

Annex G: Water Framework Directive

This strategy was published under Cumbria County Council's administration as the single Lead Local Flood Authority in Cumbria prior to 1 April 2023.

Following the disaggregation of the former County Council as part of the Local Government Reorganisation in April 2023, Westmorland and Furness Council and Cumberland Council became the new Lead Local Flood Authorities in Cumbria. The contents of this strategy contain elements relevant to both new Authorities.

Annex G Contains the Water Framework Directive, which aims to understand how water bodies are managed within Europe.

Whilst some of the content of this Annex remain relevant, transitional arrangements are in place as a new Cumbria Flood and Coastal Erosion Risk Management Partnership is developed. This Annex will be updated once new partnership arrangements have been finalised.

The 2022 Strategy is due to be updated in 2027, at which time the content relevant to Cumberland Council will be removed.

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1. Introduction

1.1 Overview

This document contains a **Water Framework Directive (WFD) assessment** of the **Draft Cumbria Local Flood Risk Management Strategy (LFRMS)**.

The European Union (EU) Council Directive 2000/60/EC '*establishing a framework for the Community action of the field of water policy*' is designed to improve and integrate the way bodies of water are managed throughout Europe (EC, 2000). It is commonly known as the **Water Framework Directive (WFD)**. The WFD was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The aim of the WFD is for all inland waters in the EU to be in 'good' condition by 2015 (EC, 2000).

1.2 Purpose of a Local Flood Risk Management Strategy

The Flood and Water Management Act (FWMA) 2010 (UK Gov, 2010) places a responsibility upon Local Authorities, to develop, maintain, apply and monitor a strategy for local flood risk management (Local Strategy). Under the FWMA Local Authorities are designated as Lead Local Flood Authorities (LLFAs) (UK Gov, 2010).

The Cumbria LFRMS will form the framework within which communities have a greater say in local flood risk management decisions. In combination with the National Strategy, the Local Strategy will encourage more effective risk management by enabling people, communities, business and the public sector to work together to:

- Ensure there is a clear understanding of the risks of flooding and erosion, nationally and locally, so that investment in risk management can be prioritised more effectively;
- Set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the remaining, residual risk;
- Encourage innovative management of flood and coastal erosion risks, taking account of the needs of communities and the environment;
- Form links between the local flood risk management strategy and local spatial planning;
- Ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings; and
- Help communities to recover more quickly and effectively after incidents.

A "local flood risk" is defined within the Flood and Water Management Act as a flood risk from:

- Surface runoff;
- Groundwater; and
- Ordinary watercourses – this includes any lake, pond or other area of water that flows into an ordinary watercourse.

Any Ordinary Watercourse is defined by the Act as a watercourse that does not form part of a main river, including but not limited to, all stream, ditches, culverts and ponds (UK Gov, 2010). Main rivers

can be identified on a main river map, and like the sea and reservoirs, are not classed as local risk and therefore remain the responsibility of the Environment Agency.

Flood risk management responsibilities lie with a range of authorities covering the wider scope of flooding, including river and coastal flooding; roles and responsibilities will be defined in the LFRMS. Close partnership working to share these interests will be central to the strategy.

1.3 Requirement for a Water Framework Directive (WFD) Assessment

The Water Framework Directive 2000 (EC, 2000) requires all natural water bodies to achieve both good chemical status (GCS) and good ecological status (GES). River Basin Management Plans (RBMPs) outline the actions required to enable natural water bodies to achieve GES (DEFRA, 2014). Artificial water bodies (AWBs) and heavily modified water bodies (HMWBs) may be prevented from reaching GES due to the modifications necessary to maintain their function. They are, however, required to achieve good ecological potential (GEP), through implementation of a series of mitigation measures outlined in the applicable RBMP (DEFRA, 2014).

New activities and schemes that affect the water environment may adversely impact biological, hydromorphological, physico-chemical and/or chemical quality elements (WFD quality elements), leading to deterioration in water body status (DEFRA, 2014). They may also render proposed improvement measures ineffective, leading to the water body failing to meet its WFD objectives for GES/GEP. Under the WFD, activities must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by invalidating improvement measures (EC, 2000).

The overall ecological status of a water body is primarily based on consideration of its biological quality elements and determined by the lowest scoring of these (DEFRA, 2014). These biological elements are, however, in turn supported by the physico-chemical and hydromorphological quality elements. Assessment of hydromorphological quality is not explicitly required for a water body to achieve moderate ecological status or lower. However, in order to achieve the overall WFD aim of GES or higher, hydromorphological quality must be considered within the classification assessment (EC, 2000).

In addition, in order to achieve the overall WFD aim of GES, a water body must pass a separate chemical status assessment, relating to pass/fail checks on the concentrations of various identified priority/dangerous substances (EC, 2000).

The requirements of the Water Framework Directive (WFD) and actions to achieve GES need to be taken into account in the planning of all new activities, plans or strategies that could affect the water environment (EC, 2000). Many of the aims of the WFD are relevant to the preparation of the LFRMS and the LFRMS has the potential to help deliver some of the actions identified in the RBMPs. The Environment Agency (the competent authority in England and Wales responsible for delivering the Directive) has recommended that all Local Flood Risk Management Strategies (LFRMSs) undergo an assessment to take account of the requirements of the WFD and ensure that the LFRMS does not conflict with the relevant local River Basin Management Plan (RBMP) or undermine the aims of the WFD.

The aims of this document are to:

- Collate information on the draft Cumbria LFRMS and relevant water bodies,
- Provide a baseline understanding of the water bodies in the study area, within the context of the WFD;
- Provide an assessment of the potential for the draft Cumbria LFRMS to cause deterioration in the WFD status of any water body directly or indirectly affected by the strategy;
- Provide an assessment of the potential impacts on water body improvement measures and ability to meet WFD objectives;
- Identify the need for actions to remove or mitigate any potential impacts, if required.

1.4 Summary of the key WFD objectives

WFD Objectives

The Water Framework Directive (WFD) is a European Directive which introduces a new strategic planning process for the purposes of managing, protecting and improving the water environment (EC, 2000). The main objectives are to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological conditions of waters.
- Aim to achieve at least 'Good Status' for all waters by 2015 (2021 or 2027) where fully justified within an extended deadline under Article 4.4.
- Promote sustainable use of water.
- Conserve habitats and species that depend directly on water.
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Help reduce the effects of floods and droughts.

The Environment Agency is the Government's lead agency for implementing the WFD and already monitors, advises and manages many aspects of the water environment through regulating discharges, abstractions and processing environmental permits and licenses (EC, 2000). The Environment Agency is committed to implementing environmental improvements by reducing the physical impacts of flood risk management activities (within artificial or heavily modified water bodies) (DEFRA, 2014).

WFD Classification

The WFD classification for a defined waterbody is produced by assessment of a wide variety of different 'elements' which includes (EC, 2000):

- 'Biological elements' such as fish, invertebrates, phytobenthos (which includes plants, macro-algae, phytoplankton).
- 'Supporting elements' that include chemical measurements such as ammonia, dissolved oxygen, pH, phosphate, copper, zinc and temperature; and

- ‘Supporting conditions’ (sometimes referred to as hydromorphology) that assess the physical attributes of the waterbody such as ‘quantity and dynamics of flow’ and ‘morphology’.

WFD Compliance

There are four key objectives against which the impacts of proposed works on a waterbody need to be assessed to determine compliance with the overarching objectives of the WFD (EC, 2000):

- **Objective 1:** The proposed scheme does not cause deterioration in the status of the biological elements of the waterbody.
- **Objective 2:** The proposed scheme does not compromise the ability of the waterbody to meet its WFD status objectives;
- **Objective 3:** The proposed scheme does not cause a permanent exclusion or compromise achieving the WFD objectives in other bodies of water within the same RBD; and
- **Objective 4:** The proposed scheme contributes to the delivery of the WFD objectives.

The first three obligations must be met to avoid infraction of the WFD. The delivery of the fourth objective is central to the Environment Agency’s implementation of the WFD, where it can be supported through its operational activities. If it is considered that the scheme is likely to cause deterioration in water body status or prevent a water body from meeting its ecological objectives, then an assessment would be made against the conditions listed in Article 4.7 of the WFD. Article 4.7 can be invoked if; ‘new modifications’ are of overriding public interest and/or the environmental and social benefits of achieving the WFD objectives are outweighed by the benefits of the new modifications to human health, safety and sustainable development; there are no significantly better environmental options that are technically feasible or not disproportionately costly; and all practicable steps for mitigation have been taken.

Artificial or Heavily Modified Water Bodies

These water bodies cannot achieve GES due to substantial modification, e.g. for flood risk management. Instead, they are required to reach GEP. The presence or absence of a set list of mitigation measures is used as a proxy for biological indicators. If all mitigation measures have been taken, the water body is assigned a preliminary tag of ‘GEP or better’. Good chemical status is a prerequisite for GEP. ‘Moderate or worse’ is used if some mitigation measures are yet to be implemented. HMWBs may therefore have an element rated ‘poor’ but not be considered ‘poor’ in overall status.

Hydromorphology

Hydromorphology is a term used in the WFD to describe the processes operating within, and the physical form of, a water body. The term encompasses both hydrological and geomorphological characteristics that, in combination, help support a healthy ecology. Hydromorphology is a supporting condition unless a water body is classified as being of ‘high’ ecological status. In these cases, hydromorphological elements contribute towards status classification.

1.5 Other legislation

Where sites are protected under other European Legislation, such as the Habitats Directive (EC, 1992) or the Birds Directive (EC, 1979), the WFD also sets standards to ensure compliance with any relevant objectives for these sites. For sites where more than one quality standard applies, compliance with the stricter standard is required.

The designated conservation sites which lie within the LFRMS area include (not including the 278 Sites of Special Scientific Interest (SSSI) in Cumbria):

Figure 1: Designated conservation sites in Cumbria

Nature Conservation Sites:	Designation:	Nature Conservation Sites:	Designation:
Border Mires, Kielder-Butterburn	SAC	North Pennine Dales Meadows	SAC
Clints Quarry	SAC	Helbeck & Swindale Woods	SAC
Cumbrian Marsh Fritillary Site	SAC	South Solway Mosses	SAC
Asby Complex	SAC	Tarn Moss	SAC
Bolton Fell Moss	SAC	River Derwent & Bassenthwaite Lake	SAC
Borrowdale Woodland Complex	SAC	River Eden	SAC
Lake District High Fells	SAC	Tyne & Nent	SAC
Naddle Forest	SAC	Ullswater Oakwoods	SAC
River Kent	SAC	Walton Moss	SAC
Roudsea Wood & Mosses	SAC	Wast Water	SAC
Moor House – Upper Teasdale	SAC	Morecambe Bay	SAC
Witherslack Mosses	SAC	Morecambe Bay Pavements	SAC
River Ehen	SAC	Solway Firth	SAC
Yewbarrow Woods	SAC	Drigg Coast	SAC
Duddon Estuary	SPA	Duddon Mosses	SAC
Morecambe Bay	SPA	Subberthwaite, Blawith & Torver Low Commons	SAC
Upper Solway Flats & Marshes	SPA	North Pennine Moors	SPA
Irthinghead Mires	RAMSAR	Esthwaite Water	RAMSAR
Duddon Estuary	RAMSAR	Morecambe Bay	RAMSAR
Upper Solway Flats and Marshes	RAMSAR		

2. The Study Area

2.1 Overview of the study area

The county of Cumbria consists of six districts (Allerdale, Barrow-in-Furness, Carlisle, Copeland, Eden and South Lakeland), and in 2020 had a population of 499,781. The county's population is largely rural and sparsely populated. It has the second lowest population density among English counties at 73.4 people per km² and has only five towns with a population of over 20,000 (Carlisle, Kendal, Workington, Whitehaven and Barrow-in-Furness).

Cumbria contains the Lake District National Park (LDNP), considered one of England's most outstanding areas of natural beauty. Much of Cumbria is mountainous, and it contains every peak in England over 3,000 feet (910m) above sea level, with Scafell Pike at 3,209 feet (978m) being the highest point of England. Cumbria's largest settlement and only city is Carlisle, in the north of the county and with a population of 108,400 in 2021. Barrow-in-Furness is the largest town in Cumbria and has a significantly smaller population of 67,648.

2.2 Timescale

The Cumbria LFRMS that is being developed is the first such plan to address local sources of flooding in a strategic manner. The legislation that requires the LFRMS is new and is driven by the Flood & Water Management Act 2010.

The Cumbria LFRMS will cover a six year period, although it will look further ahead than this, considering short term, medium term and long term issues over 100 years. This is a common timeframe over which to consider flood and erosion risk management and changes that may take place as a result of climate change.

2.3 Objectives of the Cumbria LFRMS

The purpose of the Cumbria LFRMS is to identify the extent and sources of flood risk across the county and outline the approach to managing risks. The overarching aim of the LFRMS is to better understand, communicate and manage the risks of flooding in Cumbria, through viable, sustainable and coordinated approaches, for the benefit of people, property, land and the environment, both now and in the future.

The Cumbria LFRMS policy Objectives are:

1. Reduction in flood risk to the people of Cumbria.
2. Increased knowledge and awareness of the factors affecting flood risk across Cumbria.
3. Ensure that flood risk management is integrated within the planning process in Cumbria
4. Facilitate close partnership working between all risk management authorities
5. Improve Community Resilience through awareness of flood risk

2.4 WFD Preliminary Screening

Cumbria is within the North West and Solway Tweed River Basin Management Plans (RBMP) and next to the Northumbria RBMP. The main river catchments within Cumbria are the River Derwent, River Eden, South West Lakes, Rivers Kent and Leven, River Lune, River Tess and the River Tyne. 624 km of Cumbria's rivers have been designated as Sites of Special Scientific Interest (SSSI). This is around half the total length of river SSSI designated nationally. The four rivers of SSSI in Cumbria are also Special Areas of Conservation (SAC) designated under the EU Habitats Directive.

Figure 3 shows the named water bodies wholly or partially within Cumbria that could be affected by the Cumbria LFRMS.

Figure 3: Named water bodies wholly or partially within the Cumbria LFRMS area

Lakes, Tarns and Reservoirs			
Alcock Tarn	Devoke Water	Lanty's Tarn	Siney Tarn
Angle Tarn	Dock Tarn	Levers Water	Skeggles Water
Bassenthwaite Lake	Easedale Tarn	Lingmoor Tarn	Small Water
Beacon Tarn	Elter Water	Little Langdale Tarn	Sow How Tarn
Bigland Tarn	Ennerdale Water	Little Tarn	Sprinkling Tarn
Blackbeck Tarn	Esthwaite Water	Littlewater Tarn	Stickle Tarn
Bleaberry Tarn	Floutern Tarn	Loughrigg Tarn	Styhead Tarn
Blea Tarn	Foxes Tarn	Loweswater	Tarn at Leaves
Blea Water	Goat's Water	Low Tarn	Tarn Hows
Blelham Tarn	Grasmere	Low Water	Tewet Tarn
Blind Tarn	Greendale Tarn	Meadley Reservoir	Thirlmere
Boretree Tarn	Grisedale Tarn	Moss Eccles Tarn	Three Dubs Tarn
Bowscale Tarn	Gurnal Dubs	Over Water	Three Tarns
Brothers Water	Harrop Tarn	Parkgate Tarn	Tosh Tarn
Burnmoor Tarn	Haweswater Reservoir	Potter Tarn	Ullswater
Buttermere	Hayeswater	Red Tarn (Helvellyn)	Wast Water
Chapelhouse Reservoir	Heights Tarn	Red Tarn (Langdale)	Watendlath Tarn
Codale Tarn	Helton Tarn	Rydal Water	Wet Sleddale Reservoir
Cogra Moss	High Dam Tarn	Scales Tarn	Windermere
Coniston Water	High House Tarn	Schoolknott Tarn	Wise Een Tarn
Crummock Water	Innominate Tarn	Scoat Tarn	Woodhow Tarn
Dalehead Tarn	Kentmere Reservoir	Seathwaite Tarn	Yew Tree Tarn
Derwent Water	Knipe Tarn	Simpson Ground Reservoir	

Named Rivers, Becks, Streams and Ghylls			
Angletarn Beck	Dale Beck	Holegill Beck	River Mite
Appletreeworth Beck	Derwent River	Holme Beck	Rossett Gill
Ardale Beck	Dob Gill	Hopgill Beck	Rothay River
Barrow Beck	Dovedale Beck	Kent River Kendal	Rowantree Beck
Barrow Gill	Duddon River	Langstrath River	Rowantreethwaite Beck
Beck Head	Dungeon Ghyll	Leverswater Beck	Sandwick Beck
Bleng River	Eamont River	Lingcove Beck	Scandale Beck
Borrow Beck	Easedale Beck	Lingmell Beck	Scrow Beck
Brathay River	Eden River	Lingmell Gill	Short Grain Stream
Broadslack Gill	Esk River	Liza River	Smithy Beck
Caldbeck Beck	Far Tongue Gill	Loft Beck	Southerndale Beck
Calder River	Frozenfell Gill	Lune River	St. Johns Beck
Caldew River	Gasgale Gill	Mardale Beck	Stanah Gill
Carlin Gill	Gatesgarth Beck	Mill Beck	Stockghyll
Carrock Beck	Gatherstone Beck	Mill Gill	Stonycroft Gill
Cawdale Beck	Goldrill Beck	Mosedale Beck	Strands Beck
Charleton Gill	Grains Gill	Nannycatch Beck	Styhead Gill
Church Beck	Grasmere Greenhead Gill	Newlands Beck	Swindale Valley River
Cocker River	Great Langdale Beck	Oxendale Beck	Tilberthwaite Ghyll
Coombe Gill	Green Moor Beck	Park Beck	Torver Beck
Countess Beck Wasdale	Greenburn Beck	Piers Gill	Whelpo Beck
Crake River	Greta River	Rake Beck	Whillans Beck
Crookdale Beck	Groove Beck	Redacre Ghyll	Whitecombe Beck
Crosby Gill	Hagg Gill	Rigg Beck	
Crowdundle Beck	High Cup Gill	River Bela	

Transitional		
Kent Channel	Duddon Channel	Channel of the River Eden

Coastal
Irish Sea

2.5 Water bodies and how they are classified

In the context of the Water Framework Directive, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile (DEFRA, 2014). For the purposes of river basin management, these waters are divided into units called water bodies.

The monitoring scheme assesses impacts on the (DEFRA, 2014):

- Quantity of water;
- Condition of the habitats within the water and at its edge;
- Plants and animals living within the water environment.

The assessment methods used in the monitoring programme were developed jointly with the rest of the UK. A number were also checked against those used by other countries across Europe. All are based on environmental quality criteria set out in European legislation. As a result, the water environment of the North West, Solway Tweed and Northumbria River Basin Districts has been classified to the same standards as the rest of the UK and Europe.

2.6 Water quality data for the River Basin Districts

North-West River Basin District

There are 749 water bodies in the North West River Basin District; 731 are surface water bodies and 18 are groundwaters. In 2015 DEFRA concluded that for all water categories 22% of water bodies were at a good, or better, overall status. By 2021, it was estimated that this figure would rise to 26%.

Solway Tweed River Basin District

There are 21 surface water bodies in the Solway Tweed River Basin District that are in a bad condition and an additional 126 in a poor condition as classified in 2014. Only 16 water bodies are classified as having a high quality and 239 are at a good quality. The River Basin Management Plan has also identified that 46% of water bodies and 36% of protected areas in the district are not in good condition.

Northumbria River Basin District

It has been identified within the Northumbria River Basin District that of the 274 water bodies, that 75 are in a bad or poor condition in terms of their ecological status and potential in 2015. This is in contrast to 100 water bodies being at either a good or high status during the same examination period. In terms of chemical status, 345 water bodies were good and 29 were classified as a fail in 2015.

Figure 4: River Basin Districts within Cumbria County



WFD Assessment

3.1 Introduction

There is no specific guidance that relates to how a WFD assessment for a Local Flood Risk Management Strategy should be carried out. This assessment has, therefore, been developed based on the knowledge and understanding of the WFD assessment process as applied to policy decisions. For the purposes of large-scale strategies the consideration of the requirements of the WFD when setting and selecting policies of necessity is carried out at a high level, while taking account of the fact that the strategy sets the framework for future delivery of smaller-scale plans or schemes.

3.2 WFD Objectives

The WFD sets out in Article 4 the default environmental objectives that we should aim to meet for all surface waters and ground waters (EC, 2000). These objectives are:

In relation to surface waters:

- Prevent deterioration in the status of water bodies;
- By 2015 achieve good ecological and chemical status in all water bodies other than those which are artificial or heavily modified;
- By 2015 achieve good ecological potential and surface water chemical status for artificial and heavily modified water bodies;
- By 2015, achieve the objectives and comply with the standards for protected areas;
- Reduce pollution from priority substances and cease discharges, emissions and losses of priority hazardous substances.

In relation to ground waters:

- Prevent deterioration in status;
- Take all measures necessary to prevent the input of hazardous substances into groundwater and to limit the input of other pollutants to groundwater;
- By 2015 achieve good quantitative and chemical status;
- Reverse any significant and sustained upward trend in the concentration of pollutants resulting from human activities;
- By 2015, comply with objectives and standards for protected areas.

These objectives have been used to develop objectives against which the Cumbria LFRMS objectives, measures and actions will be tested as part of the WFD assessment (see [Figure 5](#)).

Figure 5: WFD assessment objectives (EC, 2000)

Objective	Description
WFD 1	Prevent deterioration in status
WFD 2	Achieve Good Ecological Status / Good Ecological Potential (surface waters)
WFD 3	Achieve Good Chemical Status (surface waters and groundwater)
WFD 4	Achieve Good quantitative status (groundwater)
WFD 5	Comply with the standards for protected areas
WFD 6	Reduce pollution of surface waters and groundwater

3.3 Testing the LFRMS against WFD Objectives

An initial high level assessment of the Cumbria LFRMS objectives against the WFD objectives was carried out to determine if the LFRMS objectives are compatible with the WFD aims. Three levels of effort in implementing the objectives/sub-objectives were considered:

- **Do-Nothing** – Stop any related existing actions and/or expenditure. This provides a baseline position against which to measure any benefit that an increase in effort provides
- **Business as usual (BAU)** – This considers a continuation of current actions in the future. Levels of expenditure would be retained with the chance that the flood risk may increase in the future due to further expansion of the local area or climate change.
- **Do-more** – These measures identify new actions that the Council could or will have to undertake due to new legislative duties. The increased level of effort could vary depending on the type of action measure being considered, and the considered benefit of providing the additional resource.

The results of the assessment are set out in **Figure 6**. At this high level, the assessment provides only a very general indication in relation to the likely possible effects on WFD objectives. Several of the objectives could result in either positive or negative effects on the WFD objectives, depending on the way in which the objectives are delivered. The assessment does, however, clearly show that even at this high level of assessment a ‘do nothing’ option in relation to developing policies for effective land management and development control is not compatible with all of the WFD objectives and that this option has the potential to result in adverse effects to all WFD objectives.

It is important to note that this is only a high level assessment and that when individual measures/actions are assessed the outcome could be different to this high level assessment.

Figure 6: High level WFD assessment

		WFD Objective					
LFRM Objective	Level of implementation	WFD 1	WFD 2	WFD 3	WFD 4	WFD 5	WFD 6
1 – Management of flood risk to the people of Cumbria	Do nothing						
	Business as usual						
	Do more						
2 – Increased knowledge and awareness of the factors affecting flood risk across Cumbria	Do nothing						
	Business as usual						
	Do more						
3 – Ensure that flood risk management is integrated within the planning process in Cumbria.	Do nothing						
	Business as usual						
	Do more						
4 – Facilitate close partnership working between all risk management authorities	Do nothing						
	Business as usual						
	Do more						

5 – Improve community resilience through awareness of flood risk	Do nothing						
	Business as usual						
	Do more						

Status	Symbol
Conflict with WFD Objectives – action is likely to have a negative effect on the WFD Objective	
May / may not be compatible with WFD Objective – the action may have a positive or negative effect on the WFD Objective depending on implementation.	
Compatible with WFD Objectives – action is likely to have a positive effect on the WFD Objective	
No effect	

3.4 Pressures on the water environment

The North West, Solway Tweed and Northumbria River Basin Management Plans identify several pressures affecting the water environment within Cumbria, as set out in **Figure 7**.

Figure 7: Pressures on the water environment

WFD pressures:	Specific pressure:
Point source pollution	Organic pollution – including ammonia and biochemical oxygen demand
	Chemicals – including priority hazard substances, priority substances, specific pollutants and chlorinated solvents
	Other pollutants – faecal indicator organisms and metals
	Acidification
	Nutrients – nitrates and phosphorous
Diffuse point pollution	Organic pollution – including ammonia and biochemical oxygen demand
	Chemicals – including priority hazard substances, priority substances, specific pollutants and chlorinated solvents
	Other pollutants – faecal indicator organisms and metals
	Acidification
	Nutrients – nitrates and phosphorous
	Oil and hydrocarbons
Other impacts on the status of water	Abstraction and other artificial flow pressures
	Physical modification – morphology
	Invasive non-native species
	Biological pressures – including fish stocking, biota removal and commercial fishing
	Urban and transport pressures / pollution
	Recreation (e.g. boating and fishing)

The WFD requires the management of risk to the environment caused by anthropogenic (manmade) pressures, not just their impacts (EC, 2000). Managing impact is 'reactive', whereas managing risk is 'proactive', requiring the ability to identify where an impact might occur (or is occurring) and prevent it from happening in the future.

A great deal is already being done to protect and improve the water environment. However, it will take more time, effort and resources to deal with the pressures that have significantly altered and damaged the environment over the last few hundred years.

The way land is managed has given rise to complex pollution issues. This diffuse pollution is a major pressure on the water environment and can come from urban areas as well as rural areas. Around 80 per cent of the North West region is classified as rural, with the majority of this being used for agriculture, principally livestock production . Further improvements are needed to farming practices to protect water quality and allow wildlife to thrive.

The North West region is highly dependent on surface water sources such as reservoirs, lakes and rivers for drinking water: accounting for around 85 per cent of the total demand . Approximately 60 per cent of the public water supply is abstracted from highly sensitive designated sites . It is therefore a challenge to maintain the water resources for people and the environment.

Measures and actions within the Cumbria LFRMS may affect these pressures, increasing or decreasing them. Any increase in pressure may contribute to a water body/water bodies not meeting their WFD target or achieving good ecological status/potential. Other measures and actions may contribute to reducing pressures and, therefore, help in the achievement of WFD targets.

Most of the measures / actions set out within the Cumbria LFRMS apply across the whole of the county area and, therefore, have the potential to affect all of the water bodies within the area covered by the LFRMS.

4 Conclusions

Through the WFD compliance assessment it has been identified that the Cumbria LFRMS has the potential to affect a vast proportion of water bodies within the county. None of the measures and actions proposed has the potential to clearly adversely affect the WFD objectives; however, they may have positive or negative impacts depending on their implementation.

In summary, this assessment concludes that implementation of the strategies policies are not expected to cause deterioration in the status of any water bodies within Cumbria or prevent them from achieving their objectives.

More detailed assessment at a project level should be carried out during the design and implementation of any schemes to ensure continued compliance with the WFD. During the assessment the following mitigation measures should be considered for inclusion in schemes arising from the Cumbria LFRMS:

- Consider the potential for incorporating environmental benefits, bioengineering and soft engineering into schemes at the design level.
- Ensure nature conservation and geomorphological issues are taken into account in the design and construction of new schemes.
- Seek to minimise the footprint of schemes.
- Seek to work with natural processes.
- Time any works to minimise disturbance to features of designated environmental sites (taking into account wintering birds and Salmon and Freshwater Fisheries Act (SAFFA) 2003)
- Ensure nature conservation measures are taken into account in the management and maintenance of new schemes.
- Seek opportunities to improve the condition of the natural environment where practical.

