

Appendix E: Strategic Environmental Assessment (SEA) Report



Caerphilly County Borough Council

April 2024

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Non-Technical Summary

Under Section 10 of the Flood and Water Management Act (2010) Caerphilly County Borough Council (CCBC) in its capacity as a Lead Local Flood Authority (LLFA) 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 LFRMS contains 9 objectives which form the basis for preparing measures and 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 other organisations and the public towards reducing those risks, whilst aiming to balance the need of communities, the economy, and the environment.

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 have been undertaken in support of the development of this Local Strategy. The SEA evaluates the predicted impacts of the Local Strategy against environmental issues affecting Caerphilly County Borough (CCB).

Under the European Directive 92/43/EEC¹ 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 2017 (as amended)², a Habitat Regulations Assessment (HRA) is required where a plan may give rise to significant effects on European designated sites, known as European Sites. European Sites consist of Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites, and also include potential SPA and candidate SAC. Species and habitats involved in the ‘Ramsar Selection Criteria’ also require consideration under the Habitats Regulations as if they were designated features. Within the county there is one SAC and therefore a HRA 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.

The Caerphilly LFRMS provides many opportunities for mitigation and enhancement. Examples of these are listed below:

- Opportunities to maximise multiple benefits associated with flood risk objectives by Risk Management Authorities (RMA) working collaboratively with each other and with Public Service Boards.

¹ [Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora \(legislation.gov.uk\)](http://legislation.gov.uk)

² The Conservation of Habitats and Species Regulations 2017 ([legislation.gov.uk](https://www.legislation.gov.uk))

- Opportunity for RMAs to engage with the Area Statement process to identify collaborative opportunities.
- Opportunities to enhance public health and well-being through design and maintenance of assets that improve access along green corridors to encourage recreational opportunities, thereby contributing to improving health and well-being.
- Early and effective environmental and habitats assessment of all projects will embed Sustainable Management of Natural Resources (SMNR) and Sustainable Development (SD) principles and by doing so minimise adverse effects and maximise delivery of opportunities, including the biodiversity and resilience of ecosystems duty under Section 6 of The Environment (Wales) Act 2016 (the “Section 6 duty”).
- Promotion of Natural Flood Management (NFM) to maximise delivery of biodiversity enhancement under the Section 6 duty.
- Working with natural processes, good environmental design on projects and sensitive approaches to maintenance activities should seek to enhance biodiversity, ecosystem resilience, hydromorphology, carbon sequestration/emissions reduction and landscape.
- Projects should seek to protect and enhance high quality agricultural soils and recognise them as a finite resource. Nature based solutions and influencing land management practices have potential benefits on soil and land management. Measures to reduce runoff would protect soil from erosion and maintain moisture, preventing dessication at hotter times of the year.
- Implementation of NFM will have direct and indirect beneficial effects on soil erosion, diffuse pollution, maintain/restore hydromorphological function of waterbodies, minimise use of non-renewable or high energy resources and minimise effects on landscape.
- Early engagement of and partnership with the relevant conservation and heritage organisations in the development of any plans, strategies, or projects.
- An initial assessment stage of projects, it is standard practice to seek screening advice from the relevant Welsh Archaeological Trust to ensure the project can be appraised and designed to avoid impacts on the historic environment.

The anticipated environmental impacts are presented within the SEA report. The principal topics identified were pressures upon water, climatic factors, soil, biodiversity, fauna and flora, landscape, cultural heritage, population, 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 LFRMS were appraised against to test the potential environmental effects of the implementation.

In considering the 9 objectives of the Local Strategy, when compared to the 9 objectives of the SEA, it has been concluded that the Caerphilly LFRMS will either lead to positive impacts upon environmental assets and interests within the county of Caerphilly or will have neutral impacts. Opportunities to maximise positive effects have also been

considered. The SEA process has not identified any negative impacts upon the environment upon implementation of the LFRMS.

The main positive effects identified were flood risk reduction resulting in the 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 can be mitigated through best site practices, legislation, and regulatory processes including Planning, Ordinary Watercourse Consent and Sustainable Drainage Approval.

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 to ensure that the identified SEA objectives are being achieved. This will allow early identification of unforeseen adverse effects and appropriate remedial action can be taken to mitigate against any negative impacts.

1 Introduction

1.1 Background

Caerphilly County Borough Council (CCBC) has produced a revised Local Flood Risk Management Strategy (LFRMS). The purpose of the local strategy is to guide the management of local flood risk across Caerphilly County Borough (CCB). The Ecology Team within the Countryside and Landscape Section of Caerphilly County Borough Council have undertaken a Strategic Environmental Assessment (SEA) and a Habitat Regulations Assessment (HRA) of the Local Flood Risk Management Strategy.

This SEA Report presents an assessment of the potential environmental effects of CCBC's revised LFRMS.

The LFRMS must address the potential flood risk arising from local sources within the boundary of the local authority area. These are defined in the Act as: surface water run-off (where rain falls and where it goes), groundwater water (underground in soils or aquifers), ordinary water courses (including streams and small rivers) highway drainage (pipes and other systems for draining the roads) and for certain assets that are owned and managed by the council for example, reservoirs (large bodies of water), canals (inland waterways originally created for navigation and transport) and disused coal tips (channels and other drainage features important for tip stability).

Under the Flood and Water Management Act 2010, Caerphilly County Borough Council has been established as the Lead Local Flood Authority (LLFA), which places several general statutory duties onto the authority such as: a duty to develop, maintain, apply and monitor a strategy for local flood risk management, a duty to comply with the Welsh Government National Strategy for Flood and Coastal Erosion Risk Management, a duty to co-operate with other authorities, including the sharing of data, a duty to investigate all flooding within the authorities area, insofar as it is considered necessary or appropriate, and a duty to maintain a register of structures and features likely to affect flood risk. The authority also have some general permissive powers, including: powers to request information in connection with their flood risk management functions, powers to designate certain structures or features that affect flood risk as "critical flood risk assets" even where these assets are owned by 3rd parties, and the powers to undertake certain works to manage or mitigate flooding or flood risk, including on 3rd party land, and to recover the costs for such works. Also, under the Civil Contingencies Act 2004, the authority are Category 1 responders, which places them at the core of the response to most emergencies alongside Government, the Emergency Services, and the NHS.

An SEA Report has been undertaken to ensure that the environmental effects are considered during the development of the LFRMS alongside technical, economic, and other considerations. The SEA Report forms part of the consultation (along with the

LFRMS and HRA) undertaken as part of the development of the LFRMS and presents the findings of the SEA.

The LFRMS sets out:

- The roles and responsibilities of the risk management authorities in the LLFA area and the risk management functions that may be exercised by those authorities;
- The strategic objectives for managing local flood risk, the measures by which these objectives will be met and the actions that will be delivered to achieve the measures and objectives;
- The timescales and costs for the implementation of the above measures and actions;
- Benefits of these measures and the mechanisms to fund them;
- An assessment of local flood risk for the purpose of the Strategy and Action Plan;
- The method and timescales for review of the Strategy and Action Plan; and
- How the Local Strategy contributes to the achievement of wider environmental objectives.

1.2 Study Area

The LFRMS and SEA cover the whole of Caerphilly County Borough (CCB). In order to assess flood risk in individual communities, the LFRMS considered each part of the county borough on a sub-catchment basis and defined specific flood zones using topographical information, hydrological catchments and local knowledge of critical and other infrastructure that would influence flow paths. For example, where a highway runs across the slope of a hill or mountain, it is more likely that flood flows will be directed along the highway than continue to run directly down the mountainside. Using this approach, 112 sub-catchment zones have been defined within the county. The sub-catchment approach has pinpointed specific zones that are particularly susceptible to flooding, stemming from surface water, small watercourses, and groundwater seepage. These zones have been categorised based on their risk levels. As a result, four zones have been identified to have the greatest risk of flooding. The LFRMS contains a Flood Action Plan for each of the four highest risk zones.

The SEA will cover the administrative boundary of CCB as indicated in Figure 1.

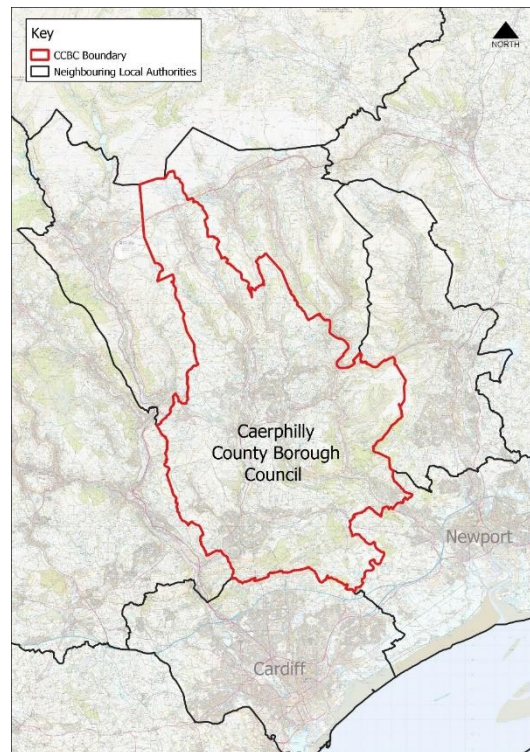


Figure 1: Location of Caerphilly County Borough

2 Consultation

The SEA Regulations require that an SEA be subject of consultation for a period of no less than 28 days. The SEA report, the LFRMS Report, the HRA report, along with the Report of Consultation – Statutory Consultee involvement, will be subject of a six-week consultation period for the LFRMS itself. During this period comments can be made on all of the documents. Details of the consultation period are set out in the LFRMS Report.

3 Strategic Environmental Assessment (SEA) Process and Stages

3.1 Strategic Environmental Assessment

A SEA is a legal requirement under Directive 2001/42/EC “on the assessment of the effects of certain plans and programmes on the environment” (the SEA Directive). The SEA Directive is implemented in Wales by the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004. This legislation makes a SEA a legal requirement for certain plans and programmes which are likely to have significant effects on the environment.

The purpose of the SEA is:

1. To integrate environmental considerations and high-level protection of the environment into strategic decision-making.
2. To ensure the integration of environmental considerations into the preparation and adoption of plans and programmes, and to contribute to the promotion of

sustainable development and environmental protection to describe environmental enhancement measures and include a monitoring framework.

LFRMS are statutory plans that could potentially have significant effects on the environment and are therefore subject to the requirements of an SEA.

3.2 Aims of the Strategic Environmental Assessment (SEA)

The aim of the SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes, with a view to promoting sustainable development and to identify potentially significant environmental effects (positive and negative), created as a result of the implementation of the LFRMS on issues such as:

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

The SEA should present the environmental effects (positive and negative) of the Strategy and ensure that Sustainable Development (SD) and Sustainable Management of Natural Resources (SMNR) principles are embedded, maximising delivery against Welsh Government's Well-Being Objectives and the Objectives of the SMNR.

The SMNR Objective is to use natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide. In doing so, this will meet the needs of present generations of people without compromising the ability of future generations to meet their needs and contribute to the achievement of the well-being goals.

3.3 Strategic Environmental Assessment (SEA) Screening

Prior to the commencement of the SEA process, a Strategy, Plan or Programme would ordinarily be 'screened' to establish whether the plan is subject to the Strategic Environmental Assessment Directives and whether it requires a SEA.

In accordance with the requests of Regulation 9 of the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004, CCBC screened its initial LFRMS to determine the likely significance of the effects of the strategy on the environment. Given the high-level nature of the LFRMS, it is difficult to accurately establish the degree to which potentially significant environmental effects will occur. Due to the uncertainty, and the potential for significant environmental effects, it is CCBCs view that the LFRMS is likely to have significant environmental effects and that an SEA is required.

A screening assessment was not undertaken for the second cycle of the LFRMS. A review of the changes to the initial and second cycle LFRMS concluded that the revision will not lead to significant environmental effects at a strategic level which have not already been identified and explored in the previous assessment. As a result, CCBC have proceeded to produce a revised SEA for the second cycle of the local strategy, which will reflect the revised Local Strategy Objectives.

3.4 Strategic Environmental Assessment (SEA) Stages

The SEA process is structured into five well-defined stages as outlined in Figure 2 and involve predicting, evaluating, and mitigating the environmental effects of the strategy.

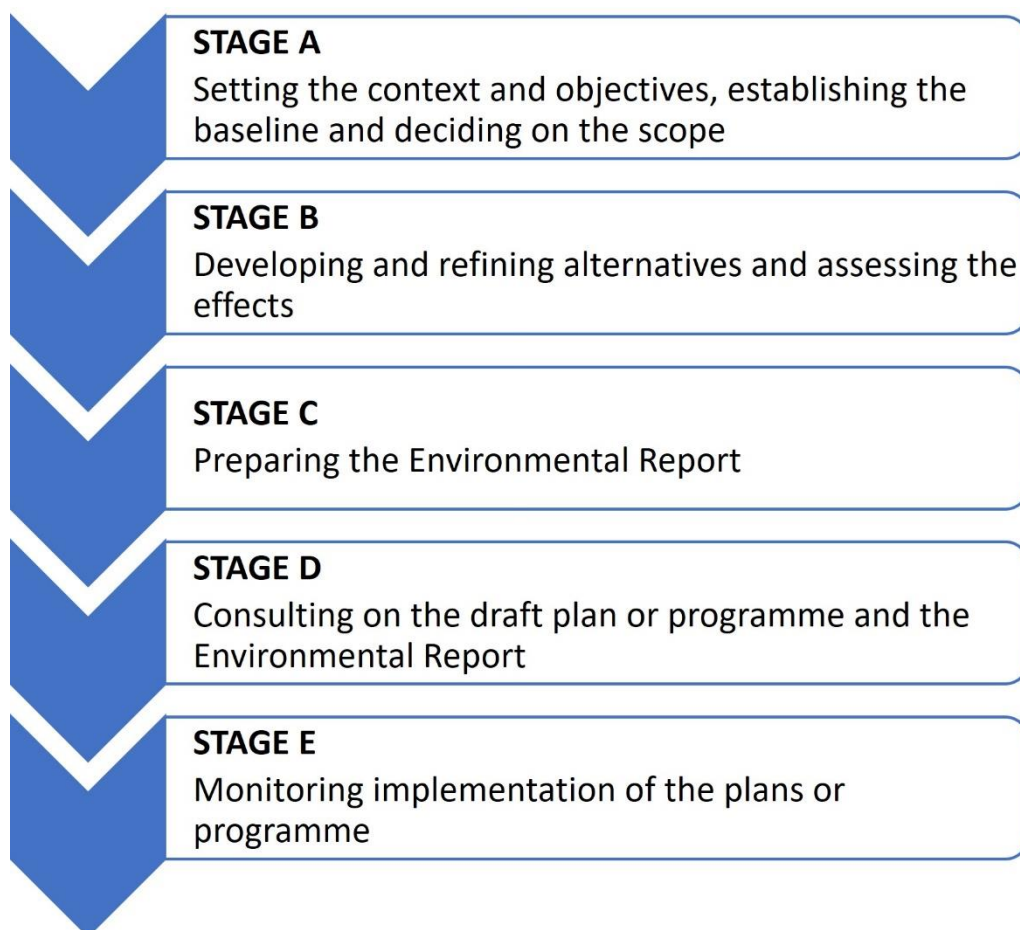


Figure 2: SEA Process Stages

3.5 Requirements of the SEA Directive

The Directive defines requirements to be included within the SEA Report. The SEA Report has been prepared in accordance with the requirements of the Directive. Table 1 below includes the specific requirements in the SEA Directive and where they can be found within this report.

SEA Directive Requirement	Section within the report
An outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes.	4.1 & 6
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Strategy.	4.2
The environmental characteristics of areas likely to be significantly affected.	4.2
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.	Included within the Local Flood Risk Management Strategy (LFRMS) Habitats Regulations Assessment.
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.	5.0 & 5.1
The likely significant effects on the environment, including short, medium, and long-term effects, positive and negative effects, permanent and temporary effects, and cumulative effects on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, including archaeological and architectural heritage, landscape, and the interrelationship between the above issues.	7
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.	N/A
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties encountered in compiling the required information.	7
A description of the measures envisaged concerning monitoring.	8

Table 1: SEA Directive Requirements of the Strategic Environmental Assessment (SEA) Report

3.6 Aims of This Report

This report aims to:

- Provide a description of the SEA process and the decisions taken during this process.
- Consider and take into consideration other strategies, plans and policies deemed relevant.
- Identify key environmental issues and trends and provides environmental context for the revised LFRMS.
- Assess the potential effects of the LFRMS in addition to appropriate mitigation measures (if required) and enhancement measures and

- Set out the proposed monitoring measures which will be used to review the LFRMS in the future.

4 Strategic Environmental Assessment Context, Baseline and Objectives

A summary of the work undertaken during the SEA scoping stage, summarising the key environmental issues identified from baseline data and a summary of the review of relevant strategies, plans, policies, and programmes are included within this section. This section also provides details on how the SEA objectives were derived and the proposed assessment framework.

4.1 Identifying other relevant Plans, Programmes and Strategies

The SEA Regulations require that the strategy gives consideration to the relationship with other policies, plans, programmes at international, national, and regional levels and to strengthen plans and strategies at the local level. Therefore, the LFRMS must support and where possible strengthen the objectives of other local plans and strategies within CCB. 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. Table 2 below outlines the key relevant documents, which were considered during the Scoping Stage.

International Plans and Programmes
EU Floods Directive - Directive 2007/60/EC on the assessment and management of flood risks, 2007
EU Water Framework Directive – Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy, 2000
EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC)
EC Directive on the Conservation of Wild Birds (79/409/EEC); Ramsar Convention on Wetlands of International Importance (1971)
UN Framework Convention on Climate Change
World Health Organisation Global Strategy on Health, Environment and Climate Change (2020)
National Plans and Programmes
Climate Change Act 2008
DCWW Water Resources Management Plan 2019
Environment (Wales) Act 2016
Flood and Water Management Act 2010
Flood Risk Regulations 2009
Future Wales: The National Plan 2040 (2021)
Historic Environment (Wales) Act 2016
Land Drainage Act 1991
National Strategy for Flood and Coastal Erosion Risk Management in Wales, October 2020
Planning Policy Wales (Edition 11) 2021
Prosperity for All: A Climate Conscious Wales (2019)
Statutory National Standards For Sustainable Drainage Systems (SUDS), October 2018
Technical Advice Note (TAN) 15: Development and Flood Risk 2004
The Conservation of Habitats and Species Regulations 2011
Water for People and the Environment: Water Resources Strategy for Wales 2009
Well-being of Future Generations (Wales) Act 2015

Welsh Government Water Strategy for Wales 2015
Wildlife and Countryside Act 1981 (as amended)
Sub-national Plans and Programmes
Caerphilly County Borough Council: De-Carbonisation Strategy: Reduce - Produce - Offset – Buy, November 2020
Preliminary Flood Risk Assessment Report; Caerphilly County Borough Council, October 2011 and October 2017
Preliminary Flood Risk Assessment: Merthyr Tydfil County Borough Council, April 2011 and January 2018
Preliminary Flood Risk Assessment: Blaenau Gwent County Brough Council, June 2011 and November 2017
Preliminary Flood Risk Assessment Report: Torfaen County Borough Council 2011
Severn Preliminary Flood Risk Assessment, December 2018
Severn River Basin Management Plan, 2022
Special Planning Guidance: Nature Conservation (LDP)
Local Plans and Programmes
'A Foundation for Success 2018 – 2023' Regeneration Strategy for Caerphilly County Borough Council
Caerphilly County Borough Council: De-Carbonisation Strategy: Reduce - Produce - Offset – Buy, November 2020
Caerphilly County Borough Council Preliminary Flood Risk Assessment, October 2011, and November 2017
Caerphilly County Borough Council Green Infrastructure Strategy, November 2020
Caerphilly County Borough Council Local Development Plan 2010 (adopted)
Caerphilly County Borough council 2 nd Replacement LDP up to 2035 (being prepared)
Caerphilly County Borough Council Rights of Way Improvement Plan 2017
Caerphilly County Borough Council Sites of Importance for Nature Conservation
Caerphilly County Borough Council Tree Strategy October 2017
Caerphilly County Borough Council Housing Strategy: An Agenda for Change (2021 – 2026)
Caerphilly County Borough Council Trees and Development Supplementary Planning Guidance LDP 4
Caerphilly County Borough Council Protection of Open Space Supplementary Planning Guidance LDP 8
Caerphilly County Borough Council Local Flood Risk Management Strategy
Caerphilly County Borough Council Biodiversity Audit of Roadside Verges 2009
Gwent Green Grid: Nature isn't Neat Initiative

Table 2: Key International, National, Sub-national and Local Plans, Programmes and Strategies

4.2 Baseline Information

Scoping of the assessment took into account the key environmental issues and trends across all SEA receptors and determined which were relevant to the Flood Risk Management Plan (FRMP). It also reviewed policies, plans, programmes, and legislation relevant to the FRMP. This information was used to develop assessment objectives and associated criteria, which are typically used in the SEA to systematically identify the beneficial and adverse effects of a plan on individual environmental issues. A key stage in the scoping process was to decide what topics were relevant for the Caerphilly LFRMS SEA and what topics, if any, should be scoped out. Table 3 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 CCB and to determine the likelihood of this potential impact.

SEA Topic	Scoped in/out	Evidence	Key Issues and Opportunities
Air Quality	OUT	In general air quality in CCB is good. Air pollution is primarily from road transport.	The SEA has been undertaken in parallel with the Welsh Governments National Flood and Coastal Erosion Risk Management Strategy (National Strategy) which states that detrimental impacts on air quality attributable to the National strategy were unlikely. Therefore, air quality is unlikely to be affected by the 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 the use of best environmental site practices. Due to the fact that the LFRMS is unlikely to have effects on air quality and that Welsh Government stated that the National Strategy was unlikely to have impacts on air quality, it is proposed to scope out air quality from the SEA.
Water	IN	The water courses and water bodies within CCB are classed by NRW as good to moderate quality, in terms of both ecological and chemical parameters. Many of the river catchments have or are recovering from historical degradation caused by the coal, iron, and other industries. Since the demise of heavy industry, there have been general improvements in water quality, allowing the return of salmon, trout, and otter, for example. However, rivers remain vulnerable to both diffuse and point source pollution from various catchment sources. Remnants of flows from abandoned mine workings can have detrimental	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 is unlikely to have a profound effect on water resources within CCB, however, potential options to promote the use of Sustainable Drainage Systems (SUDS) that mimic natural drainage processes may enhance the availability of groundwater and prevent pollution reaching watercourses and aquifers. Reduction in the amount of sediment entering watercourses is also likely to be a by-product of implementing best practice land

		effects on water quality but do not benefit base flow rivers in summer months. Water quality issues attributable to the local sewer network (principally the issues relevant from the discharge of Combined Sewer Overflows (CSO's) and water quality issues downstream of water treatment works) are significant at some locations. Surface water flooding is a common source of flooding in the county.	management techniques and the greater use of SUDS. Additionally, changes in flood frequency attributable to the LFRMS objectives, may assist in waterbodies attaining the required Water Framework Directive 'good' or 'no deterioration' status by, for example, reducing the amount of surface water entering combined sewer systems.
Climatic Factors	IN	Climate change is predicted to increase the frequency and the intensity of flooding, increasing the risk in CCB and across the UK. Flooding can have profound consequences including loss of life, damage to the economy, social implications, and environmental damage. It is predicted that the CCB will have warmer, drier summers and warmer, wetter winters. Sea level is projected to rise as a result of climate change. Local flooding, defined as flooding from surface water, ground water and ordinary watercourses such as small rivers, ditches, and streams, has become more frequent in recent years.	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. 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 CCB with regard to flood risk management, as it will incorporate more sustainable flood management techniques such as SUDS, which are more beneficial compared to current techniques; opportunity to use 'greener' solutions for flood defences including using materials which are sustainable and locally sourced, use of natural defences and use of SUDS; and the 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). The LFRMS will have a positive impact upon flooding within CCB, however, when developed in more detail, potential project options may advocate 'no intervention' policies whereby risk-based decisions are made not to manage

			flood risk in particular areas. Indeed, options to increase flooding in areas where necessary to protect downstream regions could potentially be advocated.
Soil	IN	Soils play a critical role in the quality of water within a catchment and the degree of surface/sub-surface runoff. Fundamentally, shallow, compacted soils will not retain and hence slow the response of rainfall events to the degree that a deep, loosely compacted soil would. Soil classification for CCB indicates that the borough is covered with predominantly coarse textured, shallow soils which readily transmit nonadsorbed pollutants and liquid discharges, but which have some ability to attenuate pollutants because of their clay or organic matter contents. Soil classification in urban areas and areas where mineral extraction is current or has occurred is more difficult to determine with precision. A worst-case vulnerability classification of high permeability is assumed for these areas that assumes that they will readily transmit liquid discharges because they are either shallow or susceptible to rapid flow directly to rock, gravel, or groundwater. Throughout the Borough, low permeability drift deposits occur at the surface comprising of mostly alluvium and peat. The geology of CCB consists of Pennant Sandstones, down through mudstones, siltstones, and coal seams of the middle and lower coal measures, to the millstone grit at the northern most boundary. In general, the rocks underlying this area comprise of sandstone, mudstone, siltstones, and coals that form the Pennant Measures. The	Flooding can cause damage of agricultural land (including the wider functions of soil) making it unusable for farming and can ruin crops and injure and even kill livestock. Flooding can also wash away soils leading to siltation of rivers and streams; however, it should also be noted that the flooding can increase the nutrients in 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 will seek to maintain and where possible enhance soil quality within CCB. This process may develop as a by-product of specific techniques which additionally enhance flood risk management. Certain policies may have a degrading effect upon soil quality, for instance through construction activities to implement flood defence measures, but these are anticipated to be short term in nature. The LFRMS should be mindful of the constraints resulting from the presence of potentially contaminated brown field sites within CCB. The LFRMS options will where possible seek opportunities to enhance flood risk measures when redevelopment of these sites is considered.

		exception of this is around Risca which is underlain by rocks comprising lower carboniferous limestones, Devonian Old Red Sandstones, quartz conglomerates and marls. Overlying the majority of the area are Quaternary deposits consisting mainly of Till or Boulder Clay. Areas of peat often occur at higher levels whilst valley floors contain alluvium deposited by rivers.	
Biodiversity, Flora, and Fauna	IN	The county is rich in flora and fauna. CCB contains 1 SAC, 1 NNR, 13 SSSI's, 4 LNR's and nearly 200 SINC's. These are also important for tourism.	Natural flooding plays an integral role in the 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 on biodiversity, including; possible alteration of natural flooding regimes which could potentially negatively impact ecosystems that rely on flooding to maintain their habitats and soil fertility; flood alleviation / defence measures may 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 and severity of flood events that could threaten habitats and species; physical flood defences (e.g. embankments, walls, weirs, sluices and pumping stations, etc.) used in flood management may negatively impact the habitats of certain species in turn affecting those species, e.g. white clawed cray fish, otters and fish species, etc.; natural flood alleviation schemes have the potential to increase biodiversity through the creation of new habitats; and flood defence works need to be timed appropriately to avoid fish spawning season, and bird breeding season.

Landscape	IN	Within CCB there are 6 Special Landscape Areas, 4 Visually Important Local Landscapes and 32 Green wedges. These areas are important for tourism.	Flood events could potentially result in the damage/destruction of important landscape features. The LFRMS may have effects for landscape through; the alteration of the landscape character both positively and negatively. 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, which could in turn damage important landscape features. Land management techniques for the principal benefit of flood risk management is likely to have secondary benefits for the wider environment.
Cultural Heritage	IN	There are 415 listed buildings and 16 conservation areas designated on the basis of their special architectural or historic interest within CCB. CCB has a rich and diverse archaeological record including prehistoric burial cairns, a Roman Fort and more recent post medieval examples of industrial heritage. CCBC has 47 designated Scheduled Ancient Monuments. 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; 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; implementing an efficient flood risk management plan to reduce the occurrence and level of the 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. The LFRMS will endeavour to maintain and where possible enhance the status of CCB's cultural heritage.
Population	IN	In Wales the population grew by 1.4% or 44,000 people	Flooding events can severely impact local populations. Flooding can

		between 2011 and 2021 according to the ONS census population change. However, between the last two census (held in 2011 and 2021) the population of CCB fell by 1.6% from around 178,800 in 2011 to 176,000 in 2021. This means CCB was one of the 7 local authority areas in Wales to see its population decline. In 2021 CCB was home to around 4.5 people per football pitch sized piece of land compared to 4.6 in 2011. CCB was the 4th most densely populated out of all 22 local authority areas across Wales.	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 from coming to an area. Population increase will lead to new development which increases flood risk, and assets are 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 the 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 their new developments. All of the LFRMS objectives and measures will deliver significant determinants of health (economic, environmental, and socio factors) benefits in terms of alleviating risk to people and properties, including more disadvantaged and vulnerable communities, from flooding, with associated whole community benefits to health and well-being. Robust and sensitive design of schemes will ensure that they will benefit local communities and encourage opportunities to engage in healthy and active behaviours to maximise health and well being where appropriate. Where possible, the LFRMS should attempt to assist in the accessibility of green space for local residents.
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Human Health	IN	The Welsh Index of Multiple Deprivation (WIMD) 2014 highlights that there are significant levels of deprivation in pockets across the county borough, with 14 of the 110 Lower Super Output Areas (LSOAs) in the county borough in the top 10% of the most deprived Lower Super Output Areas (LSOAs) in Wales. The most deprived Lower Super Output Area (LSOA) in Wales, is within CCB, which is St James 3, covering a large part of the Lansbury Park estate in Caerphilly town, with the second most deprived Lower Super Output Area (LSOA) in the county borough being Twyn Carno 1, covering part of Rhymney, being the 7th most deprived LSOA in Wales.	Flooding events can impact human health, both physically and mentally, through a 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 through; implementing an efficient flood risk management plan to reduce the occurrence and level of the severity of floods in the borough, and consequently the number of people at risk, and the 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. The LFRMS will have a positive impact upon human health. Through the tangible benefits or reduced injuries/deaths from flooding incidents to the more intangible aspects of stress and anxiety reduction for those living with the threat of flooding.
Material Assets	IN	Major transport links reflect the distinctive geography of CCB, with primary routes running through the valley bottoms. The 'Valley Lines' and key roads are all widely used by the population for commuting to work (both within and out of the county borough). These routes are vulnerable to disruption as a result of flooding incidents.	The LFRMS has attempted to manage the flood risk to material assets, and it is therefore anticipated that the LFRMS will have a positive influence on infrastructure and assets. However, the protection of assets is likely to be prioritised differently and the extent of any positive effects may be variable.

Table 4: Key Issues and Opportunities

5 SEA Framework

The SEA Framework was developed during the scoping stage and includes the LFRMS objectives, assessment criteria and indicators, see Table 5 below. The indicators will be used as the basis for monitoring proposals to monitor the implementation of the LFRMS.

LFRMS Objectives	Key Questions	Potential Indicators
1. Reduce the risk to and impact on people and communities from flooding	Will the LFRMS reduce the risk of flooding from ordinary watercourses? Will the LFRMS reduce the risk of flooding from surface water runoff? Will the LFRMS reduce the risk of flooding from ground water runoff? Will the LFRMS reduce the risk of flooding from artificial water? Will the LFRMS reduce the risk of flooding from storm surges? Will the LFRMS help to provide a better understanding of flood risk? Does the LFRMS encourage the implementation of SUDS?	Number of residential properties at risk from flooding from local sources. Number of non-residential properties at risk from flooding from local sources. Number of business properties at risk from flooding from local sources. Number of new developments permitted in areas of flood risk (including flood Plains). Number of flood defence schemes implemented. Number of pollution incidents following flood events. Number of Sustainable Drainage Systems (SUDS) implemented since the publication of the LFRMS. Number and severity of flooding incidents within CCB and their source.
2. Ensure that local communities are aware of and understand local flood risk and are suitably equipped, empowered, and enabled to take timely actions to prepare for, be resilient against and	Will the LFRMS increase awareness of flooding from ordinary watercourses? Will the LFRMS prescribe procedures for emergency planning for flood risk? Will the LFRMS help communities to be more resilient and prepare better for flooding events? Will the LFRMS help to reduce the perceived fear of flooding? Will the LFRMS help to maintain accessibility to key services and goods? Will the LFRMS help to preserve areas with an amenity use?	Number of flood related injuries and fatalities. Number of residential properties at risk from flooding. Number of non-residential properties at risk from flooding. Number of businesses at risk from flooding. Number of flood events leading to transport disruption. Number of awareness raising activities and events undertaken.

recover from flooding	Will the LFRMS reduce flood risk for businesses and reduce revenue, lost through flooding? Will the LFRMS protect tourism assets and reduce tourism revenue lost through flooding? Will the LFRMS have an adverse impact on human health?	Number of complaints. Area/number of recreational and amenity facilities effected by flooding incidents.
3. Reduce disruption to critical infrastructure or prepare plans to allow operations to be maintained	Will the LFRMS help to protect key transport infrastructure? Will the LFRMS help protect energy, power, and telecommunication assets? Will the LFRMS help protect community facilities including schools, libraries, and hospitals, etc? Will the LFRMS protect waste facilities? Will the LFRMS affect the water resources? Will the LFRMS help reduce the number of properties at risk of flooding?	Number and severity of incidents leading to the disruption or damage to transport infrastructure. Number and severity of incidents leading to disruption or damage to service provision. Number of residential properties at risk of flooding across the county. Number of non-residential properties at risk of flooding across the county. Number of businesses at risk of flooding across the county. Number of power, waste, and telecommunication assets at risk of flooding. Number of critical services at risk of flooding.
4. Enable national, regional, and local designated sites to be protected against or resilient to flooding and enhance these areas where possible	Will the LFRMS encourage habitat creation through SUDS and flood defence works? Will the LFRMS involve loss or damage to habitats as a result of flood defence works? Will flood management proposals affect habitats that rely on localised flooding e.g., wetlands? Will the LFRMS affect ecological areas that are benefited by flood cycles? Will the LFRMS protect ecological sites and species from flood risk? Will the LFRMS protect and/or enhance biodiversity across the county? Will the LFRMS seek to protect and/or enhance national and international sites?	Positive or negative impacts on statutory and non-statutory ecological sites as a result of flooding. Number of flood incidents that have resulted in loss or increase of protected or Section 7 species Area of Section 7 habitat damaged or brought into less favourable condition through flooding. Area of Section 7 habitat created or enhanced through flood defence works. Areas and type of habitat created or lost as a result of SUDS and flood defence works. Populations of priority species lost or increased through flood defence works.

	Does the LFRMS seek to conserve and/or enhance natural/semi-natural habitats? Does the LFRMS conserve and/or enhance species diversity, and in particular avoid harm to protected species? Will the LFRMS protect landscape quality and character from flood risk? Will the LFRMS enhance or detract landscape quality?	Achievement of biodiversity Action Plan targets. Chemical and ecological condition of rivers. Requirements for habitat enhancement and/or compensation arising out of the LFRMS. A landscape area considered at risk from flooding. Any significant adverse landscape effects from flooding related development in terms of local landscape. Any significant adverse landscape effects on protected landscapes. Positive or negative visual impact of flood defence schemes within areas of landscape quality or significance. Number of listed buildings at risk of flooding. Number of Ancient Scheduled monuments at risk of flooding. Number of conservation area at risk of flooding.
5. Ensure that investment is targeted towards those areas most at risk with due consideration of socio-economic factors	Will the LFRMS improve and enhance the physical and mental health, and well-being of vulnerable communities? Will the LFRMS reduce the level of social, cultural, and economic deprivation? Will the LFRMS protect the most disadvantaged and vulnerable communities, elderly people and most vulnerable from flood risk?	Number of flood related injuries and fatalities. Number of awareness raising events and activities undertaken. Number of residential properties at risk of flooding. Number of non-residential properties at risk of flooding.
6. Ensuring that interventions are designed, constructed, and maintained sustainably with due consideration of whole life costs, embedded	Will the LFRMS assist in educating people about the impacts of climate change on flood risk? Will the LFRMS help CCB to adapt to Climate Change effects? Will the LFRMS encourage the implementation of SUDS and NFM? Will the LFRMS minimise the potential for pollution from flooding?	Number of SUDS schemes implemented. Number of NFM schemes implemented. Predicted future flood risk with climate change. Number of educational activities (exhibitions, workshops, leaflets, questionnaires, advertising) undertaken. Indicative flood plains under current conditions and under climate change

carbon (energy) and scarce resources and are compliant with and complimentary to the Water Framework Directive	What impacts will the LFRMS have upon CCBs vulnerability to the impacts of climate change?	scenarios and the developments occurring within them.
7. Support the delivery of Objectives under other environmental and well-being legislation such as The Environment (Wales) Act 2016 and The Well-Being of Future Generations Act 2015	Will the LFRMS encourage interventions that utilise nature- based solutions, that help build ecosystem resilience and result in beneficial effects on biodiversity? Will the LFRMS provide opportunities to maintain and enhance the determinants of health (economic, environmental, and social factors)? Will the LFRMS develop resilient ecological networks including securing riparian buffer strips to provide important corridors for wildlife, increasing connectivity, to also provide a physical barrier to slow water runoff, and reduce riverbank erosion? Will the LFRMS deliver wider benefits through approaches to annual maintenance programmes (annual mowing regimes, seeding areas with native wildflowers)? Will the LFRMS utilise natural processes such as SUDS or NFM to create habitats to provide carbon sequestration via wetland creation and woodland creation?	Number of SUDS schemes implemented. Number of NFM schemes implemented. Number of blue and green environments created. Number of areas enhanced for biodiversity with appropriate management plan for future management. Number and species of trees planted. Number and size of woodlands planted. Number and size of wetlands created.
8. Work collaboratively to ensure that the Local Flood Risk Management Strategy and Plan (LFRMSP) complements other Regional and Local strategies and plans i.e., River Rhymney restoration Plan (NRW), Local	Will the LFRMS meet the requirements of the Flood and Water management Act 2010 and Flood Risk Regulations 2009? Will the LFRMS meet public well being goals of the Well-Being of Future Generations Act? Will the LFRMS meet Part 1 and Part 6 of the Environment (Wales) Act? Will the LFRMS deliver on Welsh Governments Natural resources Policy?	Specific objectives, measures, and actions within the LFRMS address all environmental goals under other legislation. Integrated Impact Assessment undertaken to see what impacts the objectives, measures, and actions will have on the public. Monitoring of objectives, measures, and actions.

Development Plan, Well-being plan, etc		
9. Continue to develop and enhance Caerphilly County Borough Council's knowledge and understanding of local flood risk taking into consideration surface water (pluvial), groundwater and ordinary watercourses (fluvial) and of flood risk management and mitigation measures	Will the LFRMS focused actions prevent flooding to those communities most at risk? Will the LFRMS protect those areas least able to protect themselves from flooding? Will the LFRMS enable regular community engagement?	LFRMS will be reviewed on a 6 yearly basis. Action plans will be reviewed on a 3 yearly basis. Updates to be published on CCBC website.

Table 5: LFRMS Objectives and potential indicators

6 Local Flood Risk Management Strategy Objectives

The aim of the LFRMS is to reduce flood risk with areas at risk of flooding from surface water run-off, small watercourses and groundwater as opposed to fluvial flooding associated with larger, main rivers. To do this the strategy has been structured into a hierarchy of objectives setting out what the strategy seeks to achieve. The National Strategy for Flood and Coastal Erosion Risk Management sets out the overarching aim to reduce the risk to people and communities from flooding and coastal erosion. The LFRMS has developed its own strategic objectives, which both align with the National Strategy objectives and reflect our local context and priorities whilst also reflecting the national context and priorities. The National Strategy Objectives are listed within the LFRMS. The LFRMS objectives are listed in Table 6 below.

Objectives	Local Strategy Objective
Objective 01	Reduce the risk to and impact on people and communities from flooding.
Objective02	Ensure that local communities are aware of and understand local flood risk and are suitably equipped, empowered, and enabled to take timely actions to prepare for, be resilient against and recover from flooding.
Objective 03	Reduce disruption to critical infrastructure or prepare plans to allow operations to be maintained.
Objective 04	Enable national, regional, and local designated sites to be protected against or resilient to flooding and enhance these areas where possible.

	Designated sites include Natura 2000 (N2K Sites), Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Sites of Importance for Nature Conservation (SINCs). Scheduled Ancient Monuments, Listed Buildings, Conservation Areas, Registered Historic Parks and Gardens and Registered Historic Landscapes.
Objective 05	Ensure that investment is targeted towards those areas most at risk with due consideration of socio-economic factors.
Objective 06	Ensuring that interventions are designed, constructed and maintained sustainably with due consideration of whole life costs, embedded carbon (energy) and scarce resources and are compliant with and complimentary to the Water Framework Directive.
Objective 07	Support the delivery of Objectives under other environmental and well-being legislation such as The Environment (Wales) Act 2016 and The Well-Being of Future Generations Act.
Objective 08	Work collaboratively to ensure that the Local Flood Risk Management Strategy and Plan (LFRMSP) complements other Regional and Local strategies and plans i.e., River Rhymney restoration Plan (NRW), Local Development Plan, Well-being plan, etc.
Objective 09	Continue to develop and enhance Caerphilly County Borough Council's knowledge and understanding of local flood risk taking into consideration surface water (pluvial), groundwater and ordinary watercourses (fluvial) and of flood risk management and mitigation measures.

Table 6: Welsh Governments National Strategy Objectives for Flood and Coastal Erosion Risk Management in Wales.

The detailed objectives are the backbone of the strategy, providing the direction for the strategy and identifying what the end position would be after its implementation. Given that the SEA is required to consider the significant environmental effects of the implementation of the strategy, and that the detailed objectives set out what is being sought to be achieved through implementing the strategy, the detailed objectives are the appropriate vehicle for the SEA assessment, i.e. the detailed objectives will be assessed against the relevant assessment tests to identify and consider any significant effects.

Whilst the detailed objectives set out the anticipated end product of the implementation of the LFRMS, they do not set out how the end product is to be delivered. It should be noted that the LFRMS is meant to be a broad overarching strategy addressing flood risk, which will be supplemented by Local Flood Plans that will provide detailed actions for addressing flood risk on the ground. As such in setting out the detailed objectives the LFRMS has met its requirements for setting the framework against which detailed proposals can be developed. From a SEA perspective the assessment of the detailed objectives would be an assessment of the end position, which would provide a very strategic view of the effects of the implementation of the LFRMS. Such an assessment would raise the question of whether further SEA would need to be carried out on the Local Flood Plans as the detailed actions and their implications have not been assessed.

The Caerphilly LFRMS, however, has gone further in its approach by identifying measures, which are the types of action that can be undertaken to deliver the detailed

objectives. The LFRMS identifies 34 measures, which have been aligned to the specific detailed objective that they will contribute towards delivering. A more detailed outline of these measures can be viewed in Appendix B – Our Flood Measures in detail of the LFRMS. In aligning the measures to the detailed objectives, it becomes clear how the LFRMS will deliver the anticipated outcomes outlined in the detailed objectives. It also provides a more comprehensive framework for the SEA to assess, which will make the SEA more robust and is likely to remove the need for assessment at the Local Flood Plan level. Consequently, in assessing the detailed objectives, the assessments have considered the likely significant effects of both the outcomes set out in the detailed objectives and the measures which contribute to their delivery.

The approach taken to assessing the LFRMS was to assess each of the 9 detailed objectives in turn to identify their significant impacts. Each of these assessments are considered below, with the summary of the objective findings. It should be noted, however, that the role of the SEA is to consider the effects at a strategic level and the results for any specific detailed objective, even if they are negative, should not be considered in isolation.

7 Assessment of LFRMS Objectives

A variety of measures were developed under each of the LFRMS objectives. The aim of the measures are to help CCBC to deliver the LFRMS objectives, by providing more detailed approaches and tasks to be undertaken. Each of the measures were assessed against the SEA Framework. 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.

However, these two measures are not realistic and will have significant negative effects. Therefore, these measures were not taken forward.

7.1 Assessment of Objectives

There are 9 Objectives presented within CCBCs LFRMS. These were assessed against the SEA Objectives/Topics. The assessment criteria and key used are shown below:

++	Significant positive effect
+	Minor positive effect
0	Neutral or no effect
	Moderate negative effect
	Significant negative effect

7.1.1 Local Strategy Objective 1- Reduce the risk to and impact on people and communities from flooding.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
+	++	++	+	++	+	0	+	+

Summary

This objective has a significant positive effect on Population, Human Health, and Water as it seeks to reduce the threat. The flooding aspect has no tangible link to Landscape quality, and this objective also has minor positive effects on the other SEA objectives/themes.

7.1.2 Local Strategy Objective 2- Ensure that local communities are aware of and understand local flood risk and are suitably equipped, empowered, and enabled to take timely actions to prepare for, be resilient against and recover from flooding.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
0	++	++	0	+	+	0	+	+

Summary

This objective has a significant positive effect on Population and Human Health as it seeks to reduce the threat. The resilient and understanding aspect has no tangible link to Biodiversity, Soil, and Landscape and this objective also has minor positive effects on the other SEA objectives/themes.

7.1.3 Local Strategy Objective 3- Reduce disruption to critical infrastructure or prepare plans to allow operations to be maintained.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
0	++	+	0	+	+	0	+	++

Summary

This objective has a significant positive effect on Population and Material Assets as it seeks to reduce the threat. The disruption aspect has no tangible links to Biodiversity, Soil and Landscape and this objective also has minor positive effects on the other SEA objectives/topics.

7.1.4 Local Strategy Objective 4- Enable national, regional, and local designated sites to be protected against or resilient to flooding and enhance these areas where possible.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
++	+	+	++	+	+	++	+	0

Summary

This objective has a significant positive effect on Biodiversity, Soil and Landscape as it seeks to protect and enhance against the threat. The protection and enhancement aspect has no tangible link to Material Assets and this objective also has minor positive effects on the other SEA objectives/topics.

- 7.1.5 Local Strategy Objective 5- Ensure that investment is targeted towards those areas most at risk with due consideration of socio-economic factors.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
+	++	++	0	+	+	+	+	+

Summary

This objective has a significant positive effect on Population and Human Health as it reduces the risk. The socio-economic aspect has no tangible links to Soil and this objective also has minor positive effects on the other SEA objectives/topics.

- 7.1.6 Local Strategy Objective 6- Ensuring that interventions are designed, constructed, and maintained sustainably with due consideration of whole life costs, embedded carbon (energy) and scarce resources and are compliant with and complimentary to the Water Framework Directive.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
++	++	++	+	+	+	+	0	0

Summary

This objective has significant positive effects on Biodiversity, Population and Human Health as it reduces the risk through SD and the SMNR. The intervention aspect has no tangible link to Cultural Heritage and Material Assets and this objective also has minor positive effects on the other SEA objectives/topics.

- 7.1.7 Local Strategy Objective 7- Support the delivery of Objectives under other environmental and well-being legislation such as The Environment (Wales) Act 2016 and The Well-Being of Future Generations Act.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
++	++	++	++	++	++	++	+	+

Summary

This objective has a significant positive effect on Biodiversity, Population, Human Health, Soil, Water, Climate Change and Landscape as it reduces the risk through Natural Flood Management (NFM), Nature Based Solutions (NBS) and SUDS whilst contributing to well-being goals through the Sustainable Management of Natural Resources. This objective also has minor positive effects on the other SEA objectives/topics. Therefore, this objective has positive effects on all of the SEA objectives/topics.

- 7.1.8 Local Strategy Objective 8 - Work collaboratively to ensure that the Local Flood Risk Management Strategy and Plan (LFRMSP) complements other Regional and Local strategies and plans i.e., River Rhymney restoration Plan (NRW), Local Development Plan, Well-being plan, etc.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
++	+	++	+	++	++	+	0	0

Summary

This objective has a significant positive effect on Biodiversity, Human Health, Water and Climate Change as it reduces the risk through collaborative working. There is no tangible link to Cultural Heritage and Material Assets and this objective also has minor positive effects on the other SEA objectives/topics.

- 7.1.9 Local Strategy Objective 9- Continue to develop and enhance Caerphilly County Borough Council's knowledge and understanding of local flood risk taking into consideration surface water (pluvial), groundwater and ordinary watercourses (fluvial) and of flood risk management and mitigation measures.

Biodiversity	Population	Human Health	Soil	Water	Climate Change	Landscape	Cultural Heritage	Material Assets
++	+	+	++	++	+	+	+	+

Summary

This objective has a significant effect on Biodiversity, Soil and Water as it reduces the risk. This objective also has minor positive effects on the other SEA objectives/topics. This objective has positive effects on all SEA objectives/topics.

8 Proposed Monitoring

Upon the finalisation and adoption of the draft LFRMS, Article 10 (1) of the Strategic Environmental Assessment requires the significant environmental effects to be monitored. Monitoring the negative effects of implementing the LFRMS is an essential ongoing element of the SEA process. Monitoring helps to ensure that the identified SEA objectives are being achieved, allows early identification of unforeseen adverse effects and this appropriate action can be taken. Monitoring will be an important requirement to measure performance and ensure that the LFRMS is being successfully implemented.

This monitoring will be incorporated within the 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.

Whilst using the existing monitoring measures will give an indication of wider environmental trends, it is unlikely that these measures will directly pick up the effects of the Local Strategy policies due to the impact of other influences. Nevertheless, it is reasonable to monitor environmental outcomes to determine whether changes to the strategy are required to further reduce conflicts or make a greater contribution to the achievement of the environmental objectives. 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 monitoring indicators have been suggested, which are listed in Table 7 below, for monitoring the effects of the LFRMS. This monitoring will be incorporated within the annual action plans that will supplement the LFRMS.

Monitoring Proposals - 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 defence schemes implemented
Number of SUDS schemes implemented
Number and severity of flooding incidents and their source
Number of flood events leading to transport disruption
Number of awareness raising events and activities undertaken
Number of flood related public enquiries
Number of pollution incidents following flood events
Number and severity of flooding incidents and their source
Number of flood related injuries and fatalities
Number of awareness raising events and activities
Number of Positive or Negative impacts on statutory and non-statutory ecological sites as a result of flooding
Number of flood incidents that have resulted in the loss of protected or Section 7 species
Area of LBAP habitat damaged or brought into less favourable condition through flooding
Number and species of trees planted
Number and size of woodland planted
Number and size of wetlands created
Areas and type of habitat created or lost as a result of Sustainable Drainage Systems (SUDS) and flood defence works
Populations of priority species lost or increased through flood defence works
Achievement of Biodiversity Action Plan targets
Number of blue and green environments created
Chemical and ecological condition of rivers and other water bodies
Number of habitat enhancement and/or compensation arising out of LFRMS
Number of landscape areas considered at risk from flooding
Positive or negative visual impact of flood defence schemes with areas of landscape quality or significance
Number of listed buildings at risk of flooding events
Number of flood defences/strategies implemented to protect listed buildings
Number of scheduled ancient monuments at risk of flooding events
Number of flood defence/strategies implemented to protect scheduled ancient monuments
Number of conservation areas at risk of flooding events

Number of flood defence/strategies implemented to protect scheduled ancient monuments
Number of complaints
Area/number of recreational and amenity facilities effected by flooding incidents
Number and severity of incidents leading to the disruption or damage to transport infrastructure
Number and severity of incidents leading to disruption discharge to service provision
Number of waste, power, and telecommunication assets at risk of flooding
Number of educational activities (exhibitions, workshops, leaflets, questionnaires, advertising) undertaken
Number of critical services at risk of flooding
Area of agricultural land at risk of flooding
Area of agricultural land lost due to the need for flood defence
Maintenance or enhancement of existing surface water and groundwater regimes

Table 7: Proposed Monitoring Proposals

9 Next Stage

The SEA 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, SEA and HRA, with the statutory consultees, stakeholders and the public and making any necessary amendments and updates to the documents. Stage E ‘monitoring’ will be carried out annually by CCBC following the adoption of the LFRMS.

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 findings of the consultation responses will be taken into account in the decision-making process and documented.

Any significant alterations to the strategy as a result of the consultation in Stage D will be assessed in terms of their environmental implications and influence on the revision of the strategy. The Final SEA report will need to be amended as necessary to reflect any changes. Information in the SEA report and responses to the consultation will be taken into account during the preparation of the strategy before it is adopted.

10 Conclusion

The SEA undertaken for the Caerphilly LFRMS has helped ensure that those objectives, measures, and actions with significant negative effects that could not be mitigated for were rejected and not taken forward into the LFRMS. The process also helped to refine the objectives and measures to maximise beneficial effects. Due to the nature of the LFRMS the objectives, measures, and the strategy itself, have positive effects. The main positive effects identified were flood risk reduction resulting in the protection of people, human health, 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 will be mitigated through best site practices, legislation, and the planning process.

Glossary

CCB	Caerphilly County Borough
CCBC	Caerphilly County Borough Council
CSO's	Combined Sewer Overflows
FRMP	Flood Risk Management Plan
HRA	Habitat Regulations Assessment
LBAP	Local Biodiversity Action Plan
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve
LSOAs	Lower Super Output Areas
NBS	Nature Based Solutions
NFM	Natural Flood Management
NHS	National Health Service
NNR	National Nature Reserve
NRW	Natural Resources Wales
RMA	Risk Management Authorities
SAC	Special Area of Conservation
SD	Sustainable Development
SEA	Strategic Environmental Assessment
SINC	Site Important for Nature Conservation
SMNR	Sustainable Management of Natural Resources
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Urban Drainage Systems
WFD	Water Framework Directive
WIMD	Welsh Index of Multiple Deprivation