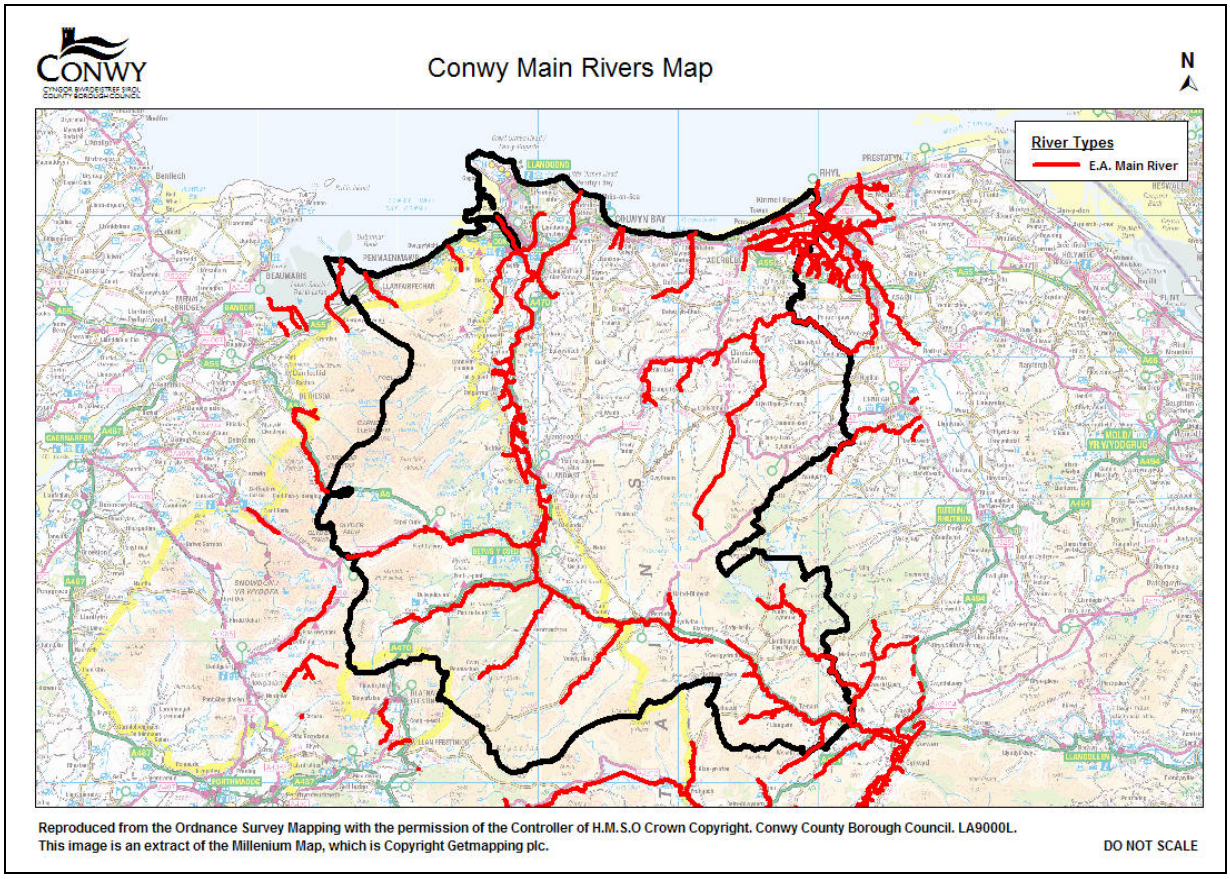
C.2. Water

C.2.1. Main Rivers and Tributaries

Based on records from the Environment Agency Wales' (EAW's) website[16] there are approximately 44 main rivers and associated tributaries that are located within the boundary of Conwy Borough as shown in the EAW's main rivers map as identified if Figure C.1 below. These main rivers are designated by the EA and are generally large watercourses but also include smaller watercourses of strategic drainage importance. The remaining rivers or streams not considered to be main rivers are 'ordinary watercourses'. The main water course that flows within the county is the River Conwy (Afon Conwy) and is by far the largest watercourse and discharges into the Conwy Bay at the historic town of Conwy.

[16] http://www.environment-agency.gov.uk/

Figure C.1: Conwy Main Rivers Map



The River Conwy rises on the Migneint Moor which flows into the Llyn Conwy before discharging and flowing in a northerly direction picking up a number of tributaries (Machno and the Lledr) through the village of Betws-y-Coed, where it is joined by another of the main water courses in the county known as the River Llugwy. The river continues in a northerly direction through the villages of Llanrwst, Trefriw and Dolgarrog where it is joined by the Afon Porth-llwyd and the Afon Ddu, before discharging into the Irish Sea some 27 miles from the source. The tide influences the river up to the village of Llanrwst.

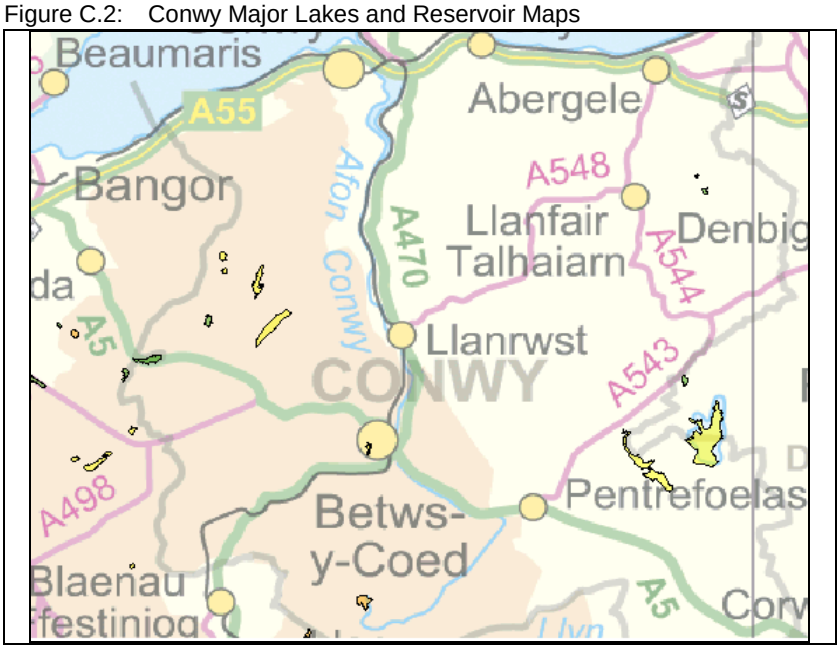
Although not discharging in the county a number of reservoirs and lakes (Alwen Reservoir and Llyn Brenig) contribute to form the Alwen River before joining the River Dee at Corwen, which eventually discharges into the Dee Estuary.

C.2.2. Major Lakes and Reservoirs

There are numerous lakes, manmade and natural reservoirs that are located within the boundary of the county which are used as a source of drinking water serving both England and Wales. One of the largest of the manmade water bodies is the Alwen Reservoir which was constructed between 1909 and 1921 to form a 5 km long lake held back by a 27 m high dam that is one of the sources of the River Dee as identified above. In addition to the Alwen, Llyn Brenig as dammed in 1976 to form the 4th largest water body in Wales. Both of the water courses were constructed to serve the City of Liverpool and the surrounding Merseyside population.

A number of other significant and natural water bodies are located within the county which include the Llyn Cowlyd (deepest lake in Wales) and Llyn Eigiau reservoirs which are used to supply the hydro-electric power station at Dolgarrog through a series of over and underground pipes. The majority of the lakes and reservoirs are used by the general public for recreational purposes, and are important for areas that support a wide variety of wildlife.

Figure C.2: Conwy Major Lakes and Reservoir Maps

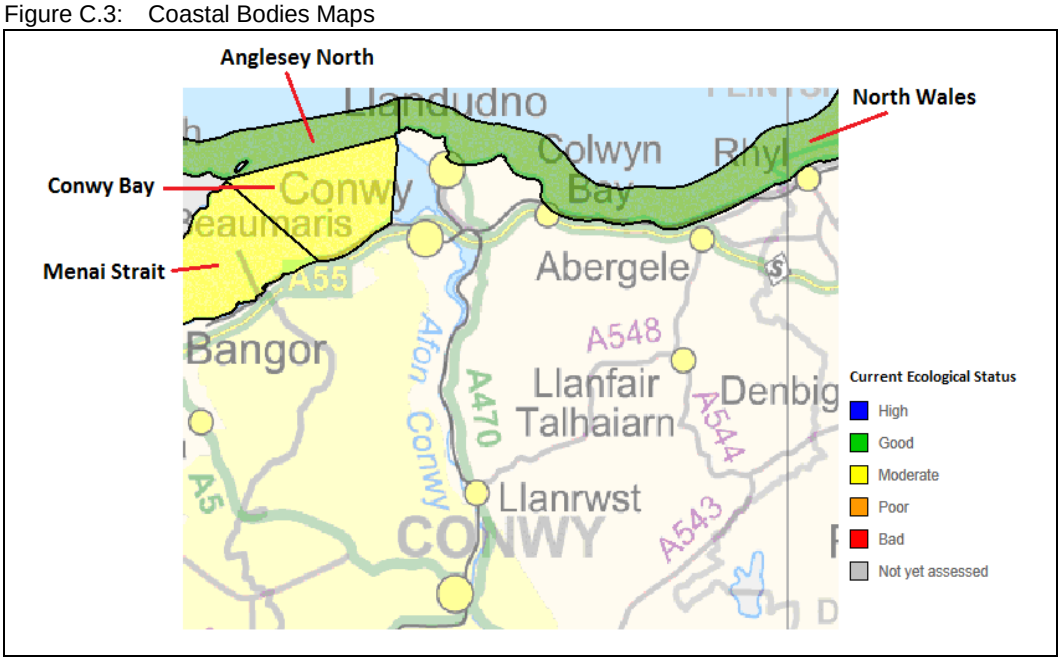


Source: Environment Agency Website

C.2.3. Estuarine and Coastal Bodies

Conwy County contains a number of important estuarine and coastal bodies which are crucial to the economy of the county through the tourism and commercial fishing industries. Conwy Bay, Colwyn Bay and the Menai Straits are all protected under European conservation legislation for important marine species and habitats.

Figure C.3: Coastal Bodies Maps



Source: Environment Agency Website

C.2.4. Groundwater Bodies

There are a total of five groundwater bodies located within the Conwy County. Four of bodies (Conwy, Clwyd Permo-Triassic Sandstone, Clwyd Silurian and Llyn & Eryri) fall within the catchment areas of the Western Wales District River Basin Management Plan and one (Dee Silurian / Ordovician) within the Dee River Basin District. Based on the EAW's information all of the current quantitative and chemical qualities are recorded as good, with the exception of the current chemical quality of the Conwy groundwater body which is described as poor.

C.2.5. Water Pollution Issues

The Western Wales District River Basin Management Plan (Environment Agency Wales 2009) assesses the current water quality of the rivers and water bodies within the western district of Wales. The plan includes the majority of the Conwy County and covers an area of 16,653 km² and a population in excess of 1.3 million. It extends across the entire western half of Wales from the Vale of Glamorgan in the South to Denbighshire in the north and is predominately rural in nature. The remaining area of the county is covered by the Dee River Basin District (2,251 km² and population > 0.5 million), which includes upper catchment of the River Dee and the Llyn Brenig Reservoir which regulate the flows of the River Dee.

The majority of the water courses and water bodies located within the county are classified by the EAW as being of good to moderate quality in terms of both ecological and chemical parameters. Only the River Lledr and Llyn Conwy were described as of poor status for ecological and chemical quality. All of the estuaries and coastal water bodies within the Conwy Borough are classified as achieving good ecological status and potential based on the EAW's records. It should however be noted that surface runoff can impact the coastal and bathing water quality following periods of heavy rainfall.

It is likely that poor surface and groundwater quality within the county will be likely to be influenced by agricultural activity rather than industrial processes. Anticipated issues would include, nitrification of water

courses from field surface runoff and animal activity (including the use of slurry), discharges from sewerage works, sedimentation of rivers and streams through runoff and erosion and pollution from pesticides used during the farming process. Due to the sparse distribution of the population an additional source of pollution may derive from damaged septic tanks and other private fuel storage areas (over and under ground oil and diesel tanks).

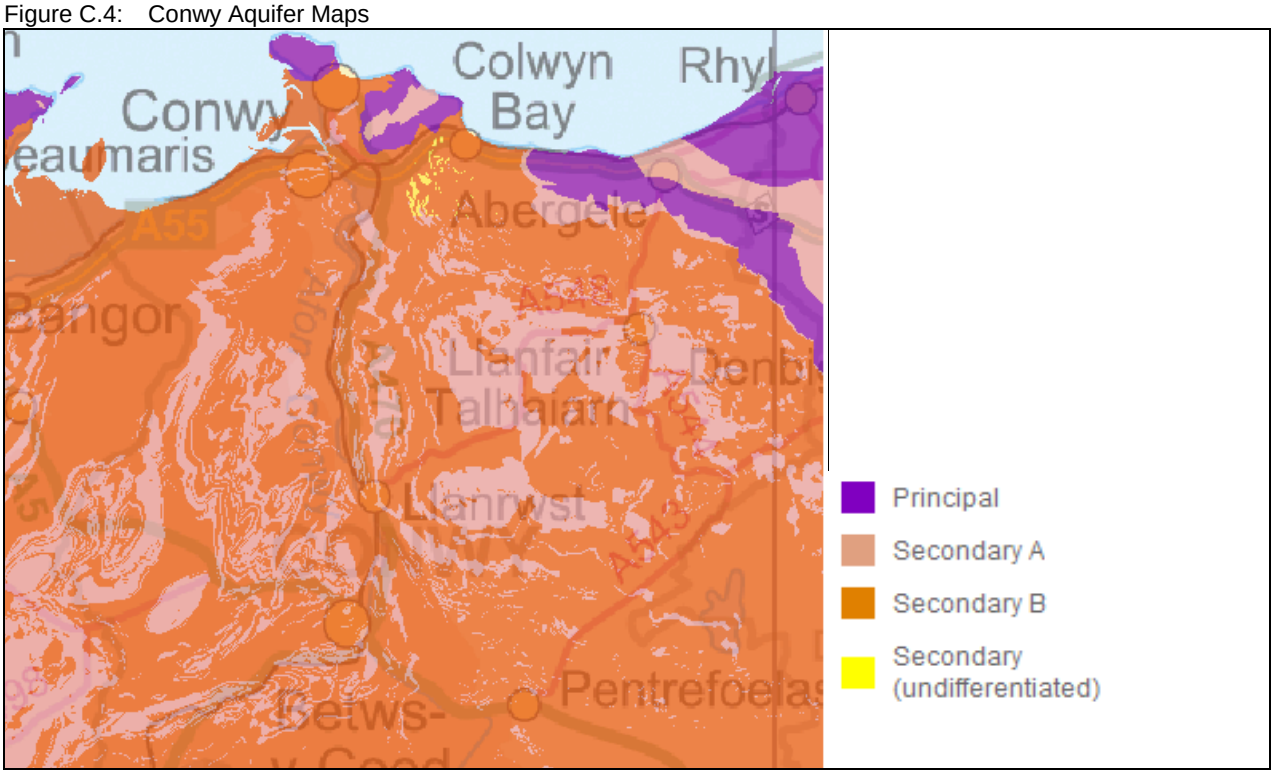
Historical mining that occurred within the Conwy Valley may be a potential source of pollution to the underlying groundwater. Numerous heavy metal mines were active along the length of the Conwy Valley and throughout the county in the 19th and 20th Centuries (predominantly lead and aluminium). The working and processing of these metals have left a legacy of heavy metal contamination within the area which may lead to elevated concentrations of metals in the underlying groundwater.

C.2.6. Hydrogeology

The geology of the county is extremely variable, which in turn impacts the hydrology and hydrogeology of the area. Bedrock across the majority of the county consists of undifferentiated Mudstones, Siltstone and Sandstones. Areas of igneous rock are more prevalent on the western boundary of the county, with areas of undifferentiated Limestone are present within the Great Orme, Little Orme, and Llysfaen.

A review of the bedrock aquifer plans for the county identify that the majority of the area is underlain by Secondary B aquifer which is classified as being of low water bearing potential, and is unlikely hold significant volumes of water. Principal and Secondary A aquifers are located within the areas of outcrops of carboniferous limestone prevalent at the Great Orme, Little Orme and Llysfaen (Rhos-on-sea and Kimmel Bay). These aquifers are described by the Environment Agency as having the ability to hold large volumes of water and support water supply and base flows for rivers.

Figure C.4: Conwy Aquifer Maps



Source: Environment Agency Website

The thickness and types of superficial deposits vary dramatically across the county. Superficial deposits are absent in large areas, but where present they comprise Diamicton Till of varying thicknesses and Alluvium along the river corridors (Clays, Silts and Sands).

The groundwater vulnerability maps of the area indicate that the susceptibility of the underlying aquifers to pollution varies dramatically across the county. As indicated above the areas of limestone around the Ormes and Llysfaen are classified as of the areas that are most susceptible to the influence of contamination on the underlying aquifers (high leaching potential).

A groundwater source protection zone (GSPZ) has been defined by the EAW to protect a groundwater source such as a borehole, or spring used for public drinking water supply. The zones were set up in conjunction with the EAW's Groundwater Protection Policy to prevent pollution to known sources which are considered at higher risk, and to monitor the activities of potential polluters nearby.

Only one GSPZ is located within the county near Trofarth, which mainly consists of SPZ2 but has a small section of SPZ1. These are defined as:

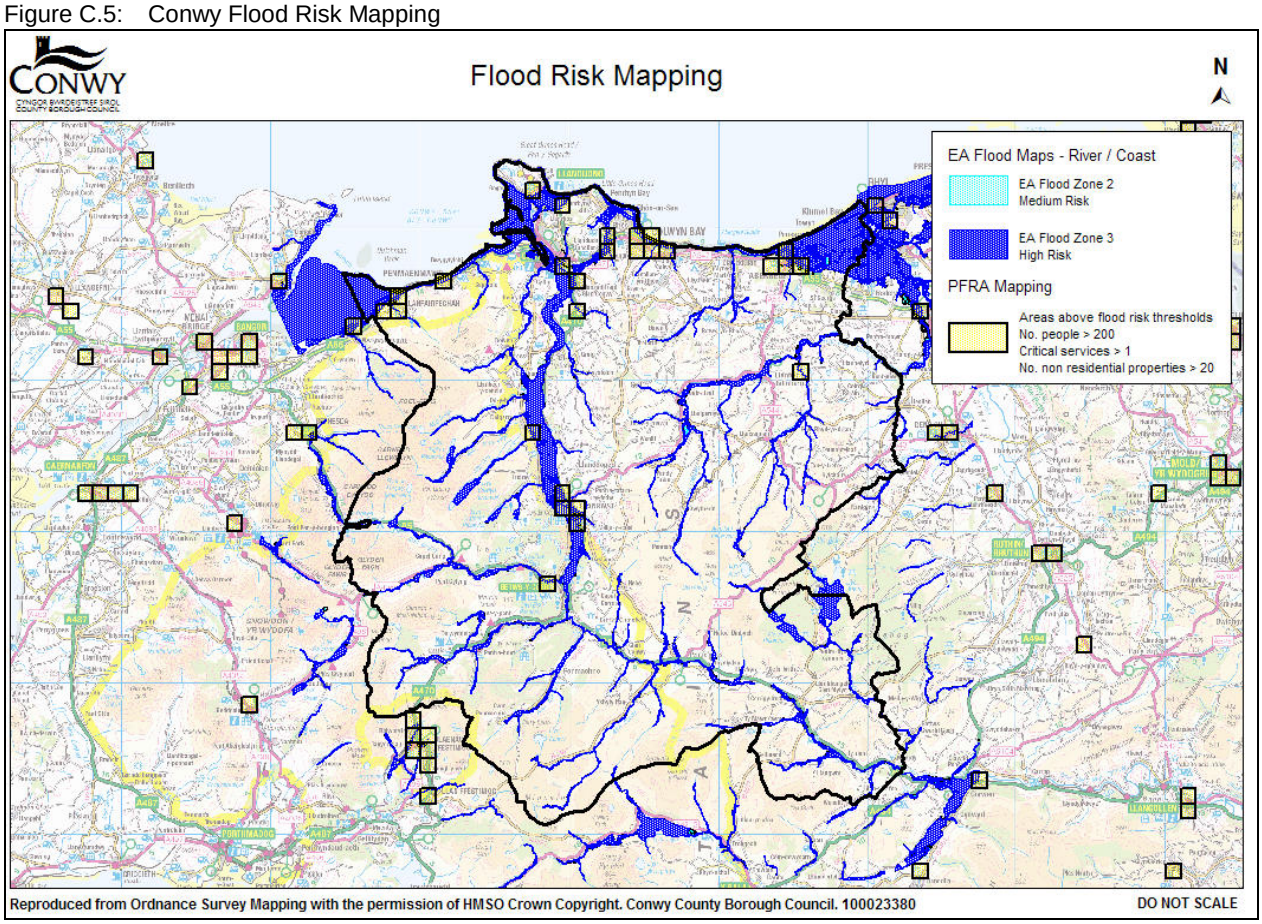
- SPZ1 – Inner protection zone is defined as the 50 day travel time from any point below the water table to the source (this zone has a minimum radius of 50 m); and
- SPZ2 – Outer protection zone is defined by a 400 day travel time from a point below the water table (this zone has a minimum radius of 250 or 500 m around the source, depending on the size of abstraction).

Public drinking water supplies are not commonly abstracted from any groundwater sources within the Conwy county area being largely supplied by surface water impoundment reservoirs. The most significant inland area being Llyn Brenig, Llyn Alwen and Llyn Cowlyd. There are however a significant number of private water supplies (over 500 properties) across the region where the source of the supply ranges from surface or shallow groundwater to deep ground water boreholes. As the use of these is restricted largely to domestic consumption and local food production there are no restrictions limiting the volumes consumed. One commercial spring water bottling plant is situated within the district.

C.2.7. Flooding

Significant work has been conducted by CCBC under their role as LLFA with regard to flooding from surface water, groundwater and ordinary watercourses within the county. Figure C.5 shows areas of flood risk in the Conwy County including EA Flood Zones and the Preliminary Flood Risk Assessment flood risk areas. The topography and hydrology of the county of Conwy heavily influences the flooding that occurs in the County. The tidal influence on the River Conwy has the potential to exasperate flooding within the county but also the flood plains within the valley can reduce the impacts by allowing an agricultural areas to flood relieving the pressure and flooding risks down stream.

Figure C.5: Conwy Flood Risk Mapping



C.2.7.1. Sources and Types of Flood Risk

The cause and sources of floods are often complex and difficult to attribute to a single factor. Flooding within the county can occur from a variety of different sources which can include tidal and fluvial flooding, overland flows, groundwater flooding, drainage (sewers) and flooding from artificial sources such as man made water bodies (lakes, reservoirs and canals).

Flooding can be influenced by a number of factors, which may include high river levels preventing the discharge of surface water sewers causing localised surface water flooding through the backing up of water within the sewer system.

Surface water flooding is a common source of flooding within the Conwy County and occurs when periods of high intensity rainfall generates run-off which flows over the ground's surface and collects in low lying areas. While not in all circumstances, the surface water flooding is quite often exasperated by saturated ground or when the drainage network is of insufficient capacity to cope with the additional flow. As such surface water flooding is extremely complex and can occur anywhere with limited or no warning and can be highly localised.

Flooding attributed to groundwater is again complex and relies on numerous factors including geology, aquifer surcharge rates and localised or area wide rainfall, which in their nature are difficult to predict

C.2.7.2. Historical Flood Records

The Flood Risk Regulations 2009 placed a duty on the Lead Local Authority (CCBC) to produce a Preliminary Flood Risk Assessment (PFRA) to manage local flood risk from surface water, groundwater and ordinary watercourses and deliver the requirements of the regulations.

In May 2011 CCBC published its PFRA which identifies those areas in the county at risk of flooding with significant consequences (Flood Risk Areas).

The PRFA reviewed all of the historical records held by the council and the EAW through a desk based assessment. The incidents were collated and assessed for local significance, where a significant event was defined as one where generally 5 or more residential properties were flooded or where a flood feasibility study (FFS) identified a risk of greater than 5 properties could be flooded.

The PRFA identified 24 historical incidences of significant local flood events based on the criteria above. In addition records were also identified where non-significant flooding had occurred within the borough which identified an additional 24 incidences.

Relation to Conwy LFRMS

The influence of the LFRMS options on water resources and flooding need to be considered separately as the implementation of options have varying impacts (both positive and negative on each topic).

Flooding

The implementation of the strategy for the Conwy County should provide a better understanding of flooding and associated flood risk within the county. As such this should enable adverse flood events to be controlled, managed, and predicted with a better degree of accuracy.

Under the Flood Risk Regulations the LLFA will fulfil the role of SuDS Approval Body (SAB) and as such the LFRMS will describe how the LLFA will manage the implementation of SuDS within the county. While the use of SuDS for new developments within the county would not contribute towards the current loading of the existing drainage systems, it would not alleviate the problems in existing areas that have experienced flooding historically. SuDS systems do however control the quality of run-off by attenuating pollutants, which may assist in reducing potential damage to wildlife, ecology and water quality.

Any construction activities undertaken relating to flood defence assets, have the potential to negatively impact on water quality through release of contamination (fuel and oil spills), and generation of silt and sediment during the construction process. Any works conducted as part of the LFRMS options should be conducted in line with environmental best practice and comply with the relevant environmental legislation (Land Drainage Consents, etc.).

Water Quality and Resources

The LFRMS is unlikely to have a significant impact on the water quality and resources within the County.

Construction activities associated with flood defence assets may introduce potential negative impacts during the construction phase, however these are likely to be short term impacts and not perceived as significant. Strategic decisions on whether to allow areas to flood in close proximity to known contaminated

sites and landfills may have a detrimental impact on water quality, however these should be identified during the scoping stage of any future decisions and avoided if possible.

C.3. Climatic Factors

According to the UK Climate Change Projections 2009 (UKCCP09), Wales is predicted to experience changes in temperature, rainfall and sea level as a consequence of climate change. These changes are predicted to occur under all three emissions scenarios (i.e. low, medium and high greenhouse gas (GHG) emissions), which are incorporated into the climate change models produced by the Met Office Hadley Centre. The general trend for this region is warmer and drier summers and warmer and wetter winters.

Under the medium emissions scenario for 2050, the average summer temperature is estimated to increase by 2.5℃ with a range of uncertainty of 1.2℃-4.1℃ . The average winter temperature is estimated to increase by 2.0℃ with a range of uncertainty of 1. 1℃-3.1℃. The average summer rainfall rate is estimated to decrease by 17%, whereas the average winter rainfall rate is estimated to increase by 14%. Sea levels within the Principality have been predicted to rise between 0.10 m and 0.32 m by 2050. Climate change is likely to result in an increase in the occurrence of more extreme flooding events across Wales, as a consequence of increased rainfall levels in winter time. This could potentially result in an increase in the frequency and intensity of flooding events. Over the last 270 years of UK rainfall records, the last 45 years have shown a marked increase in the number of rainfall events. In some locations, this increase coincided with the worst flooding events experienced in the UK – such as the Cumbria floods of 2009. Similarly, a rise in sea level may potentially lead to an increase in flooding along coastal areas and at upstream sites subject to tidal influence and cumulative events (storm surge). It is estimated that flood damage costs the UK government approximately £1 billion a year (DEFRA 2012) and with an increase in the frequency and intensity of flooding, this figure is likely to increase. Conversely, climate change may indirectly result in water scarcity issues as a consequence of decreased rainfall levels and increase temperature in the summer time.

To date the carbon footprint of the county of Conwy has not been calculated, and hence the impacts of the carbon footprint within the county cannot be assessed.

Relation to Conwy LFRMS

Any construction activities associated with developing (and maintaining) flood defences through implementation of the proposed options for the strategy would increase the release of greenhouse gasses and contribute towards climate change. Opportunities do exist to mitigate any increases and to promote ‘greener’ solutions to flood defences through the use of sustainable and locally sourced materials during construction, use of renewable technologies and promotion of sustainable drainage systems for new build schemes (recycling grey water, etc.). In addition to above construction activities additional resilience measures may be required for the protection of infrastructure against climate change predictions.

C.4. Soils

C.4.1. Geology

The Borough of Conwy consists of an area of approximately 1,130 km², and has a diverse landscape, and geological setting. Soils types across the county ranging from coastal frontage, moorland, glacial and fluvial valleys, and the rugged mountains of Snowdonia National Park.

Over three quarters of the county's area is used for agriculture and 87% of this land is classified as grade 4 or grade 5 (poor or very poor quality), using the agricultural land classification system. As such the land is predominantly used for livestock farming (sheep), due to the poor quality of the land.

The geology of the county is heavily influenced by the last ice age (Pleistocene Period) which occurred approximately 1.8 million years ago. Ice sheets, glaciers and changes in sea level carved and moulded the underlying bedrock to leave the landscape in it's existing form.

The solid geology of the county differs on either side of the Conwy River with harder formations to the west consisting of Mudstones, Sandstones, and Igneous rocks from the Ordovician Period (440 to 490 million years ago), which have resulted in the outstanding examples of glaciation within the Snowdonia National Park. The underlying geology to the east of the Conwy River is from a younger geological period dating from 415 to 440 million years ago known as the Silurian Period and consists of softer Sandstones, and Mudstones which are worn with greater ease resulting in a more rounded landscape associated with the eastern side of Conwy and the Denbighshire Moors. An outcrop of Limestone from the Carboniferous Period (280 to 340 million years ago) forms the Great Orme and Little Orme at either end of the North Shore in Llandudno.

Superficial materials are limited across the whole of the county (reflected in the poor agricultural classification) particularly in the national park in the south west of the county. However, where present the overlying materials are dominated by Glacial Till, with Alluvial and River Terrace Deposits following the line of the major rivers across the county.

The formation of the geology in the area has left a number of rich veins and deposits of heavy metals, particularly Lead and Zinc along the Conwy Valley and Copper deposits in the limestone outcrop of the Great Orme. These deposits have been mined and exploited since the Bronze Age (circa 1,500 BC), later by the Romans in the 1st Century AD and fully exploited by the Victorians.

C.4.2. Contamination

Generally the Conwy County does not have a history of heavy (or polluting) industries, with the main employment associated with agriculture and tourism. However, the expansion of the metal extracting industry (and associated processing and refinement) in the Victorian era has resulted in a legacy of contamination (to soils and groundwater) along the Conwy Valley. Additional historical sources of contamination include rail sidings and associated workshops, former gas work sites used to store and refine coal gas associated with street and residential lighting.

CCBC have produced a Contaminated Land Inspection Strategy for the county to identify and create a public register of potentially contaminated land to comply with Part IIA of the Environmental Protection Act 1990 which came into force by the Contaminated Land (Wales) Regulations 2001.

Under Section 15 of the Act the Council is required to keep a Public Register of sites which met the strict definition of Contaminated Land and for which remedial action was required. These records are maintained and are available for public review at the Civic Offices in Colwyn Bay, or an electronic version is available by e-mail from Regulatory Services.

At present (14th of July 2012) only 2 sites are on the register as detailed below:

- Berry's Garage Ref No. PCLA10 (hydrocarbon contamination); and

- Pandora Mine Ref No PCLA 75 (heavy metal contamination).

Both of the sites were fully investigated and remediated by the Council with additional assistance from the Welsh Government.

While only a limited number of sites are contained in the register, the majority of contaminated sites (as a result of historical use) are dealt with through the planning process and as such do not appear in the document. In these cases the sites are managed and regulated either by Conwy CBC or by the EAW who will impose planning conditions to ensure that these sites are correctly remediated to the appropriate and current standards through qualitative and quantitative assessment and associated remedial strategies.

Records obtained from both the Council and the EAW's records; indicate that there are approximately 45 landfill sites within the county. Further landfills both (historic and previously unregistered) are likely to present in the county and all available records are available on the EAW's website. It is unlikely that flooding or changes in groundwater levels will impact any registered landfills in the county as they are likely to be well designed, lined and have a leachate management system. However, the fluctuation in groundwater and increased infiltration rates may impact groundwater quality in areas of historic and unregulated sites containing waste leading to mobilisation of contamiantion.

C.5. Biodiversity, Fauna and Flora

Due to the predominately rural character of the county and it's reliance on tourism attracted by the natural beauty and rich biodiversity of the area, Conwy CBC are aware of it's responsibility to maintain the biodiversity of the county. As such, the Council is committed to working closely with it's partner organisations to conserve and enhance the county's rarer or more threatened species and habitats.

As such the Council has drawn up a Local Biodiversity Action Plan (LBAP) to identify a list of species that are of conservation concern within the borough. The list also includes all of the species identified as being of Principal Importance for Conservation in Wales under Section 42 of the Natural Environment and Rural Communities Act 2006. As part of the LBAP actions relating to 13 species and 16 habitats have been drawn up to manage and enhance the varied species and habitats that are present within the county.

There are 7 designated sites within the borough which include 6 Special Areas of Conservation (SAC) and 1 Special Protected Area (SPA) which are afforded protection under European legislation. The sites are designated due to a broad range of descriptions including fine examples of heathlands, grasslands, woodlands, boglands, intertidal mudflats and sandflats and limestone reefs which are unique to the area. In addition to the geological and habitat features, the areas have been identified as providing prime habitats for breeding and feeding area for Schedule 1 birds, bats and rare mosses and liverworts and lichens. The Snowdonia National Park covers over 38% of the county and contains many varied habitats and species including varied geology, montane habitats (above natural tree level) including arctic alpine plants, blanket bogs, mires, lakes and heathlands which support rare plants, upland bird populations, and mountain invertebrates.

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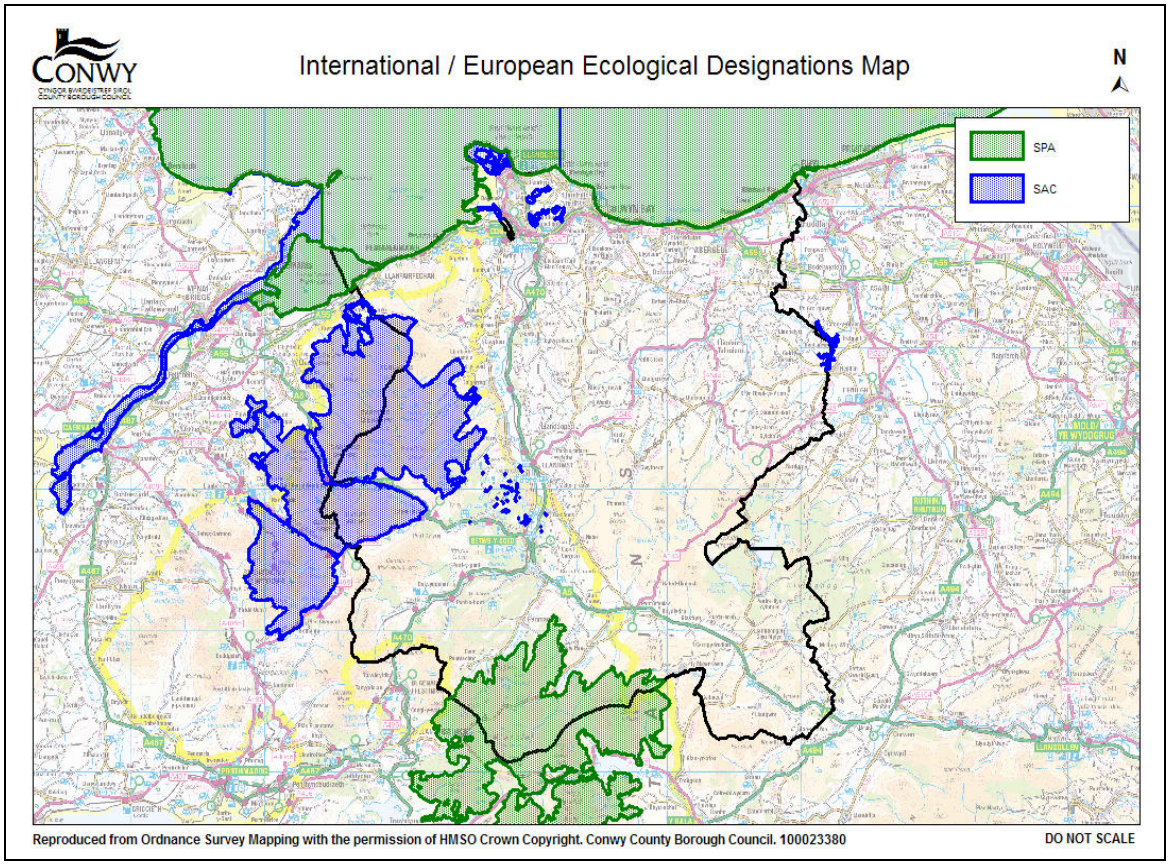
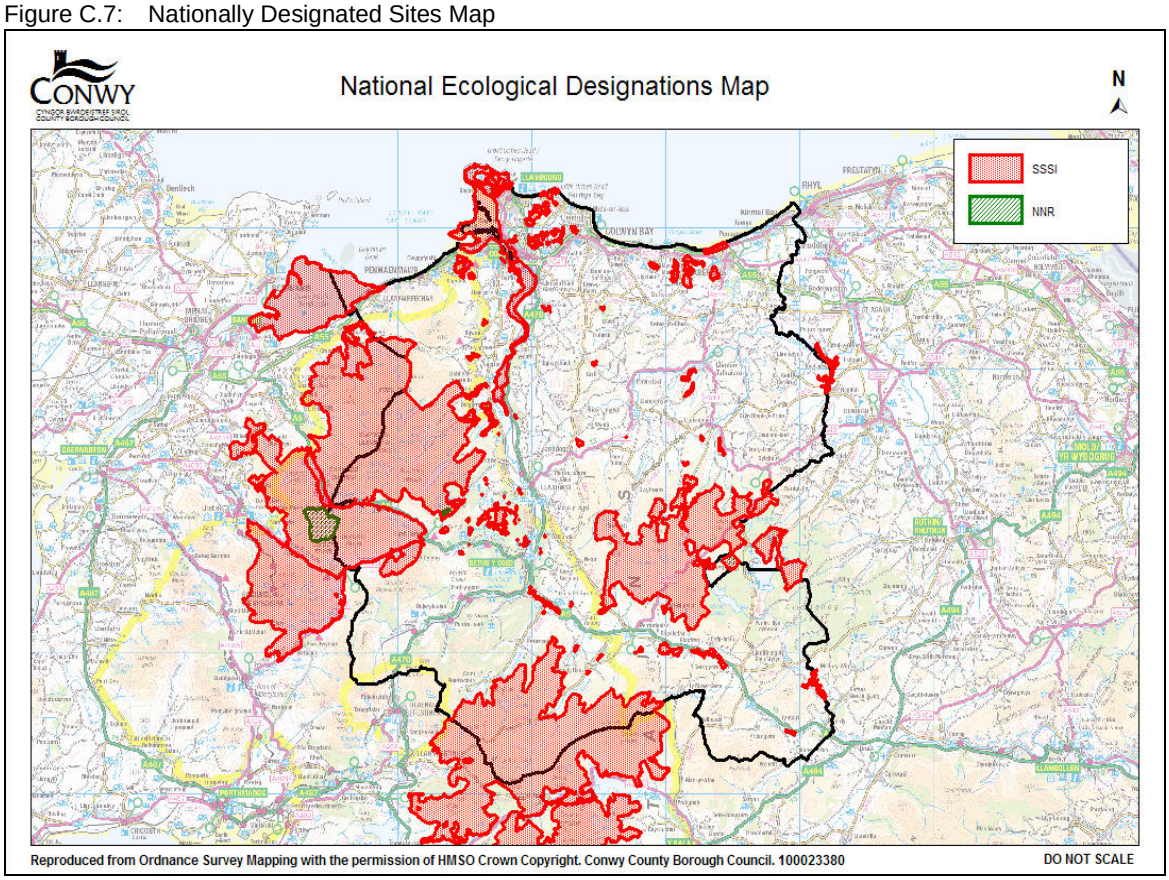
Figure C.6: European Protected Sites Maps



There are a large number of nationally designated sites which are afforded statutory protection at a national level on grounds of their wildlife and geology. These designations ensure the appropriate protection and management are afforded to the sites to ensure that they are preserved for future generations. They include 5 National Nature Reserves (NNR's), and 38 Sites of Special Scientific Interest (SSSI's) designated for their geology, biodiversity or habitat quality. In addition there are several Regionally Important Geological Sites (RIGS) are present within the county. While these are non-statutory designations they are chosen on the basis of their scientific, educational, historic and aesthetic value.

Figure C.7: Nationally Designated Sites Map



On a local level there are 10 Local Nature Reserves (LNR's) which are designated for a broad variety of flora, fauna, geology, and biodiversity. Further 10 local sites have been designated for similar examples of the LNR's, but in addition a number of viewpoints are included in the site descriptions.

Relation to the Conwy LFRMS:

The nature of the impacts on biodiversity, flora and fauna associated with the options for the LFRMS can be both positive and negative. While the construction of flood alleviation schemes may lead to the protection of certain habitats and the option to create new habitats through mitigation (planting woodlands or creation of habitats etc), the changes in the area may cause irreversible changes to the hydrological balance and disrupt foraging habitats (bats and other mobile species). These changes could negatively affect other habitats and biodiversity and move the flood risk further downstream. However, any such changes may create opportunities by establishing new habitats, and increasing the biodiversity in the area. In addition to the construction of schemes, other flood resilience measures including the controlled flooding of areas may benefit biodiversity.

C.6. Landscape

The Conwy County Borough covers an area of over 113,000 hectares, with approximately 38% of the county located within the Snowdonia National Park. The landscape can be described as varied ranging from extensively sandy beaches and headlands to sheltered valleys, open moorland and the rugged mountains of Snowdonia. The population and economy relies heavily on the landscape due to the beauty and rural nature of the area.

The narrow coastal belt contains over 80% of the County's population with the two main urban areas of Llandudno and Colwyn Bay (former Victorian Seaside Resorts). Llandudno is a major resort and also a regional shopping and cultural centre.

Over 75% of the County's area is used for agriculture, however due to the poor or very poor classification of the land (87%), livestock farming (sheep) predominates.

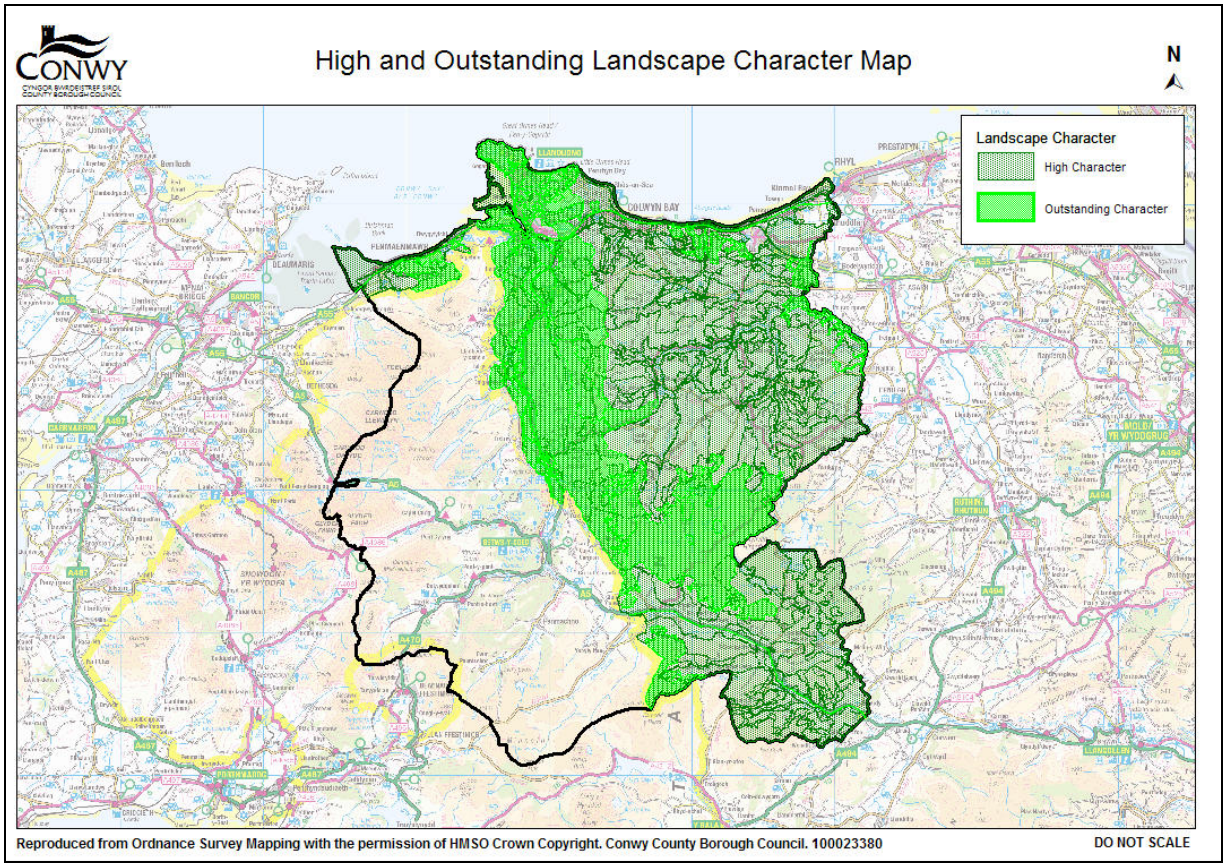
Population density in the urban costal areas rise to over 2,000 persons per km², in comparison with the Borough as a whole of 102 persons per km².

Some of the built environment is also recognised as being of significant value. Conwy Castle and Town Walls have been designated as a World Heritage Site (WHS) by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), one of only 28 in the UK and the Llandudno North Shore is of significant landscape character having one of the best preserved sweeping grand Victorian promenades in the UK.

The process for gathering, organising and evaluating the landscape character areas within Wales is assessed and informed through Landscape Assessment and Decision Making Process (LANDMAP). LANDMAP is the name given to a computer based landscaped assessment and decision making process devised by the Countryside Council for Wales (CCW) and the Wales Landscape Partnership Group (which comprises of the main local government bodies in Wales from local and central levels).

Two Landscape Character Areas within the county have been designated as 'outstanding' and 'high' qualities using LANDMAP. The 'outstanding' area is defined as being of national or international landscape value and includes an area of land that extends from the Great Orme down the Conwy Valley and eastwards over the Hiraethog moorland.

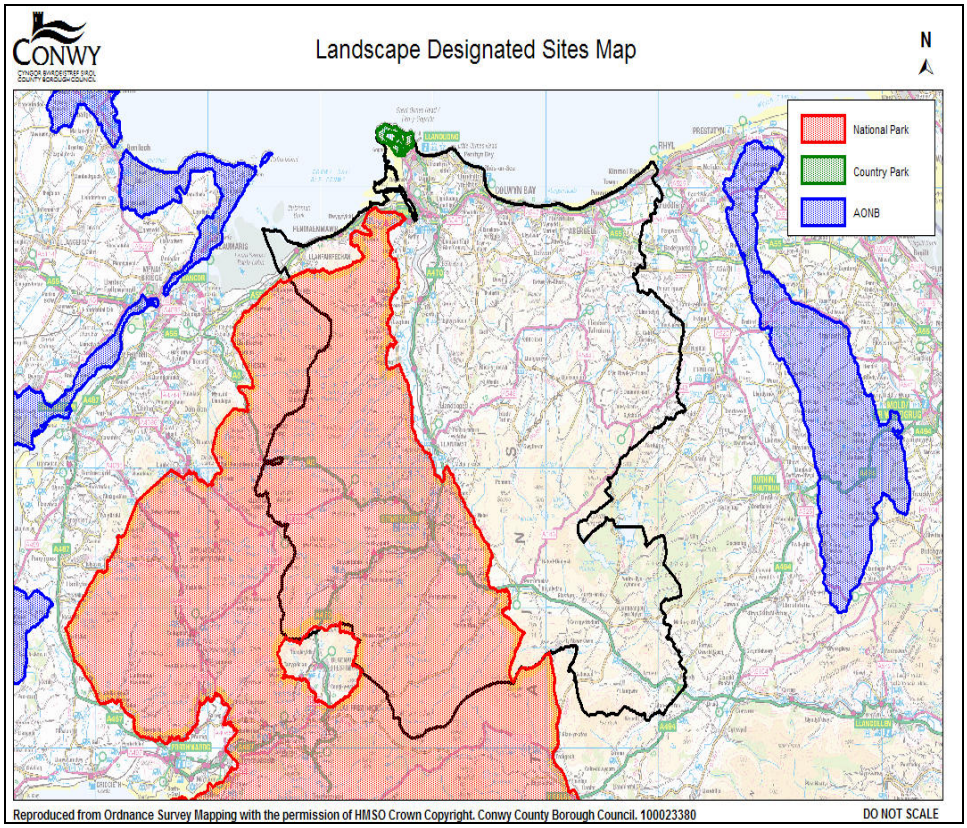
Figure C.8: High and Outstanding Landscape Character Map



The visible characteristics of the landscape within the county boundary are highly valued by the residents and visitors. As such a high level of priority is afforded to the existing landscape features to protect, enhance and conserve the character of the landscape.

CCW, Cadw, and the International Council of Monuments and Sites (ICOMOS UK) in association with the Welsh Archaeological Trusts and the Royal Commission on Ancient and Historic Monuments in Wales (RCAHMW) have compiled a Register of Landscapes of Historic Interest in Wales. The Register comes in two volumes and describes 58 landscapes in Wales that are of outstanding or special historic interest. Information obtained from the CCW website and cross referenced with records held within CCBC indicates that there are five designated Historic Landscapes either wholly of partially with the county boundary. Two of these historic landscapes are straddled across the boundary between Conwy County and Denbighshire; two are shared between the county and Snowdonia National Park (SNP) and the remaining designated landscape covers the SNP and Gwynedd.

Figure C.9: Landscape Designated Sites Map

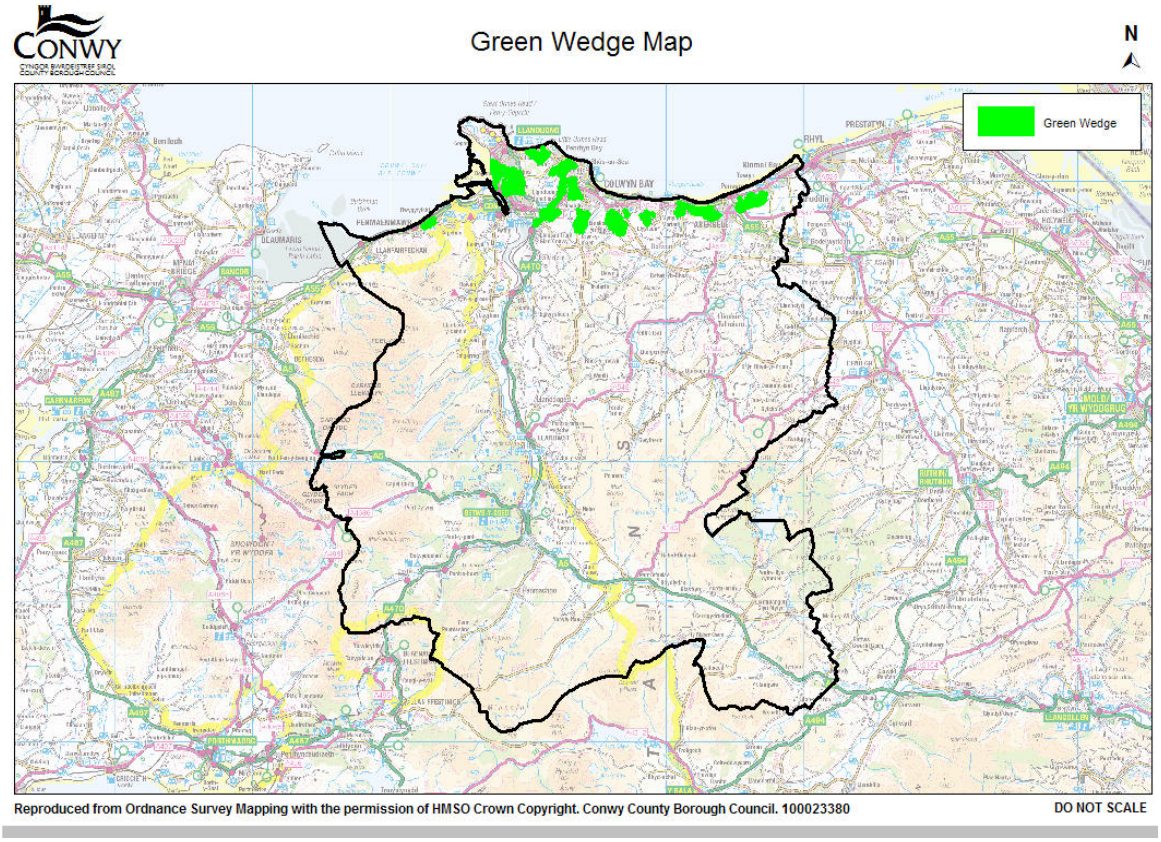


The visual character of the landscapes, seascapes and townscapes with the county boundary and the separation of the settlements, both within and outside the designated area are an important asset to the local area in terms of landscape character.

There are no known Areas of Outstanding Natural Beauty (AONBs) within the boundary of the county.

A total of 12 areas within the boundary of the county have been designated as Green Wedges to prevent coalescence of the existing settlements and to retain the open charter of the area. The concept of the green belt is an important element in planning policy for the county as it controls urban sprawl by keeping land permanently open, preventing the excessive spread of large urban areas and the merging of neighbouring towns. This in turn protects the character of historic towns.

Figure C.10: Green Wedge Map



Relation to Conwy LFRMS:

The options proposed within the strategy may include construction of flood defences, changes in flood frequency and water levels within the county that have the potential to have negative impacts on the landscape value and character of the area. Alternatively, opportunities may exist to enhance the existing area by creating new landscape features, through sympathetic landscape designs. Reduction of flood risk could also help protect landscape areas and features from flood damage.

C.7. Cultural Heritage (architectural and archaeological heritage)

The Council has a duty to preserve listed buildings and designated conservation areas. The borough possesses a wealth of heritage assets and conservation areas such as Conwy and Llandudno towns which are not only designations of outstanding historical importance in UK terms, they also generate significant money into the regional economy. The council has recognised the value of the areas to the local community, approving a conservation area management strategy that ensure that the areas of historical importance are maintained through careful planning and sympathetic alterations.

The Conwy Conservation Area is world renowned and contains the thirteenth century Conwy Castle and Town Walls that are designated as part of a UNESCO World Heritage Site (WHS). Conwy Castle was constructed by Edward I in the 13th Century as part of series of castles knows as the 'Iron Ring' to control and subdue the Welsh Princes in North Wales. The designation includes the castles and fortified towns of Caernarfon, Beaumaris and Harlech Castles, which are classified as some of the finest examples of late

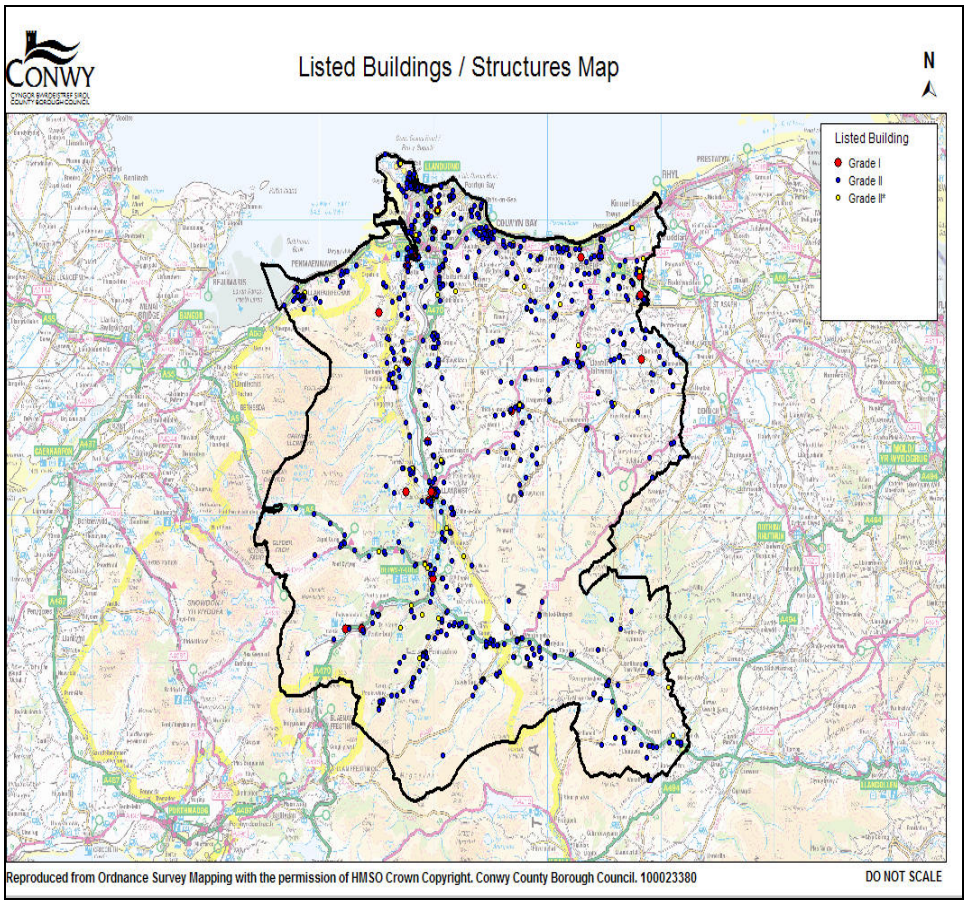
13th and early 14th Century military architecture in Europe. They are particularly important as they have only undergone minimal restoration and provide in their pristine state, a veritable repertory of medieval architectural form: barbicans, drawbridge, fortified gates, chicanes, redoubts, dungeons, towers and curtain walls.

Only Conwy Castle and Town Walls are within the council boundaries. As well as being part of the World Heritage Site they are also Scheduled Ancient Monuments (SAMs), and Grade I Listed Buildings. Figure 5.12 shows the location of the World Heritage Site within the Conwy County.

C.7.1. Listed Buildings

The Welsh Government is required by law to compile lists of buildings of special archaeological or historic interest. The work is conducted by Cadw (the historic environment service of the Welsh Government) and each building or structure of interest are classified under one of three Grades; I, II* and II depending on their significance (Grade I assessed as highest significance). Based on the current records held by the council there are approximately 1,730 listed buildings / structures within the Conwy County Borough. Figure C.11 shows the general distribution of these listed buildings /structures. Of these 89 listed buildings are currently on the “At Risk” register, which have been identified as being at risk of being lost to the nation through neglect or decay.

Figure C.11: Listed Buildings



C.7.2. Scheduled Ancient Monuments

There are approximately 160 Scheduled Ancient Monuments within the county (some cross county boundaries), which are protected under the Ancient Monuments and Archaeological Areas Act 1979. Under the Act the Welsh Ministers (through Cadw), compile a Schedule of Ancient Monuments. The monuments included on the schedule are of national importance and cover a a diverse range of archaeological sites ranging from completely buried sites to the ruined remains of castles and abbeys More complete structures of national significance are usually protected as listed buildings. Figure C.12 shows the location of Scheduled Ancient Monuments in the county.

C.7.3. Conservation Areas

Within the county there are 25 Conservation Areas which are designated by local planning authorities under their powers. The areas are protected to preserve special areas of historical and architectural importance and can range from small villages, town centres and residential areas. Conservation Areas are present within most of the major towns and villages along the coast and all of which are detailed on the plan below:

C.7.4. Historic Parks and Gardens

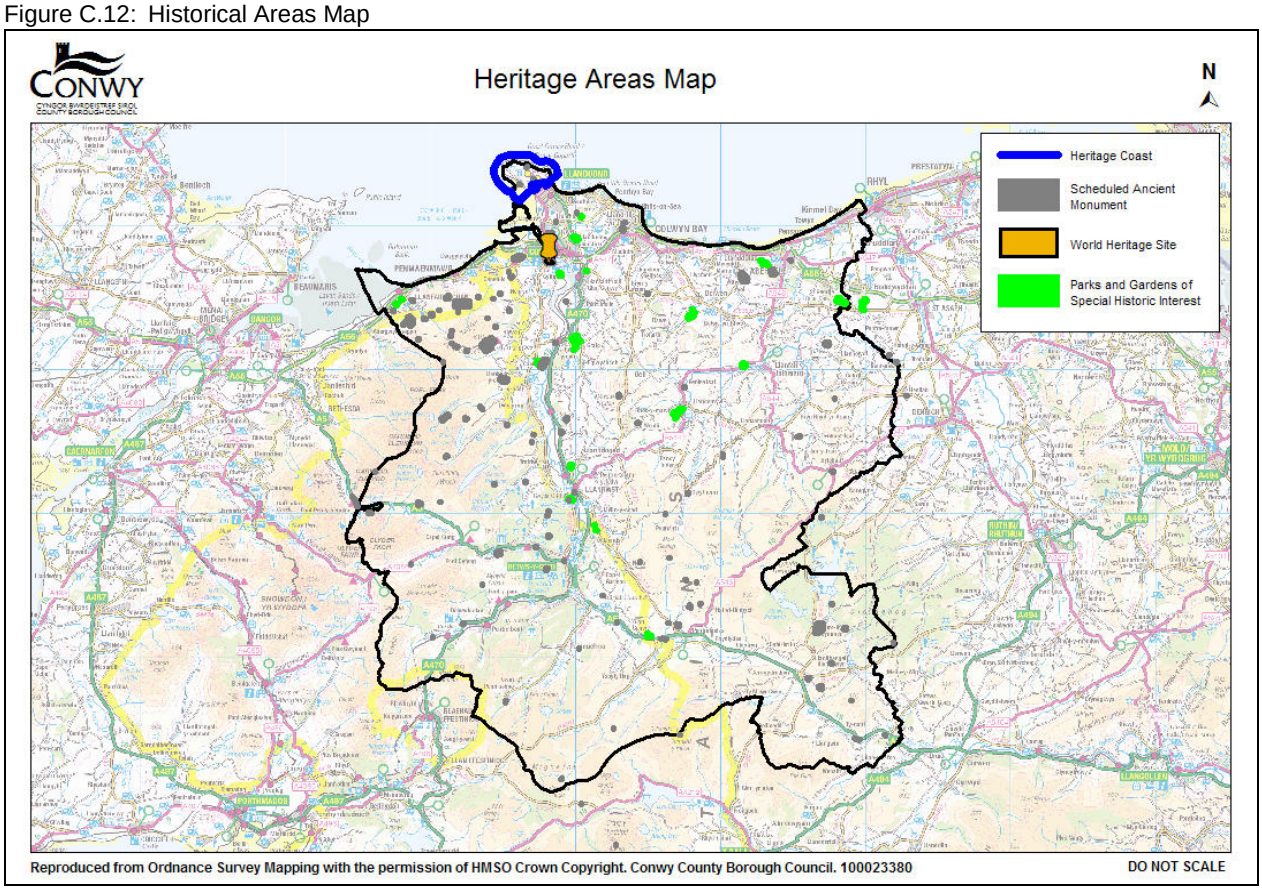
Conwy has a rich inheritance of historic parks and gardens and they form an important and integral part of the historical and cultural fabric of the county. Within the county there are 25 areas, however unlike listed buildings and conservation areas, historical parks and gardens are not afforded legal protection within the UK. However, it is important not to let an insensitive development harm the historical and visual character of these areas and consultation during the planning process is a mechanism to try to prevent any adverse development which is considered out of character. Figure C.12 shows the location of historic parks and gardens in the Conwy County.

C.7.5. Non-Designated Historic Assets

There are a substantial number of undesignated historic assets within the County with regional and local importance. Some categories of monuments can be particularly vulnerable to flooding and flood management actions including bridges, harbours, World War II defensive structures and coastal/river-side monuments.

The county of Conwy falls under two archaeological trusts: Clwyd Powys Archaeological Trust and Gwynedd Archaeological Trust. Both trusts hold a regional Historic Environment Record (HER). This is a database and archive of information about sites of archaeological and historical interest within the area. The HER contains data on Listed Buildings, Scheduled Ancient Monuments, individual find spots, and other archaeological features.

Figure C.12: Historical Areas Map



Relation to Conwy LFRMS:

Flooding has the potential to cause both positive and negative impacts on cultural heritage within the county. The proposed measures have the potential to improve the management of and impact of flooding on cultural heritage assets, however, the construction of flood defences may negatively impact the historical landscape character of an area, while protecting the asset itself.

C.8. Population and Human Health

C.8.1. Population

According to the 2011 Census (Release in July 2012) the population of Conwy County Borough is estimated to be approximately 115,200 people. This indicates an increase of approximately 4.9% from 2001 to 2011. Wales as a whole experienced a 5.5% increase in population from 2001 to 2011.

Records provided from the Office of National Statistics (ONS) indicate that Conwy County Borough has a population density of 102 people per km^2, this is lower than Wales (147 people per km^2). The narrow coastal belt contains a number of settlements housing around 80% of the overall population, whilst around 5% of the population reside in the Snowdonia National Park. New data has recently been released by the ONS on the new population statistics, however a full data set

Settlements along the coastal belt include: Llandudno which is a major resort and also a regional shopping and cultural centre. Colwyn Bay is an increasingly important commercial and business centre. Other

significant settlements on the coastal belt are Abergele, Conwy, Kinmel Bay, Llandudno Junction, Llanfairfechan, Penmaenmawr and Penrhyn Bay.

Rural Conwy is a mainly agricultural area with limited alternative employment and few development pressures. Its population is widely dispersed and predominately welsh speaking. The main settlements are the market towns of Llanrwst and the scattered villages of Betws yn Rhos, Betws y Coed, Cerrigydrudion, Dolwyddelan, Eglwysbach, Glan Conwy, Llanfairtalhaearn, Llangernyw, Llansannan, Pentrefoelas and Trefriw (LDP BP1, Conwy Community Strategy).

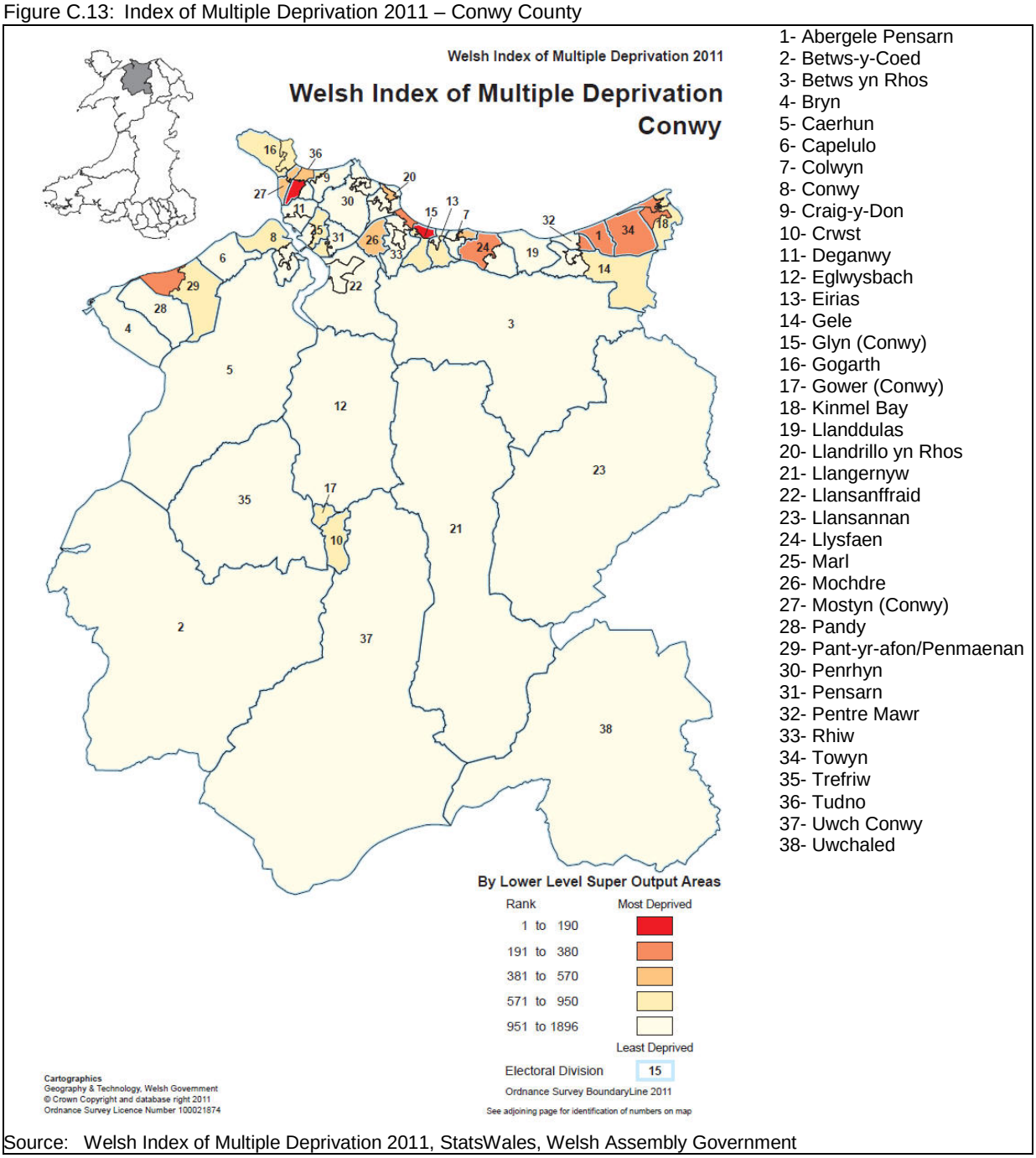
C.8.2. Human Health

The health profile of a local authority considers a range of factors that provide information on the overall current population health state. Some of the key headline health issues in Conwy County are:

- Life expectancy is relatively high, standardised death rates are low;
- Low incidence of treatment for many illnesses, but incidence of cancer is high;
- High proportion of residents suffer from limiting long-term illness;
- Residents of Conwy CB lead a healthier lifestyle than the rest of Wales; and
- A high number of people provide unpaid care.

Indices of Multiple Deprivation (IMDs) are used to measure the level of deprivation in a Super Output Area (SOA). They are calculated from a range of scores based on income, employment, health and disability, education, skills and training, barriers to housing and services, crime and disorder and the living environment. According to the Welsh Index of Multiple Deprivation 2011 Conwy County has two Lower Super Output Areas (LSOA) within the most deprived areas of the Country. These are Glyn and the eastern part of Mostyn. In general the more deprived areas in the county tend to be located along the coast. The figure below shows the IMD 2011 for the Conwy Borough.

Figure C.13: Index of Multiple Deprivation 2011 – Conwy County



Source: Welsh Index of Multiple Deprivation 2011, StatsWales, Welsh Assembly Government

C.8.3. Economy and Employment

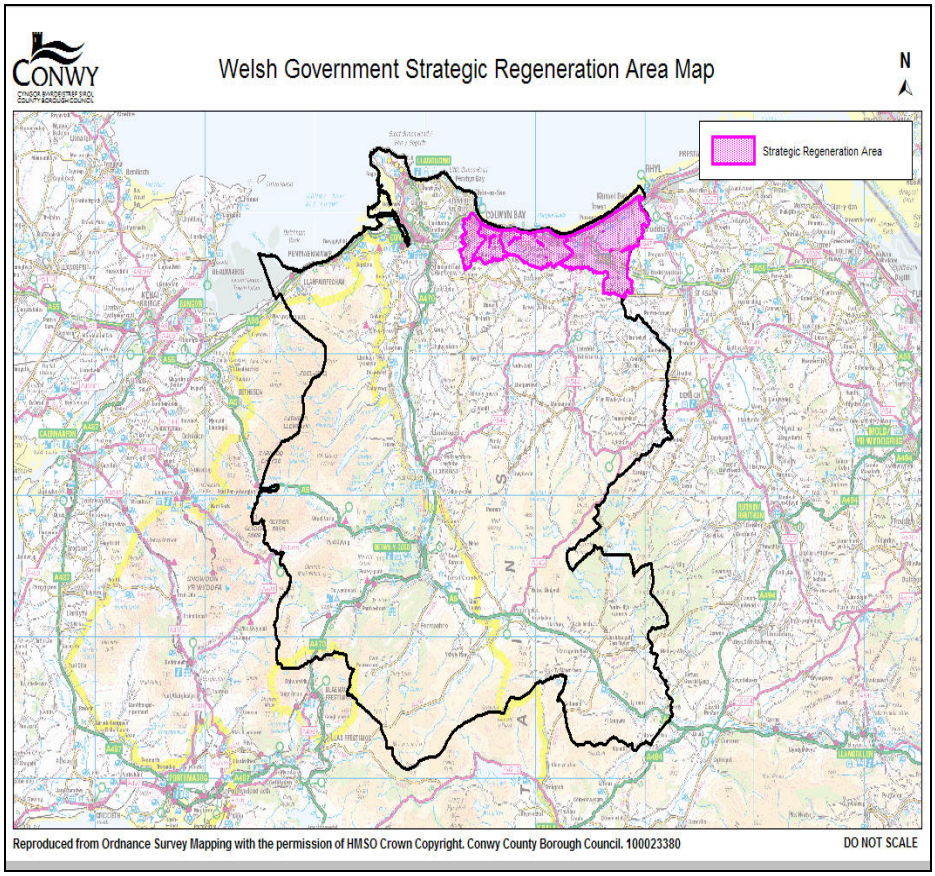
In general terms, the economy relies heavily upon tourism, particularly in the summer months, and is largely evident within the coastal settlements, particularly Kinmel Bay, Abergele, Llandudno and Conwy. Industrial employment, although limited to a certain extent and predominately located near the coast, includes manufacturing, office and research concerns and can be found in places such as Kinmel Bay, Colwyn Bay, Llandudno Junction, Penmaenmawr and Llanfairfechan. Agriculture and forestry are important employment activities in the predominately Welsh speaking rural areas (LDP BP1).

The wage levels in the county are significantly below the UK average. 15 LSOA (out of 71) in Conwy are amongst the 25% most income-deprived in Wales.

The North Wales Coast was designated as a Strategic Regeneration area by the Welsh Assembly Government in October 2008. The North Wales Coast Regeneration Area programme is one of seven areas across Wales that aims to improve the area for its people and communities. The area extends from Prestatyn in the east to Mochdre in the west and is home to roughly 100,000 people (see Figure C.14 for location map). It consists primarily of coastal communities which are linked by the A55 trunk road, the A547 coastal road and the North Wales mainline railway. Various regeneration initiatives are being developed for the area, including:

- Housing masterplan for Colwyn Bay;
- 'Empty to affordable' scheme – buying long term empty houses, refurbishing them and selling them as affordable housing to local people at 50% of their open market value;
- Helping with tourism – focussing on improving the look of the coast; introducing new flagship projects; providing better places to stay in the area along with more choice; communicating with the encouraging visitors; and
- Bay Learning Centre for Colwyn Bay.

Figure C.14: Strategic Regeneration Area



C.8.4. Tourism

Approximately 38% of Conwy lies within the Snowdonia National Park making tourism as important inland as in the coastal seaside resorts. During the summer months the number of people staying within the County Borough, whether as residents or visitors increases dramatically due to high levels of tourism (Conwy Council Contaminated Land Inspection Strategy, October 2002).

Figures collected by the tourism industry show that Conwy County has about 15% of Wales' tourism accommodation. About 6.5 million tourists visit the County each year, spending some 13 million days a year in the county and adding £375 million to the local economy (Conwy Regeneration Strategy 2005-2015).

Key Population and Human Health Trends:

- According to 2011 Census the Conwy County Population has grown by 1.1% between 2001 and 2010;
- Resident population of Conwy County Borough is predicted to increase by almost 5,000 between 2008 and 2023. This is a growth rate of 4.4% - equal to an increase of about 0.3% each year;
- Net increases in the population total will come from in-migration, as natural change alone (births and deaths) would lead to a fall in total;
- Population growth will be in the 65+ age group. The number of people of working age and the population aged under 18 will decline;
- The number of jobs in Conwy County is increasing, mainly in the service industries; and
- There is a large reliance on the service and tourism sectors.

(LDP BP2, & An area profile for Conwy County Borough, 2010)

Relation to Conwy LFRMS:

The LFRMS and the options considered in it will seek to manage flood risk for the benefit of the population of Conwy County Borough.

The LFRMS options considered may affect public access to recreational features, goods and public services that can make a material difference to their Quality of Life.

The perceived level of flood risk that communities are exposed to may also affect levels of stress and impact on Quality of Life.

C.9. Material Assets

C.9.1. Housing

In 2009 Conwy's dwelling stock was around 53,000 household spaces. Of these around 18% are flats, considerably higher than the proportion found across Wales (11%). The proportion of detached dwellings is high too, at 35%, compared to 27% in Wales and 23% across England and Wales. Just over 2% of dwellings were identified as second homes or holiday accommodation.

The number of households in the Conwy County is increasing steadily due to population growth, a trend towards smaller household sizes (particularly single person households) and a decrease in the numbers of people living in institutions/communal establishments. Recently produced projections estimate growth in household numbers of 16% in the years 2008 to 2028 – requiring around 420 new dwellings to be provided every year.

Between April 1996 and March 2010 the average annual building rate of new dwellings has been around 400 units per year (in the area outside of the Snowdonia National Park). Current planning permissions and land allocated for housing allow for a further 1,802 dwellings to be built in coming years. During the year April 2009 to March 2010 over 90% of housing development was in the coastal belt and 71% of developments were on 'brownfield' sites, that is development of previously used land and buildings.

Increased levels of home ownership do not indicate greater affluence, however. In the 2008 Welsh Index of Multiple Deprivation housing is the domain in which Conwy County fares worst, with 20% of its sub-areas in the worst 10% of areas for the whole of Wales. These areas of highest housing deprivation are found in the urban coastal settlements, but there are also a significant number of the county's rural areas within the top quartile of most deprived areas too (An Area Profile for Conwy County Borough, 2010).

C.9.2. Community Assets and Facilities

There are four community hospitals within the Conwy County Borough. These are: Llandudno General Hospital; Colwyn Bay Community Hospital; Abergele Hospital; and Ruthin Community Hospital.

There are approximately 59 primary schools, 7 secondary schools, and 1 college (Llandrillo College).

There are 12 public libraries at: Abergele; Cerrigydrudion; Colwyn Bay; Conwy; Deganwy; Kinmel Bay; Llandudno Junction; Llandudno; Llanfairfechan; Llanrwst; Penmaenmawr; Penrhyn Bay.

C.9.3. Energy and Power Assets

Power Stations within the county include the Dolgarrog and the Dulyn Weir Power Stations. Dolgarrog is a hydro-electric power station, Dolgarrog High-Head Power Station, at Dolgarrog near Conwy. The power station was originally built to supply the Dolgarrog Aluminium Works in 1907, and was substantially extended in 1925. It originally used Pelton turbines which were replaced with Frances turbines when the station was re-planted in 1992 utilising state of the art technology for the time. Dolgarrog is now the Operations Centre for Npower Renewables (Subsidiary of RWE).

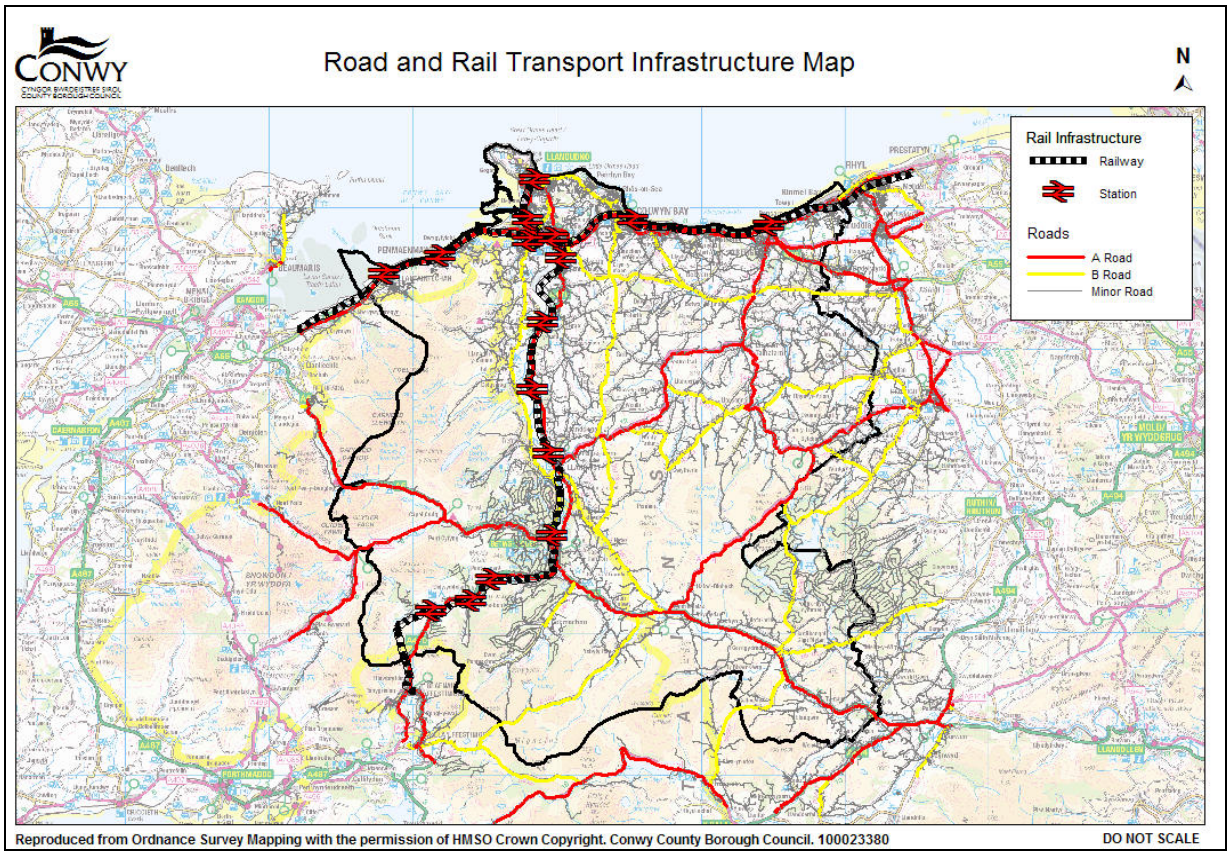
Dulyn Weir Power Station was built in 1998 as a result of a need to transfer water it a new treatment works. An innovative engineering solution enabled 500 kW of electricity to be generated by utilising existing hydro-electric infrastructure. The station is run by Npower and is controlled by Dolgarrog Power Station.

The county also contains a wind farm at Moel Maelogan, a hill summit on the western edge of Mynydd Hiraethog, overlooking the Conwy Valley. The initial 3 turbines were erected in 2002, and started generating in January 2003. Each turbine is capable of producing 1,300 kW. The electricity produced goes to the local Llanrwst sub-station 4.5 km away, and is sold to the Non-Fossil Purchasing Agency. In 2008 a further 9 turbines were erected and commissioned.

C.9.4. Transport

Conwy County Borough is important as the hub of major regional and local transport links. The principal means of access to, from and within Conwy CB are the A55 coast road (Euroroute E22), the parallel railway from Manchester and London to Holyhead, and the A5 road to the south. The A470 provides a north-south road link which is paralleled by a railway linking Llandudno Junction to Blaenau Ffestiniog. The A543, A544 and A548 trunk roads provide access to the large rural area lying to the east of the River Conwy.

Figure C.15: Map of road and rail transport infrastructure



Reliance on cars for travelling to work is well above the England and Wales figure, though slightly better than for Wales as a whole. The rural nature of the area and the lack of access to alternative methods of transport is the cause of the high reliance on personal car use. Public transport accounts for a very low 5% of journeys to work.

Car ownership in Conwy is slightly higher than the Wales and England & Wales average, with only 24% of households having no car. In rural areas, where there is often very limited access to public transport, car ownership is higher still – in Eglwysbach, only 6% of households had no access to a car or van according to the 2001 Census. Car ownership levels are at their lowest in parts of Llandudno and Colwyn Bay, areas which are also some of the most deprived in Conwy County according to the Welsh Index of Multiple Deprivation.

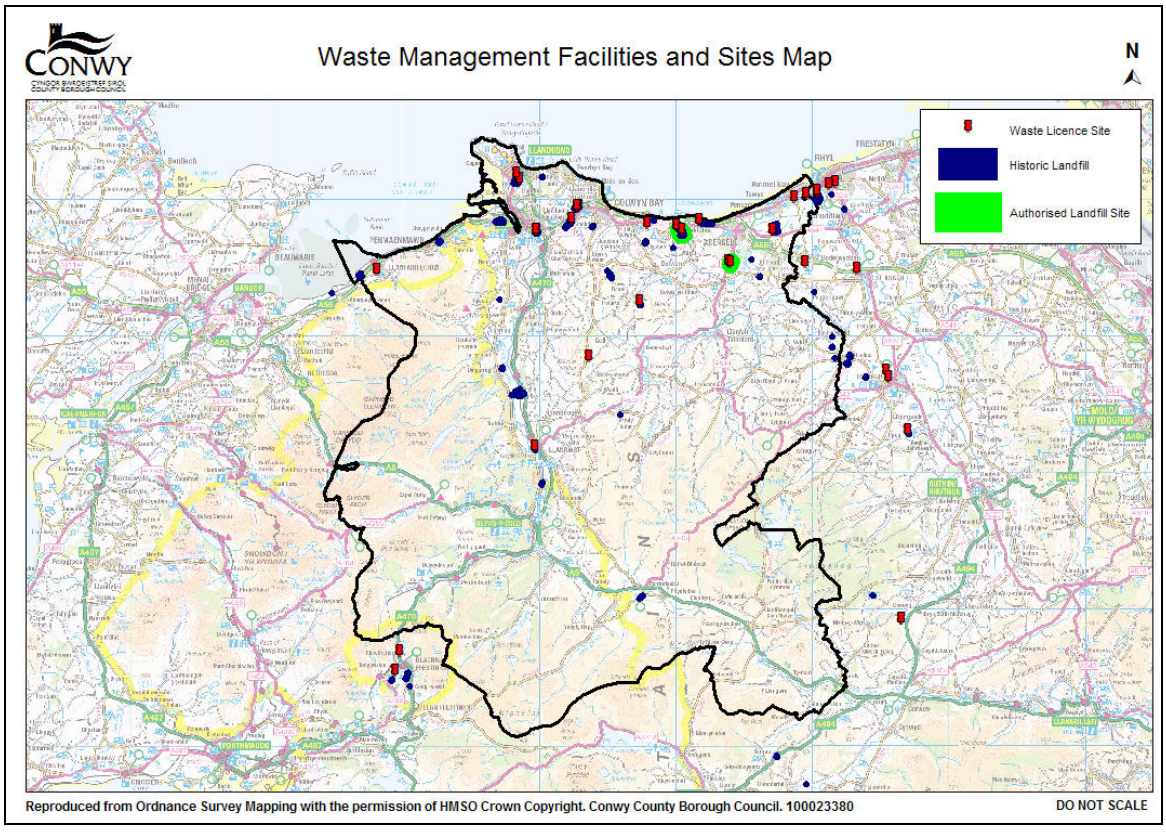
Data on commuting patterns from both the 2001 Census and more recent surveys show more people travel out of the county for work as travel in to the County Borough – a net out-flow of about 4,800 commuters. All together, around 26% of Conwy's working population travel out of the area for employment. Most of these outward commuters travel to the neighbouring Welsh authority areas (to Denbighshire in particular), though an estimated 2,100 people travel to England for work (An Area Profile for Conwy County Borough, 2010).

C.9.5. Waste Management Facilities

There are a number of waste management facilities within the County Borough. They include:

- Two civic amenity sites at Gofer (near Abergele) and Mochdre (provides residents with a facility to dispose of household waste that is too large to be disposed of through the normal refuse collection service, plus a facility for deposit of recyclable and compostable materials);
- Recycling bank sites (76 across the County Borough);
- A bulking station (at Gofer);
- Composting facilities at Dolgarrog, Llanddulas and Caerhun;
- ELV / Scrap yard / metal re-processing (3 within the County Borough);
- Waste transfer sites (7 within the County Borough);
- Llanddulas landfill site for municipal waste, (excluding materials that are recycled or composted);
- Inert landfill site at Ty Mawr, in Abergele; and
- Four depots for refuse and recycling collection vehicles.

Figure C.16: Map of waste management facilities and sites



The majority of Conwy Council's waste comes from construction and demolition, then from commercial and industrial, then from municipal and solid waste. The 2008 regional waste plan revision identifies that there is infrastructure to manage around 190 tonnes of waste a year in Conwy County. Waste is mainly sent to landfill, for which there is good capacity. This is almost all transferred out of the County Borough for disposal or further management elsewhere.

In the future new land needs to be found for additional waste transfer stations, open windrow compositing and recycling. Land adjoining the Llandulas landfill and at Gofer are identified as potentially suitable for new waste management facilities in the Conwy LDP.

Key Material Asset Trends:

- Household numbers will increase at a greater rate than population, due to a nationally predicted trend towards smaller household size. In particular, growth will be amongst one person households in the older age groups;
- Household number projections for 2008 – 2028 will require around 420 new dwellings to be provided each year;
- High proportions of both flats and detached dwellings, and low levels of social renting;
- Housing based deprivation well above Wales average; and
- Additional capacity and land required for future waste arisings

Relation to Conwy LFRMS:

The LFRMS options will seek to manage flood risk to critical infrastructure and material assets within Conwy County Borough. The implementation of options has the potential to disrupt critical transport infrastructure (such as road or rail networks), waste management facilities, utilities (such as clean water) or access to community care facilities (hospitals or health centres). The location of such infrastructure may influence the range of available options.

Appendix D. Options Assessment Tables

D.1. LFRMS Outcome 1 Options Assessment

		LFRMS Outcome 1: To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks						
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)
		LT - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)
		LT - - - (P)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT +++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - - (T)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST + (T)	ST + (T/P)	ST ++ (T)
		MT - - - (T)	MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT + (T)	MT ++ (T/P)	MT +++ (T)
		LT - - - (T)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT ++ (T/P)	LT +++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST - - (T/P)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)	ST 0
		MT - - (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT 0	MT ++ (T/P)	MT + (T)
		LT - - (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT 0	LT ++ (T/P)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST - - (T/P)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)	ST 0
		MT - - (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT 0	MT ++ (T/P)	MT 0
		LT - - (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT 0	LT ++ (T/P)	LT + (T)
	6. Protect historic assets and their landscapes.	ST - - (P)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - - (P)	MT ++ (T/P)	MT ++ (T/P)	MT ++ (T/P)	MT + (T)	MT ++ (T/P)	MT ++ (T)
		LT - - - (P)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT ++ (T/P)	LT ++ (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST - - (P)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)	ST + (T)
		MT - - - (P)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT ++ (T)	MT +++ (T)
		LT - - - (P)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT ++ (T)	LT +++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)
		LT - - - (T)	LT ++ (T/P)	LT ++ (T/P)	LT ++ (T/P)	LT + (T)	LT ++ (T/P)	LT +++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST - - (T/P)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - - (T/P)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (P)
		LT - - - (T/P)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (P)

Measure 1 – Do nothing
If the CCBC flood management team, Risk Authorities and the public do not understand flood risks and issues then the risks cannot be effectively managed and flooding will continue to be a problem and furthermore is likely to get worse as climate change affects cause more frequent and severe weather events. This is likely to have significant negative effects on flood risk reduction, human health, infrastructure, property and businesses, historic assets and soils. In addition, the measure would not allow for climate change planning and adaptation. There are also likely to be moderate negative effects on biodiversity, water quality and landscape from flood damage.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
The flood management team keep up-to-date with current flood risk knowledge and flood management techniques and communicate these to the public so that all have an understanding of current flood risk issues. As more data is recorded and built up over time the understanding of risks and risk areas will increase and more efficient and effective management can be implemented to reduce flood risk. This will have benefits in terms of protecting humans, property and businesses, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. Business as Usual also involves keeping abreast of climate change effects and projectors and taking these into consideration in planning flood management.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Instigate and publicise the process for recording all flooding incidents and where appropriate carry out flooding investigations
This measure would ensure that the process for recording flood incidents and carrying out flood investigation was consistent and transparent, allowing data to be used for future flood management. This is likely to result in more effective flood management, identifying responsibility, bringing all useful information together in one place, providing an understanding of the incident, outlining possible causes of flooding and potential long-term solutions to protect people and their homes from flooding. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage in the future. It will also help plan for future climate change effects.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Develop a consistent approach to registering and recording of flood and drainage assets and make relevant data readily available to all interested parties
This measure would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects.

SEA Recommendation - Measure 4 and Measure 6 are basically the same and only one or the other needs to be included.

Measure 5 – Asset ownership and responsibility

This measure would ensure that everyone knew who owned which assets and what their responsibilities are regarding those assets. This would help reduce flood risk as people are more likely to take ownership and responsibility of looking after their own assets, and also if a flood event occurs there will be no disagreement over whose responsibility it is to take action. However, just because people know they have responsibilities doesn't mean they will carry them out. Therefore, there are likely to be minor positive effects in terms of reducing flood risk and impacts on humans, infrastructure, property, businesses, historic assets and soils. There are unlikely to be effects on biodiversity and landscape.

SEA Recommendation – This measure supports Measure 4 or Measure 6 and would have more benefits if it was incorporated as one measure.

Measure 6 – Develop a consistent approach to designation of flooding/drainage structures
This measure is similar to measure 4 and will therefore have similar effects. It would ensure a consistent and complete database was kept up-to-date of flood and drainage assets in the County. This would help plan maintenance and upgrading of assets and identify where issues may occur. This is likely to have benefits in terms of protecting humans, property, infrastructure, water quality, biodiversity, landscape, soils and historic assets from flood damage. It will also help plan for future climate change effects.

SEA Recommendation – Measure 4 and Measure 6 are basically the same and only one or the other needs to be included.

Measure 7 – Develop a county wide flooding and drainage asset model to allow a proactive risk management approach to be taken by the flood authority
This measure is likely to have significant positive effects in terms of better understanding and reducing flood risk and will have a positive impact in terms of protecting human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model making it more accurate. Reduced flood risk will have moderate positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

SEA Recommendation – This measure would provide significant positive effects in terms of flood risk understanding and flood reduction and could be included in the LFRMS.

D.2. LFRMS Outcome 2 Options Assessment

		LFRMS Outcome 2: Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk								
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT - - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - -	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0
		MT – (T)	MT 0	MT 0	MT 0	MT 0	MT 0	MT + (T)	MT 0	MT 0
		LT – (T)	LT + (T)	LT + (T)	LT + (T)	LT 0	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0
		MT – (T/P)	MT 0	MT 0	MT 0	MT 0	MT 0	MT 0	MT 0	MT 0
		LT – (T/P)	LT + (T/P)	LT + (T/P)	LT + (T/P)	LT 0	LT + (T/P)	LT + (T)	LT + (T/P)	LT + (T/P)
	6. Protect historic assets and their landscapes.	ST - - (P)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST + (T)	ST + (T/P)	ST + (T)	ST + (T/P)	ST + (T/P)
		MT - - - (T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)	MT + (T)	MT + (T/P)	MT ++ (T)	MT + (T/P)	MT + (T/P)
		LT - - -(T/P)	LT + (T/P)	LT + (T/P)	LT + (T/P)	LT + (T)	LT + (T/P)	LT ++ (T)	LT + (T/P)	LT + (T/P)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST – (T)	ST 0	ST 0	ST 0	ST 0	ST 0	ST + (T)	ST 0	ST 0
		MT – (T)	MT + (T)	MT + (T)	MT + (T)	MT 0	MT + (T)	MT +++ (T)	MT + (T)	MT + (T)
		LT - - (T)	LT + (T)	LT + (T)	LT + (T)	LT 0	LT + (T)	LT +++ (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T/P)	ST 0	ST 0	ST 0	ST + (T)	ST 0	ST + (T)	ST 0	ST 0
		MT - - (T/P)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT ++ (P)	MT + (T)	MT + (T)
		LT - - (T/P)	LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT ++ (P)	LT + (T)	LT + (T)

Measure 1 – Do nothing
Doing nothing will have significant negative effects in terms flood risk, human health and impacts on property, infrastructure, businesses and historic assets because individuals and communities will not be aware of the risk and what measure they should put in place to reduce flood risk and flooding consequences. In the medium and long term as frequency and severity of flooding events increase with climate change effects, doing nothing to prepare for this will have negative impacts on water quality, biodiversity, landscape and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently CCBC carry out some awareness raising campaigns and events, especially in high flood risk areas. This helps increase public awareness of flood risks and what to do to prepare for a flood. Therefore, this measure is likely to have positive effects on reducing the impact and consequences of flooding for human health, infrastructure, property, businesses and historic assets. As understanding and awareness increases there may be beneficial effects for biodiversity, landscape and soils from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Raise public awareness of the impacts of climate change on coastal erosion and flooding
Climate change will have significant impacts on coastal erosion and flooding in the future. It is important that people are aware of this so that they can plan for the future and prepare and adapt their homes for future flood risk. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Publish a clear public awareness strategy and communicate it (Workshops, public awareness events, publish information on the Council Website, adverts in local press)
Implementing a public awareness strategy through a range of media should engage with a wide variety and geographical distribution of people. The more people that are aware of flood risk and how to deal with it the more benefits will be gained in terms of flood protection. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic assets, property, assets and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Maintain / improve a flood incidents team (on call 24 hour) to deal with non-emergency flood incidents
This measure will help ensure that flood support is provided to people in non-emergency situations. The team can provide advice on what to do to prepare and protect assets and property from flooding. This measure is likely to have positive effects on reducing impacts and consequences of flooding, protecting historic

assets, property and businesses, resulting in benefits for human health. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – To collaborate with statutory bodies to promote the existing flood warning service and their proposed flooding campaigns
Awareness of flood warning services and flooding campaigns are important to allow people to prepare for a flood event and understand what to do in a flood event. This will have benefits on human health and reducing the impacts and consequences of flooding. It may also have minor positive effects on biodiversity, water quality, landscape and soils. By collaborating, CCBC can utilise staff and expertise from other authorities and help reduce costs to the Council.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 7 – Create an integrated county wide real time hydraulic and flood alert map
This measure is likely to have significant positive effects in terms of understanding and raising awareness of flood risk and reducing flood risk and associated impacts on human health, infrastructure, property and businesses. Larger benefits are likely to be felt in the medium and long term as more data is recorded and fed into the model creating a more accurate reflection of flood risk in the County. Reduced flood risk will have positive effects for biodiversity, water quality, historic assets and soils. The model should also help manage and plan for future climate change effects.

SEA Recommendation – This measure would provide significant positive effects in terms of flood risk understanding and awareness, and flood reduction and could be included in the LFRMS.

Measure 8 – Make public aware of available flood prevention and mitigation measures in the event of flood incidents
If the public are aware of the flood prevention options and mitigation measures available to them to reduce flooding and alleviate the effects of flooding then they are more likely to use these to protect themselves, their properties and businesses. This is likely to have positive effects in terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, this measure is the same as Measure 5 under Outcome 4 and therefore only one or the other should be included in the LFRMS.

Measure 9 – Target areas of historical flooding (or at high probability of flooding) to increase awareness of emergency procedures in the event of a flood
This measure should help people plan and prepare for flooding events which in turn should reduce the impacts on human health, property, businesses, infrastructure and historic assets. The measure is more focused on increasing awareness of what the public can do to stay safe in a flood and in clearing up afterwards than biodiversity and landscape. However, there may be some long term minor positive effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

D.3. LFRMS Outcome 3 Options Assessment

		LFRMS Outcome 3: To work together (both FRMA, stakeholders and public) to reduce flood and coastal risks, sharing data and resources to the greatest benefit					
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT + (T)
		LT - - (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT + (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST 0	ST 0	ST 0	ST 0	ST 0	ST + (T)
		MT – (T)	MT 0	MT 0	MT 0	MT 0	MT + (T)
		LT - (T)	LT + (T)	LT 0	LT + (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0	ST 0	ST 0	ST 0
		MT 0	MT 0	MT 0	MT 0	MT 0	MT 0
		LT - (T/P)	LT + (T/P)	LT 0	LT + (T/P)	LT + (T/P)	LT + (T/P)
	6. Protect historic assets and their landscapes.	ST 0	ST + (T/P)	ST + (T)	ST + (T/P)	ST + (T/P)	ST + (T/P)
		MT – (T/P)	MT + (T/P)	MT + (T)	MT + (T/P)	MT + (T/P)	MT + (T/P)
		LT - (T/P)	LT + (T/P)	LT + (T)	LT + (T/P)	LT + (T/P)	LT + (T/P)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST 0	ST 0	ST 0	ST 0	ST 0	ST + (T)
		MT 0	MT + (T)	MT 0	MT + (T)	MT + (T)	MT ++ (T)
		LT - (T)	LT + (T)	LT 0	LT + (T)	LT + (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T)	ST ++ (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST 0	ST 0	ST + (T)	ST 0	ST 0	ST + (T)
		MT – (T/P)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - (T/P)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)	LT + (T)

Measure 1 – Do nothing
Not working together and sharing data and knowledge on flood risk is likely to have negative, transboundary effects and flooding issues in other catchments that can not be fully understood and collaboratively tackled. This will lead to flood risk issues resulting in negative effects on water quality, human health, biodiversity, historic assets, soils, infrastructure, property and businesses.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently there is a certain amount of data sharing and collaboration with FRMA's, stakeholders and the public. This provides positive effects in terms of reducing flood risk which will have resulting benefits in protecting humans, property, infrastructure, businesses, soils, water quality and historic assets from flood damage. There will be minor benefits for biodiversity and landscape.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Identify responsibilities of the riparian owners of managing their assets, through public engagement
This measure would ensure that riparian owners understood their responsibilities of managing their assets. This would slightly help to reduce flood risk as owners should fully understand what they are required to do. However, just because people know they have responsibilities doesn't mean they will carry them out. Therefore, there are likely to be minor positive effects in terms of reducing flood risk and impacts on humans, infrastructure, property, businesses, historic assets and soils. There are unlikely to be effects on biodiversity and landscape.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Continue to meet with the North Wales LFRMA's and Coordination Group to share knowledge, data and lessons learnt
This measure will ensure that CCBC continue to participate in sharing knowledge, data and lessons learnt. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Develop an effective communication plan to ensure collaborative working and data sharing
This measure will help ensure continued and effective communication to share data and work together to address flood issues. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – Undertake stakeholder engagement, to identify responsibilities of flood risk partners

Ensuring flood risk partners are aware of, and understand, their responsibilities is important for effective and collaborative flood management. This is likely to help reduce flood risk effects for humans, property, infrastructure and businesses. It may also have minor positive effects in terms of protecting water quality, soils and historic assets from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

D.4. LFRMS Outcome 4 Options Assessment

		LFRMS Objective 4: To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion					
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T) MT - - (T) LT - - (T)	ST + (T) MT 0 LT - (T)	ST 0 MT 0 LT 0	ST 0 MT D LT D	ST + (T) MT + (T) LT + (T)	ST + (T) MT + (T) LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T) MT - - - (T) LT - - - (T)	ST 0 MT - (T) LT - - (T)	ST + (T) MT + (T) LT + (T)	ST + (T) MT ++ (T) LT ++ (T)	ST ++ (T) MT ++ (T) LT ++ (T)	ST 0 MT 0 LT 0
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - - (T) MT - - - (T) LT - - - (T)	ST 0 MT - (T) LT - - (T)	ST ++ (T) MT ++ (T) LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)	ST ++ (T) MT ++ (T) LT ++ (T)	ST ++ (T) MT ++ (T) LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST – (T) MT - - (T) LT - - (T)	ST 0 MT – (T) LT - (T)	ST 0 MT 0 LT 0	ST (P/T) - + MT (P/T) - + LT (P/T) - +	ST 0 MT 0 LT + (T)	ST 0 MT 0 LT 0
	5. Protect and enhance landscape quality and character across the county.	ST 0 MT - (T/P) LT - (T/P)	ST 0 MT 0 LT - (T/P)	ST 0 MT 0 LT 0	ST (P/T) - + MT (P/T) - + LT (P/T) - +	ST 0 MT 0 LT + (T)	ST 0 MT 0 LT 0
	6. Protect historic assets and their landscapes.	ST - - (T/P) MT - - - (T/P) LT - - - (T/P)	ST 0 MT – (T/P) LT - - (T/P)	ST 0 MT 0 LT 0	ST (P/T) - + MT (P/T) - + LT (P/T) - +	ST + (T) MT + (T) LT + (T)	ST 0 MT 0 LT 0
	7. Educate, manage, plan and adapt for the effects of climate change.	ST – (T) MT - - (T) LT - - -(T)	ST 0 MT – (T) LT - (T)	ST + (T) MT + (T) LT + (T)	ST + (T) MT ++ (T) LT ++ (T)	ST 0 MT + (T) LT + (T)	ST 0 MT 0 LT 0
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - - (T) MT - - - (T) LT - - - (T)	ST 0 MT - (T) LT - - (T)	ST + (T) MT + (T) LT + (T)	ST + (T) MT ++ (T) LT ++ (T)	ST ++ (T) MT ++ (T) LT ++ (T)	ST + (T) MT + (T) LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T/P) MT - - (T/P) LT - - (T/P)	ST 0 MT – (T) LT - (T)	ST 0 MT 0 LT 0	ST (P/T) - + MT (P/T) - + LT (P/T) - +	ST 0 MT + (T) LT + (T)	ST 0 MT 0 LT 0

Measure 1 – Do nothing
Under the do nothing option, flood risk and the associated consequences would not be addressed and the situation would continue to get worse as flood events increase due to climate change. This would have significant negative effects on human health, infrastructure, property, businesses and historic assets from flood damage. It is also likely to have minor and moderate negative effects on water quality, biodiversity, landscape and soils.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
CCBC currently manage and reduce flood risk using the resources available but not every area of the County can be protected. In the future as the impacts of climate change results in more frequent and severe flooding events CCBC will not have the capacity to deal with all flooding issues. This is likely to result in negative effects in terms of increased flood risk and flood damage for humans, infrastructure, property, businesses, historic assets, and soils.

SEA Recommendation – This measure will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 3 – Identify vulnerable groups within the community, and prepare action plans in the event of flooding
This measure is aimed at the protection of vulnerable groups within the community from flooding. Therefore, there will be positive effects in terms of human health and flood reduction but only for certain groups and areas. It is unlikely that there would be any effects on biodiversity, water quality, landscape, historic assets or soils.

SEA Recommendation – Although this measure only provides limited positive effects. The positive effects are considered important in protecting vulnerable groups from the effects of flooding, and could be included in the LFRMS.

Measure 4 – Identify areas at greatest risk of flooding, and develop a capital cost investment programme to mitigate against flooding
Identifying high flood risk areas will allow investment to be prioritised and targeted at the most appropriate areas. A capital cost investment programme is likely to result in construction of flood alleviation schemes. This will have positive effects in terms of reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Effects on water quality will depend on the type or flood defence scheme implemented. For example, creation of a wetland or reedbed will have positive effect on water quality. However, other defence works could affect water flows or could have potential for spillages and contamination during construction.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 5 – Educate general public on options for protecting their properties through flood prevention options and resilience measures

If the public are aware of the flood prevention options and resilience measures available to them to reduce flooding effects then they are more likely to use these to protect themselves and their properties and businesses. This is likely to have positive effects in terms of reducing the impacts and consequences of flooding on human health, property and businesses. Measures such as storing fuels and oils out of the way of flood water will help protect water quality from pollution. Owners of historic assets and farmers can also implement these measures to protect their assets from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, this measure is the same as Measure 8 under Outcome 2 and therefore only one or the other should be included in the LFRMS.

Measure 6 – Establish a post incident support team to assist following a flood event
Although this measure is likely to have limited benefits it is important for people's peace of mind to know that there is someone they can call to get advice and support following a flood incident. The support team may also be able to advise people what do to next time there is a flood. This could help reduce impacts and consequences for property and businesses. It may also help protect water quality as advice could be provided on where to store fuels, oils etc so they don't pollute the water during a flooding incident.

SEA Recommendation – Although this measure only provides limited positive effects. The positive effects are considered important in providing peace of mind and support to people following a flood event, and could be included in the LFRMS.

D.5. LFRMS Outcome 5 Options Assessment

		LFRMS Outcome 5: To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments						
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)
		LT - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT +(T)	LT ++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST - (T)	ST + (T)	ST + (T)	ST + (T)	ST ++ (T)	ST 0	ST + (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT 0	MT ++ (T)
		LT - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT 0	LT ++ (T)
	5. Protect and enhance landscape quality and character across the county.	ST - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT - - (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT 0	MT + (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT 0	LT ++ (T)
	6. Protect historic assets and their landscapes.	ST - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT - - (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)	MT 0	MT + (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT 0	LT ++ (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT + (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST + (T)	ST + (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT ++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T/P)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST 0	ST + (T/P)
		MT - - T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)	MT 0	MT + (T/P)
		LT - - (T/P)	LT + (T/P)	LT++(T/P)	LT++(T/P)	LT+ (T/P)	LT 0	LT++(T/P)

Measure 1 – Do nothing
If the planning department are not aware of flood risk areas and issues then they may allow development in inappropriate places such as floodplains and high flood risk areas. This will increase flood risk and the number of people and properties at risk. This will have significant effects in terms of increased flood risk negatively affecting humans, infrastructure, property, businesses, water quality, biodiversity, landscape, historic assets and soils. It may also exacerbate future climate change effects.

SEA Recommendation – This measure is not realistic and will have negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently the CCBC flood management team and planning department do have some communications on development policies in flood risk areas. This provides minor benefits in terms of flood reduction through appropriate location of new developments in relation to flood risk areas. This is likely to have minor positive effects in terms of protection of biodiversity, water quality, landscape, human health, historic assets and soils from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Develop clear guidance for the Planning Department when assessing planning applications
This measure would provide clear guidance to the Planning Department on how to deal with planning applications in flood risk areas and what standards should be set. This should help ensure development is not permitted in inappropriate locations such as floodplains or areas at high risk of flooding. It would also provide a consistent approach for determining all planning applications. The measure is likely to have positive effects in terms of reducing flood risk and assets at risk of flooding. Thus, having positive effects through protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage. It will also help plan and adapt for future climate change effects through discouraging building in appropriate places such as floodplains which may be needed in the future for flood water storage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Develop a process with the Planning Department to create clear advice and direction to developers on FRMS and drainage (including incorporation of SuDS into new developments)
This measure would help ensure that developers design new developments with appropriate drainage and with consideration of flood risk issues. It would also encourage developers to incorporate appropriate SuDS into designs and plan for future climate change effects. The measure is likely to have positive effects in terms of preventing further areas of the County becoming at risk from flooding and lead to the protection of humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from flood damage.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 5 – Establish a SuDS Approval Body (SAB)
Establishing a SuDS Approval Body (SAB) should move SuDS higher up the agenda and encourage more implementation of SuDS in developments as flood management techniques. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to

reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also assist in planning and adapting for future climate change effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 6 – Keep the Planning Department informed and up-to-date with flood areas in the County
This measure will help the planning department determine where new development should be appropriately placed to avoid flood risk areas. This should help reduce the numbers of development on floodplains or in high flood risk areas. This is likely to have positive effects in terms of flood reduction, human health and protection of infrastructure, property, businesses and water quality. It will also help contribute to future climate change planning and adaptation. The measure is concerned with development in relation to flood risk and is unlikely to have impacts on biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 7 – Develop policies for effective land use management and enhance development control procedures where appropriate
This measure would provide a clear and consistent approach to land use management and development control procedures in relation to development and flood risk. This would help planners to effectively plan new developments away from high flood risk areas and incorporate spatial development policies. This is likely to have positive effects in terms of flood risk reduction and benefits for humans, infrastructure, property, businesses, historic assets, water quality, biodiversity, landscape and soils from protection from flooding effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

D.6. LFRMS Outcome 6 Options Assessment

		LFRMS Outcome 6: Improve and/or maintain the capacity of existing drainage systems by targeted maintenance				
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST - - (T)	ST + (T)	ST + (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT +++(T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT +++(T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST - - (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - – (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST 0	ST 0	ST 0	ST 0	ST 0
		MT – (T)	MT 0	MT 0	MT 0	MT 0
		LT - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	6. Protect historic assets and their landscapes.	ST 0	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT – (T)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST – (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T)	ST + (T)	ST ++ (T)	ST ++ (T)	ST ++ (T)
		MT - - - (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT +++(T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST 0	ST 0	ST 0	ST 0	ST 0
		MT – (T)	MT 0	MT 0	MT 0	MT 0
		LT - (T)	LT + (T)	LT + (T)	LT + (T)	LT + (T)

Measure 1 – Do nothing
If drainage systems were not maintained then they would block up causing flooding and potential sewage overflows. These effects are likely to get worse with time as more drains become blocked increasing flooding. Both flooding and sewage will have health implications for humans, significant negative effects on water quality, and moderate negative effects on biodiversity and climate change adaptation. It will also have minor negative effects on landscape, cultural heritage and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently drainage maintenance is largely reactive. The maintenance team are usually called to unblock or mend/upgrade a drainage asset which prevents it from flooding. However, sometimes the drainage system floods before the team can remove the obstruction or upgrade the asset. Continued maintenance will provide minor benefits through a small reduction in flood risk. This is likely to have benefits in terms of human health, reduction of impact and consequences of flood, planning for climate change, protection of biodiversity and historic assets.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Identify and assess condition of existing drainage assets within the County, to prioritise capital investment
This option would provide a more proactive active looking at the condition of drainage assets to identify what and when assets will need upgrading to prioritise investment. This is likely to have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses. It is likely to have minor positive effects on biodiversity, water quality, historic assets and climate change adaptation and planning.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Develop a risk based reactive and cyclical maintenance regime
This measure builds on Measure 2 by ensuring a prescribed and regular maintenance regime was in place. This would have moderate positive effects in terms of reducing flood risk and the associated impacts and consequences on human health, property, infrastructure and businesses, and water quality. It is likely to have minor positive effects on biodiversity and historic assets as a result of decreased flood risk.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is recommended that for clarity the measure is reworded to ‘Develop and implement a risk based reactive and cyclical maintenance regime’.

Measure 5 – Develop a risk based programme for improving existing infrastructure
This measure builds on Measures 3 and 4 by using a proactive risk-based approach to improve existing drainage infrastructure. Improving drainage infrastructure will include upgrading assets that are failing and upgrading assets to deal with larger future flows from climate change. This will have significant effects in reducing future flood risk and impacts and consequences for human health, infrastructure, property and businesses. It will also have benefits in terms of protecting biodiversity, historic assts and water quality from the effects of flooding. Long term as more assets are improved the benefits will increase.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

D.7. LFRMS Outcome 7 Options Assessment

		LFRMS Objective 7: Take a sustainable approach to flood risk management balancing economic, environmental and social benefits			
		Measure 1	Measure 2	Measure 3	Measure 4
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST 0	ST + (T)	ST + (T)	ST + (T)
		MT – (T)	MT + (T)	MT + (T)	MT + (T)
		LT - (T)	LT + (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT 0	LT + (T)	LT + (T)	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST + (T)	ST + (T)	ST + (T)	ST 0
		MT + (T)	MT + (T)	MT + (T)	MT 0
		LT + (T)	LT + (T)	LT + (T)	LT 0
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST (T/P)	ST + (T)	ST + (T)	ST 0
		- +			
		MT (T/P)	MT + (T)	MT + (T)	MT 0
		- +			
		LT (T/P)	LT + (T)	LT + (T)	LT 0
		- +			
	5. Protect and enhance landscape quality and character across the county.	ST (T)	ST + (T)	ST + (T)	ST 0
		- +			
		MT (T)	MT + (T)	MT + (T)	MT 0
		- +			
		LT (T)	LT + (T)	LT + (T)	LT 0
		- +			
	6. Protect historic assets and their landscapes.	ST (T)	ST 0	ST + (T)	ST 0
		- +			
		MT (T)	MT 0	MT + (T)	MT 0
		- +			
		LT (T)	LT 0	LT + (T)	LT 0
		- +			
	7. Educate, manage, plan and adapt for the effects of climate change.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT 0	LT + (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT 0	LT + (T)	LT + (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T/P)	ST + (T/P)	ST + (T/P)	ST 0
		MT – (T/P)	MT + (T/P)	MT + (T/P)	MT 0
		LT - - (T/P)	LT + (T/P)	LT + (T/P)	LT 0

Measure 1 – Do nothing
It has been assumed that in the do nothing option economic and social benefits would be prioritised over environmental issues when making flood management decisions. Therefore, flood risk may be reduced in the short and medium term using unsustainable methods but at climate change increases frequency and severity of flood events unsustainable methods will not be as effective as reducing and managing flood risk. Also unsustainable flood management could cause long term environmental impacts that could worsen flood risk in the future. There will be positive and negative effects on biodiversity, landscape and cultural heritage. Positive effects are likely from reduced flood risk and negative effects are likely from prioritisation of social and economic issues over environmental issues, resulting in negative environmental effects.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as usual
Currently environmental issues are given consideration as well as economic and social issues. This is likely to have a minor positive effect on water quality biodiversity, landscape and soils as flood management decision will take environmental effects into consideration. Currently historic assets are not given as significant priority as other environmental issues, social and economic issues. Therefore, a score of neutral has been determined. The current approach will help reduce flood risk for humans, properties, infrastructure and businesses.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that more measure would also be required.

Measure 3 – Ensure the environmental consequences of implementing the LFRMS are considered against the technical, economic and social benefits
Consideration of environmental issues as well as economic and social issues is likely to have a minor positive effect on water quality biodiversity, landscape and soils as flood management decision will take environmental effects into consideration. It is assumed that historic assets would be given equal weight with other environmental issues. This approach will help reduce flood risk for humans, properties, infrastructure and businesses.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 4 – Embed policies from other local basin management plans, catchment flood management plans, local environmental policies and European protected sites into flood risk management procedures and programmes
This measure is unlikely to affect biodiversity, landscape, historic assets, soils and human health. Taking other plans into account may have minor benefits in terms in a clearer understanding of the wider picture of flood risk and cross-boundary effects. This will help plan flood management strategies for the local area.

SEA Recommendation – This measure will produce some minor positive effects and could be included in the LFRMS. However, other measures may provide greater benefits.

D.8. LFRMS Outcome 8 Options Assessment

		LFRMS 8: Increasing approaches that utilise the natural environment in place of traditional solutions				
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT + (T)	MT + (T)	MT + (T)
		LT - - (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST – (T)	ST ++ (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT - - - (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST – (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT - - - (T)	LT +(T)	LT ++ (T)	LT + (T)	LT + (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST - (T)	ST ++ (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT ++ (T)	MT + (T)	MT + (T)	MT + (T)
		LT - - (T)	LT ++ (T)	LT ++ (T)	LT + (T)	LT + (T)
	5. Protect and enhance landscape quality and character across the county.	ST – (T/P)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - -(T/P)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - - (T/P)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	6. Protect historic assets and their landscapes.	ST – (T/P)	ST + (T)	ST + (T)	ST 0	ST + (T)
		MT - -(T/P)	MT + (T)	MT + (T)	MT 0	MT + (T)
		LT - - (T/P)	LT + (T)	LT ++ (T)	LT 0	LT + (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST – (T/P)	ST + (T)	ST 0	ST + (T)	ST 0
		MT – (T/P)	MT + (T)	MT + (T)	MT + (T)	MT + (T)
		LT - - (T/P)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST – (T)	ST + (T)	ST + (T)	ST + (T)	ST + (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT + (T)	MT + (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT + (T)	LT + (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T/P)	ST + (T/P)	ST + (T/P)	ST + (T/P)	ST + (T/P)
		MT - -(T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)	MT + (T/P)
		LT - - (T/P)	LT + (T/P)	LT ++ (T/P)	LT + (T/P)	LT + (T/P)

Measure 1 – Use traditional approaches to drainage
Traditional drainage approaches are likely to become updated in the future and less efficient and effective than other solutions. Using only traditional approaches is likely to lead to increased future flood risk resulting in negative effects on humans, property, infrastructure, businesses, water quality, biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Adopt soft engineering including SuDS
Implementing soft engineering approaches including SuDS can have benefits over just using traditional solutions in the majority of cases. SuDS are likely to provide more environmental benefits for water quality, biodiversity, soils and landscape. They will also help to reduce flood risk having minor positive effects for humans, property, infrastructure, businesses and historic assets. Implementation of SuDS will also help plan and adapt for future climate change effects.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS.

Measure 3 – Keeping up-to-date with new and innovative technologies for flood defence and flood management
The assessment has assumed that this measure is to keep up-to-date and implement where appropriate new and innovative technologies. New and innovative technologies are being continuously developed. However, it is likely that significant new and innovative technologies will not be developed until some time into the future. Therefore, larger benefits are likely to be realised in the medium and long term. It is likely that new and innovative technologies will make flood defences more efficient and effective, reducing flood risk and adapting to climate change. This would have benefits for human health, property, infrastructure, businesses, water quality, biodiversity, landscape, historic assets and soils.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Where possible incorporate multiple benefits such as water quality, biodiversity and amenity benefits
This measure is about incorporating multiple benefits into flood management schemes. Incorporation of new or enhanced habitat, landscaping, use of local materials, creation of amenity area will have benefits for biodiversity, water quality, landscape, climate change and human health. Creation of new wetland, for example, will help reduce flood risk and benefit the environment and society.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 5 – Develop and implement a policy of de-culverting
The de-culverting policy will have a presumption against culverting. This is likely to have positive effects as culverts can get blocked or collapse causing flooding. A reduction in culverting will reduce this risk and have minor positive effects in terms of reduced flood risk and effects for humans, water quality and historic assets. It will also allow waterways to be open having positive effects for biodiversity and landscape.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

D.9. LFRMS Outcome 9 Options Assessment

		LFRMS Outcome 9: Ensure the development of skills required to implement effective and innovative flood risk management measures					
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6
Strategic Environmental Assessment Outcomes	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T)	ST +	ST +	ST +	ST +	ST +
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T)	ST +	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - - (T)	ST +	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST – (T)	ST +	ST +	ST +	ST + (T)	ST + (T)
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	5. Protect and enhance landscape quality and character across the county.	ST – (T)	ST +	ST +	ST +	ST +	ST +
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++	MT ++	MT ++
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	6. Protect historic assets and their landscapes.	ST - - (T)	ST +	ST +	ST +	ST +	ST +
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)
	7. Educate, manage, plan and adapt for the effects of climate change.	ST – (T)	ST +	ST +	ST +	ST +	ST +
		MT - - - (T)	MT +	MT ++	MT ++	MT +++	MT ++
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T)	ST +	ST +	ST + (T)	ST ++ (T)	ST + (T)
		MT - - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT +++ (T)	MT ++ (T)
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT +++ (T)	LT ++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T)	ST +	ST +	ST +	ST +	ST +
		MT - - (T)	MT + (T)	MT ++ (T)	MT ++ (T)	MT ++ (T)	MT ++
		LT - - - (T)	LT + (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)	LT ++ (T)

Measure 1 – Do Nothing
If staff don't have the skills, knowledge and equipment to provide effective flood management then flood risk is likely to increase. The most significant effects are likely to be seen in the medium and long term when an accumulation of increased frequency and severity of flood events from climate change together with a lack of understanding and knowledge in how to deal with this will result in significant negative effects on humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as Usual
Currently the flood risk management team keep abreast of the latest news, legislation and techniques in the industry, and employ new staff members where a shortage is identified. This current situation is likely to have short, medium and long terms benefits for on humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets because the team will understand the current issues relating to flood risk and how to deal with them. However, there are barriers that hinder the team such as funding for additional staff, bureaucracy, and severe flood events requiring a large amount of resources which take staff aware from other work.

SEA Recommendation – This measure will produce positive effects and could be included in the LFRMS. However, it is felt that larger benefits could be achieved through inclusion of other measures with more positive effects.

Measure 3 – Provide appropriate staffing levels to deliver the requirements of the Act
The Act places additional duties on the LLFA and in order that the quality of flood protection and response does not decrease with the extra workload additional members of staff will be required. Having additional staff will ensure that all the requirements of the Act are implemented effectively, allow staff to develop flood risk mapping and asset management systems to increase the efficiency and effectiveness of responses, and allow staff time to read up on new innovations and attend conferences. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 4 – Invest in appropriate software and hardware
Having the appropriate software and hardware for a task is essential for effective flood management. Often there are financial barriers to achieving this. This measure would ensure that appropriate software and hardware was available to the flood management team. This would allow them to conduct their work more efficiently and effectively, provide a consistent method and recording system, and manage data and interpretation to better understand flood risk. This is likely to have positive effects for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 5 – Outsource specialist skills to deliver specific projects
Some skills are very specialist and the flood management team may not have the technical knowledge and expertise in these areas. Employing a specialist to provide support, advice and delivery of specific projects is important to ensure projects are designed and implemented successfully. Using a specialist during

project design and development can have significant future benefits in terms of innovation, operational life and reliability, success of the project in protecting people and assets from flooding, and minimisation of negative environmental effects.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

Measure 6 – Provide support, training and networks of staff across the risk management authorities
This measure will help ensure that knowledge is shared between the risk management authorities to help better understand flood risk. Appropriate training is important so that staff can do their job effectively. This in turn should help understanding and reduction of flood risk which will have benefits for humans, assets, properties, infrastructure, business, biodiversity, landscapes, soils, water quality and historic assets.

SEA Recommendation – This measure will have positive effects and could be included in the LFRMS.

D.10. LFRMS Outcome 10 Options Assessment

		LFRMS Objective 10: Identify projects and programmes which are affordable, maximising capital funding from internal and external sources				
		Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Strategic Environmental Assessment Objectives	1. Protect and enhance where possible the ecological and chemical status of watercourses and water bodies in accordance with the WFD objectives.	ST – (T) MT - - (T) LT - - (T)	ST + (T) MT ++ (T) LT ++(T)	ST + MT +++ (T) LT +++ (T)	ST + MT +++ (T) LT +++ (T)	ST + MT +++ (T) LT +++ (T)
	2. Reduce and manage flood risk from ordinary watercourses, surface water run-off, groundwater and artificial water bodies within Conwy County.	ST - - (T) MT - - - (T) LT - - - (T)	ST + (T) MT ++(T) LT ++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	3. Enhance human health and wellbeing through reducing flooding effects	ST - -(T) MT - - - (T) LT - - - (T)	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	4. Protect and enhance biodiversity and geo-diversity across the Conwy County.	ST – (T) MT - - (T) LT - - (T)	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - ++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	5. Protect and enhance landscape quality and character across the county.	ST – (T) MT - - (T) LT - - (T)	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - ++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	6. Protect historic assets and their landscapes.	ST – (T) MT - - (T) LT - - (T)	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - ++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++
	7. Educate, manage, plan and adapt for the effects of climate change.	ST 0 (T) MT - - (T) LT - - (T)	ST 0 MT + LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT ++ (T) LT ++ (T)
	8. Minimise the key impacts and consequences of flood risk on key assets, infrastructure, properties and businesses.	ST - - (T) MT- - - (T) LT - - - (T)	ST + (T) MT ++ (T) LT ++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)	ST + (T) MT +++ (T) LT +++ (T)
	9. Protect best quality soil and agricultural land and minimise the potential for pollution.	ST – (T) MT - - (T) LT - - (T)	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - ++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++	ST (T/P) - + MT (T/P) - ++ LT (T/P) - +++	ST (T/P) - + MT (T/P) - - ++ LT (T/P) - - +++

Measure 1 – Do Nothing
If funding is not obtained then flood protection projects cannot be implemented. In the short term this is likely to have minor negative effects on water quality, biodiversity, landscapes, historic assets and soils as flood events will go unmanaged. In the future, as the frequency and severity of flood events increases due to climate change the effects of flood damage will worsen. If flood management programmes and projects are not implemented, then flood risk and severity of flooding will increase. This is likely to have significant medium and long term negative effects on human health, key assets, infrastructure, properties and businesses.

SEA Recommendation – This measure is not realistic and will have significant negative effects. Therefore, it should not be taken forward into the LFRMS.

Measure 2 – Business as Usual
Currently funding is obtained from internal and external sources and projects are implemented based on risk, priority and costs. There is a limit to current funding and so many flood management programmes and projects are not implemented. In the short term a few new flood management projects are likely to be implemented having minor positive effects in terms of protecting humans, assets, infrastructure, property, business , biodiversity, landscape, soils water quality and historic assets from flooding. However, there can also be temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. In the medium and long terms more projects are likely to be implemented resulting in larger cumulative positive and negative effects.

SEA Recommendation –The positive effects associated with this measure are likely to outweigh the negative effects. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes. However, some of the other measures are likely to have larger positive effects and should be taken forward first.

Measure 3 – Identify potential funding sources
Identifying new funding sources should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 4 – Undertake full lifecycle cost benefit analysis for projects including social and environmental benefits

Undertaking lifecycle benefit analysis is likely to help prioritise projects and ensure that the most cost effective and beneficial project is taken forward. This should help reduce wasting money on projects with few benefits that could be better spent on alternative projects. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features. Consideration of social and environmental benefits as part of the lifecycle analysis is also likely to reduce negative effects associated with a project and maximise positive effects.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.

Measure 5 – Investigate opportunities for match funding and grants

Investigating opportunities for match funding and grants should increase the funds available for flood management projects resulting in more programmes and schemes being implemented. The most significant benefits are likely to be seen in the medium and long terms as a larger number of projects will have been implemented over the period resulting in cumulative benefits in reducing flood risk and therefore protecting humans, assets, infrastructure, properties, businesses, biodiversity, soils, landscape, water quality and historic assets. However, implementation of schemes also has the potential for temporary and permanent negative effects on biodiversity, landscape, soils and historic assets associated with construction and loss of land or an asset for flood defence works. Negative effects are likely to be minimised through the planning process and legislation protecting these assets and features.

SEA Recommendation – The positive effects associated with this measure are likely to outweigh the negative effects and could be included in the LFRMS. Negative effects should be mitigated through consideration of the environment when choosing location and type of defence works, and through the planning, EIA and legislative processes.