



Environment
Agency

a new beginning



Somerset
Local Flood Defence Committee

Handover Document March 2005



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ENVIRONMENT AGENCY

Information Services Unit

Please return or renew this item by the due date

Due Date	



- 1 Hillfarrance during construction
- 2 Minehead Beach during sea wall construction
- 3 Committee meeting at Bridgwater December 2004. Tony Owen (Area Manager); Richard Symonds (Flood Defence Manager); Allen Cotton (Chairman); Jane Brookhouse; Hazel Prior-Sankey; Humphrey Temperley (WRFDC Chairman); Brian Livings; Alan Lovell; Ray Adlam; Roger Martin; Peter Burden; Peter Maltby.

Cover: High flow in the River Tone. Curry Moor on the left bank, Stan Moor Bank on the right

Somerset Local Flood Defence Committee

A new beginning

A new regional flood defence committee is to take over the work of the Somerset Local Flood Defence Committee (SLFDC). This booklet celebrates the Local Committee's many achievements and looks at the challenges facing its successor.

The Committee can trace its history of responsibility for the Somerset area's flood defences back to 1932. In 1989 the Somerset Local Land Drainage Committee became the Somerset Local Flood Defence Committee. The Local Land Drainage Committee had in its turn taken over duties from the Somerset River Authority on the formation of Wessex Water Authority in 1974. The 1963 Water Resources Act had led to the Somerset River Authority taking over from the Somerset River Board

in 1965. The Board had come into being in 1950 when it added fishery and pollution prevention duties to the role of the Somerset River Catchment Board formed in 1932.

A single tier of flood defence committees is being set up following the 2003 Flood and Coastal Defence Funding Review. A regional committee for Wessex - the Wessex Regional Flood Defence Committee (WRFDC) - will be responsible for Somerset and the rest of the region.

The Committee's work would not have been possible without the support of the Environment Agency's Flood Defence staff, including the Emergency Workforce (now Operations Delivery). We thank them for their efforts and urge the new committee to continue supporting their work.

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Baltmoor Wall strengthening at Athelney

Flood defence work has traditionally focused on reducing flooding by building, operating and maintaining defences. Panel 1 (page 5) highlights local policies that the SLFDC commends to the WRFDC.

The Committee has now moved from funding defences in reaction to events to a more strategic investment policy. This follows the shift to Flood Risk Management by both the Environment Agency and the Department for Environment, Food and Rural Affairs (Defra).

Flood Risk Management means that the results of flooding can be reduced by not only built defences but also:

- better flood forecasting and warning;
- emergency planning;
- land management;
- raising awareness.

These activities are detailed in this booklet.

The Committee is pursuing its new strategy by starting work soon on Catchment Flood Management Plans and revisiting Shoreline Management Plans. It is also looking at the idea of moving back banks along rivers and the coast.

Flood maps

Flood risk maps have been given to local councils so they can reflect the risk in their emergency planning and development control policies. Similar maps are on the Environment Agency's website, www.environment-agency.gov.uk.

The maps are part of a strategy to give the public better information about flood risk and provide an initial assessment of risk. The Committee supports a national modelling programme that will produce more detailed flood risk data.

Panel 1

SLFDC policies recommended to WRFDC

- Where the justification of continuing maintenance of assets is questionable an option of promoting set-back should be given positive consideration.
- The prolonging of the life of existing assets through programmed maintenance is preferable to allowing deterioration requiring asset replacement.
- The Environment Agency should not promote schemes to protect single isolated properties, but should consider contributing towards acceptable solutions promoted by the individual property owner.
- The Committee has been at the forefront of promoting the consideration of catchment-wide solutions for flood risks, and supports the Catchment Flood Management Plan approach to producing policies for the future management of flood risk.

Flood warning



Taunton Cattle Market Doppler Gauging Station installation

The Committee is overseeing a big improvement in the flood warning service. A programme to raise public awareness is helping people help themselves. It is also reducing unrealistic expectations of what the Environment Agency can do – many people think the Agency can stop flooding altogether.

The Environment Agency works with local communities in flood risk areas which ensures their needs are understood and catered for. Flood warden schemes are being set up and some are already operating.

Emergency plans

Flood emergency response plans must be kept up to date. We help other authorities review their emergency plans. Local flood warning plans have been implemented and joint practices held to test the plans so that we can work well together in a real event.



Somerset Local Flood Defence Committee

Planning guidance

Hankeridge Farm, Taunton during high flows in the River Tone

The Committee has tried to ensure that flood risk to development is minimised. It has done this by promoting the Government's guidance on development in flood risk areas, and by giving advice and help on flood defence issues. The Committee has stressed that development should not take place if it:

- creates an unacceptable flood risk that could endanger lives, damage property or mean inappropriate spending on repairs;

- creates or worsens flooding elsewhere;
- prejudices future work needed to reduce flood risk;
- harms the environment.

Natural floodplains must be kept and, where possible, restored so that flood water can be stored.

Success stories

The Committee has overseen successful working with others on development sites at Hankeridge Farm, Taunton; Portishead and Portbury Dock; Express Park, Bridgwater; and the River Axe at Uphill. There have been improvements to wildlife habitats at these sites as well as flood defence benefits.

Development pressures are increasing and the Committee is keen for the Environment Agency to be part of the growing number of exciting opportunities opening up. Negotiations are ongoing for major developments in Taunton town centre, at Norton Fitzwarren and on the River Banwell.

The Somerset drainage area

Eighteen rivers flow into the Severn Estuary along the Somerset coast. The estuary has the second highest tidal range in the world. This has a big effect on water levels in the tide-locked Somerset Levels and Moors and along the coast.

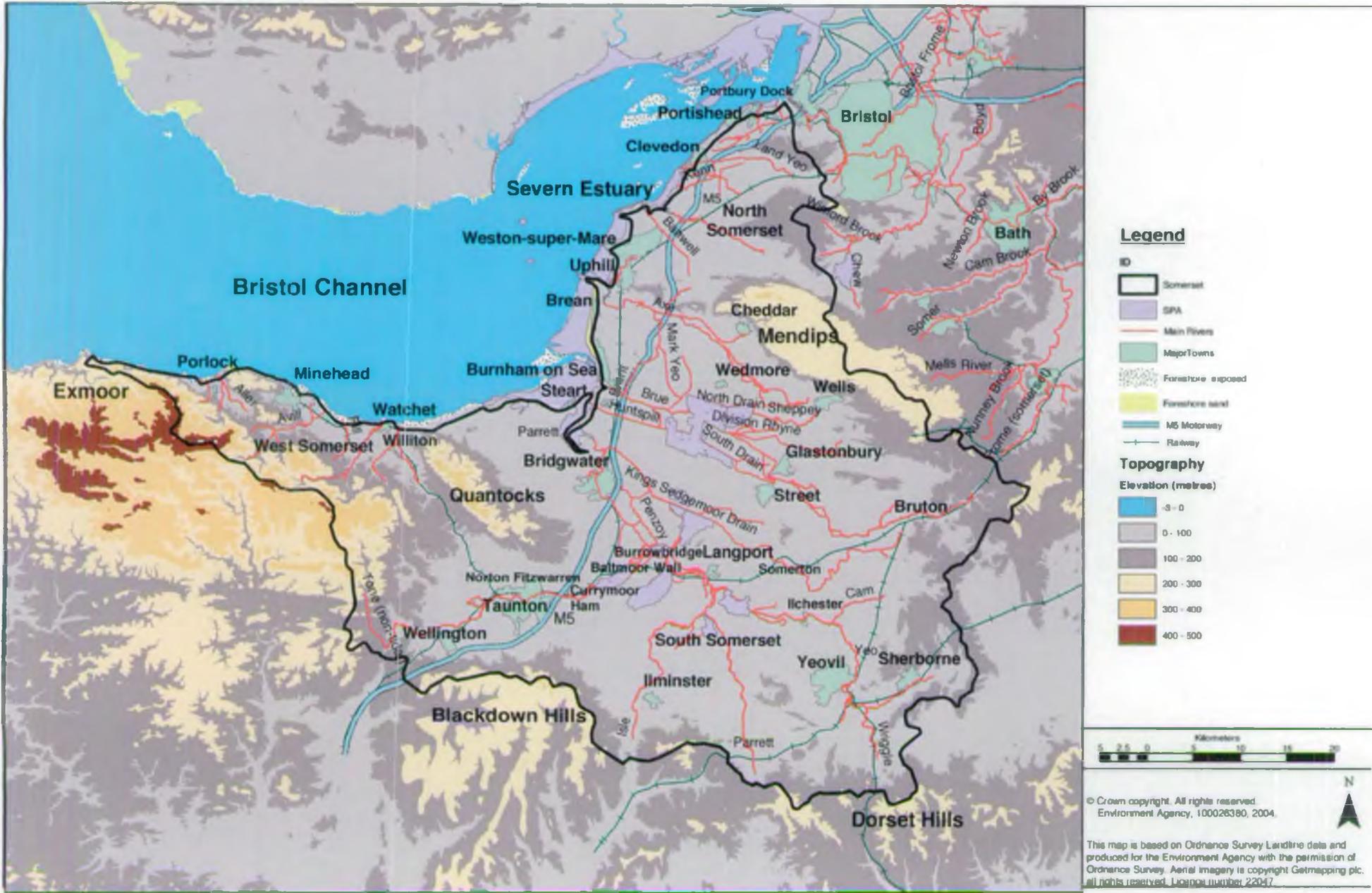
Steep streams drain the north edge of Exmoor in the west of the county. Run-off from other hilly areas – the Blackdowns, Dorset Hills, Mendips and Quantocks – flows across flat lowlands in tide-locked channels that are often embanked.

Taunton, Bridgwater, Yeovil, Glastonbury and Wells are market towns, while Minehead, Burnham, Weston-super-Mare and Clevedon are coastal resorts.

These main towns have many built flood defences. However, the Somerset Levels and Moors have been the major focus for expenditure because they are internationally-important wetlands.



Uphill Sluice construction



Map showing the boundary of the Somerset Local Flood Defence Committee

Key details

The following are key statistics about the Committee's area:

Total area	306,600 ha
Population	684,000
Area at risk of flooding	43,800 ha
Of which:	
agricultural land	26,500 ha
housing	36,823 No.
industry	49 ha
Area below sea level	635 km
Major infrastructure	
motorway	81 km
dual carriageway	34 km
'A' roads	124 km
main railway	200 km
International environmental sites (SACS, SPA, RAMSAR)	16,200 Ha
National environmental sites (NNR, SSSI, AONB, National Park, Scheduled Ancient Monuments)	25000Ha

River flood defences for which the Committee is responsible:

Watercourses (main river)	871 km
Pumping stations	21 No.
Major gates/control structures	250 No.
Raised embankments (fluvial)	784 km

Coastal and tidal flood defences for which the Committee is responsible:

Raised embankments (tidal rivers)	87km
Coastal flood defences	38 km

The Environment Agency also owns 162 bridges in the Committee's area.

The following table shows the major urban locations and their properties at risk:

Name	Total Properties	Properties in the 1% risk floodplain	Proportion (%)
Weston-super-Mare	30965	9659	31.19
Bridgwater	15742	7716	49.02
Clevedon	9298	6057	65.14
Burnham on Sea and Highbridge	7618	5298	69.55
Taunton	24021	1923	8.01
Portishead	6317	761	12.05
Minehead	5044	659	13.07
Langport	1030	335	32.52
Glastonbury	3631	218	6.00
Sherborne	4427	205	4.63
Ilchester	453	127	28.04
Watchet	1113	42	3.77
Williton and Sampford Brett	859	28	3.26
Wellington	4260	18	0.42
Yeovil	16988	12	0.07
Ilminster	1796	11	0.61

The Somerset Levels and Moors

Some 635 square kilometres of the Levels and Moors are extremely vulnerable to flooding because they are below mean high tide level.

This area was an inlet of the sea 8,000 years ago. The sea gradually receded over the next 2,000 years and was replaced by saltmarsh, fen and bog, with thick peat deposits building up.

The Abbot of Glastonbury and the Bishop of Bath and Wells were recorded in the Domesday Book as owning vast tracts of floodable land. They were the first to make large-scale river improvements and build sea embankments.

Today's land drainage system originates from the local enclosure and drainage Acts of the 18th and 19th centuries. These divided the moors into thousands of fields separated by rhynes. Most of these enclosure schemes demanded the building of high-level carriers – rivers flowing between high embankments.

Drainage boards evolved in the 19th century to remove flood water that spilled from the carriers to the moors. Then pumps started to replace gravity drainage from 1830.



Raised water level area

The Environment Agency now, in consultation with the internal drainage boards, operates and maintains 21 pumping stations and hundreds of sluices on the Levels and Moors.

The high-level carriers have large gates where they meet the estuary. These stop tides moving up the rivers, reducing the impact on flooding and keeping a fresh water habitat. The River Parrett is the only river without a tidal sluice.

The Committee's management of water levels in the carriers is vital for many reasons: managing flood risk, agriculture – through provision of irrigation and 'wet fences' – and wildlife on the moors. Sixteen moors are Sites of Special Scientific Interest (SSSIs) and 12 of these form the Special Protection Area under the European Birds Directive.

Panel 2

Issues for WRFDC consideration

The following are schemes in the SLFDC area whose feasibility will require early determination

Somerset Levels and Moors

Strategies for improving flood risk are at various stages. There is a need to reduce flood risk in the light of climate change and, by 2010, achieve 'favourable condition' at designated sites.

Parrett and Tone dredging

A programme of monitoring has one more year to run before a decision on any future programme needs to be made.

Parrett tidal sluice

In the absence of a current justification on flood risk grounds alone, the Committee has been trying to get another partnership interest to take a lead. Studies continue on the impact on the Parrett Estuary together with any resolution of Steart Peninsula options, and the sluice is still a possible future option in preference to bank works to deal with climate change impact on Bridgwater.

Parrett banks

A programme of strengthening and raising of the whole length of both banks of the tidal Parrett needs to be kept under review.

Steart Peninsula

Studies and consultation with those affected have produced options for significant set-back. However,

mechanisms for funding are not clear, and decisions on the area's defences will still be outstanding.

Taunton

Remodelling of the River Tone has shown a good level of protection from the Tone alone. However, there is still a need to consider the risks from the Critical Ordinary Watercourses when backed up from high levels in the Tone. These COWs become Main River in 2006.

Weston-super-Mare

The Environment Agency is a partner in the North Somerset production of a 'Vision' for Weston. The Council's sea defences are generally below the standard of Agency defences on the North Somerset coast. The vision will need to consider a flood risk assessment for the River Banwell, and mitigation works to allow for the impact of new development.

The Committee has only just begun considering those flood risk locations, especially in West Somerset, which are vulnerable to a 'Boscastle' type event. These are being identified, and then there will be a need to consider resulting impacts and what if anything can be done to minimise them.

Bridges

The Environment Agency owns 162 bridges within the SLFDC area. North Wessex Area is trying to promote a national approach to the funding of strengthening, repair and replacement of such non-flood risk assets.

Asset modernisation

The ongoing programme of modernising and refurbishing of the area's assets including pumping stations and major sluice gate installations needs to take account of the fact that many are not necessary for flood risk management.

Shoreline Management Plans 2

The Coastal Group's promotion of this improved study of strategic policies for coastal cells includes significant amounts of consultation, and requires the Environment Agency's involvement and support.

Fluvial flood banks

Many lengths of banks requiring refurbishment over the next few years would be ideal candidates for set-back schemes if a funding mechanism to encourage landowner co-operation can be found.

Other studies to be undertaken include a technical review of the Mid-Parrett and for the Upper Yeo and the Upper Isle.

Managing flood risk from the sea

Porlock Shingle Ridge

About 30,000 homes are protected by the 38km of coastal flood defences for which the Committee is responsible. The population of the Somerset coast is swollen by thousands in summer, with many visitors staying in seaside caravans and chalets in vulnerable areas.

The threat comes from high tides and winds whipping up surges. The coast is protected by sea walls, shingle banks, beaches and salt marshes. Breaches in these defences would not just damage properties and roads along seafronts. They would also let in salt-water, damaging large areas of

low-lying land. Some of this land has recently been developed for housing, such as around Weston-super-Mare.

All sea walls and other structures keeping out tides along the coast have been refurbished over the last 20 years. This work is crucial to protecting the coast.

The Committee has transformed the sea fronts at Minehead, Brean, Brue Pill and Uphill with recent improvements to sea defences. It has offered to help North Somerset improve Weston-super-Mare's defences.

The Committee has reviewed the continued maintenance of defences in some places. Its Shoreline Management Plan sets out where it's questionable to keep spending money on coastal protection.

At Porlock, the Committee halted spending on the shingle ridge and allowed it to be breached.

On the Steart Peninsula, the line of protection could be moved back to homes and farms that must be defended, leaving some of the land to become flooded. This approach would be cost-effective and create more wildlife habitats.

Managing flood risk from rivers

Most Somerset homes and businesses at risk are in rural areas, but some urban areas in Taunton, Ilchester, Ilminster and Yeovil are also at risk. The standard of protection for major towns is against the worst flood that could happen in 100 years for rivers or 200 years for tidal areas.

Rivers in West Somerset are fast-flowing and floods can happen quickly, threatening lives. Floods on the Levels and Moors rise slowly as the rivers overflow their high embankments, and can last for weeks. The small number of properties at risk can have several days' warning. However, floods on the Levels and Moors could threaten lives if the embankments were breached.

A programme for inspecting rivers and their flood defences has been produced based on risk. Significant stretches of defences and many assets such as sluices need work to ensure they withstand severe conditions.

The Committee has done its best to regularly maintain its own defences so they work as well as possible.



River Parrett bank strengthening at Stathe, 2000.

Improvements that are economically, technically and environmentally sound are proposed where defences are insufficient.

Panel 2 (page 12) highlights imminent schemes the SLFDC recommends the WRFDC to support in the future.

The Flood and Coastal Defence Funding Review outcomes announced in March 2003 included

the transfer of Critical Ordinary Watercourses to the Environment Agency. This will entail an increase of 96.3 km on the length of main river by 2006. The WRFDC needs to make allowance for the consequent increase in maintenance and operations, and the possibility of the need for capital schemes on these new reaches.



Athelney Spillway running flood water from Curry Moor. Baltmoor Wall in the foreground.

The Committee, the Environment Agency and partners have adopted a strategic approach to the River Parrett that is catchment-wide. This followed frequent and severe flooding of the Somerset Levels and Moors in the 1990s.

This approach involved widespread consultation with local communities and organisations. It has since been used as a good example of integrated flood management for river catchments.

The Committee has targeted its recent spending on reducing the

frequency of flooding along the Parrett and Tone, especially on Curry Moor and Stan Moor.

The strengthening and raising of Stan Moor Bank in 2003 won an Institution of Civil Engineers Merit Award. Baltmoor Wall was strengthened to meet the requirements of the Reservoirs Act to reduce flood risk to villages downstream.

River banks on the Parrett are being strengthened. Trial dredging of the river downstream of Burrowbridge is being closely monitored to help to

decide on the value of future dredging programmes.

Pumping stations are being modernised to ensure they are ready when needed and can produce the water levels needed, especially for wildlife conservation. Pumping stations are also needed to remove water after the moors have been used to store flood water that spills over from the high-level carriers.

The future

Improvements to flood defences for villages - such as the recent ones at Ham and Hillfarrance - will need to be funded from the local levy. This is because they would lose out to larger urban schemes in England and Wales under the new grant-in-aid priorities.

National targets concentrate on protecting homes, although targets are being produced for infrastructure and environmental assets. Funding will be allocated to national priorities in future. Funding for a proposed scheme will rely on a watertight case that shows its benefit against cost and its need relative to other schemes nationwide.

The new Wessex Regional Committee must consider moving back raised river banks. This is because the focus is on flood risk to properties and there is no justification for protecting fields from flooding.

The benefits of moving back flood banks are that it:

- reduces maintenance costs;
- reduces risk by shifting the focus on to the integrity of smaller lines of defences;
- releases land that can be used as an improved habitat for wildlife.



Completed sea wall at Minehead

The Committee has agreed a programme of strengthening bridges for which the Environment Agency is responsible. Work on some bigger road bridges has been done with the Highways Authority.

The Committee supports the Environment Agency in its approach to health and safety as an important override to other considerations. A lot of work has gone into ensuring public safety at all the Committee's structures over the last five years.



Gold Comer Pumping Station diesel engines

The Committee has worked to help promote wildlife conservation on the Levels and Moors. It published a Strategy for Water Level Management and Nature Conservation in 1991. Since then it has promoted 1,018 hectares of Raised Water Level Areas – wetlands where water levels are kept artificially high.

The Committee produced Partnership Action Plans for Water Level Management in 1999 and a Water Management Strategy for the Parrett Catchment in 2002.

The Committee's vision for the Levels and Moors is that:

- farming and other local industries continue being successful and help achieve conservation targets;
- internationally-important wetlands and archaeology are properly conserved and improved;
- use of wetlands supports the local economy and helps communities thrive;
- widespread understanding of this unique landscape's value;
- sustainable management of excess water.

The Flood Risk Management Strategy focuses spending on reducing flood risk to homes, with infrastructure and environmental assets as a lower priority. It does not allow funding to be used to reduce flood risk to agriculture, and works for Water Level Management have to compete with works for protection of houses in the priority scheme. Other ways to achieve 95% 'Favourable Conditions or Improving' for the Special Protection Area must be found by 2010.

Funding



Steart Peninsula

The Committee recognised in 2000 that there was not enough investment in flood defence in Somerset because of the large number of its assets and the relatively low population. Investment fell short of meeting the Government's aim and objectives.

The Committee worked with other flood defence authorities to make people aware of how difficult it is with the existing system to raise enough money to maintain sustainable flood defences for Somerset. Efforts to raise sufficient funding need to be maintained with the new grant-in-aid and local levy funding system.

The Committee prioritises its use of funds in the following way, while still recognising its environmental obligations:

1. Regulatory activity
 - consenting
 - enforcement
 - development control

Flood forecasting and warning

Flood risk mapping to support the above

Emergency response - e.g. operating structures and clearing channels
2. Investment justification, in relation to 3, 4 and 6 below
3. Maintenance of flood defences to existing levels of service
4. Renewal of flood defences to existing levels of service
5. Supervisory role including asset surveys
6. Improvements to flood defences above the existing level of service
 - for existing defended areas
 - for new areas

A changing climate



Uphill habitat enhancement works

Floods in 1994, 1997, 1998, 1999 and 2000 have shown that extreme weather is becoming more frequent. Climate change is becoming universally accepted but its impact is difficult to predict.

We should expect long spells of heavy rain and generally more extreme weather conditions. So climate change is vital when considering the long-term approach to flood risk management. The Levels and Moors have been identified as vulnerable to sea level rise.

The Committee supports a study into the viability of a tidal sluice on the River Parrett. This would be an alternative to raising the level of defences in Bridgwater. The proposal shows the large amount of work required to successfully progress options for major partnerships. Such partnerships are likely to be needed more and more when tackling large projects.

The Somerset coast is vulnerable to sea level rise. The Committee has already been involved in plans to

realign coastal defences at Porlock and on the Steart peninsula.

Somerset's flood defence authorities will face some tough decisions in the long term about the managed re-alignment of coastal defences. It will be impossible to keep things as they are, and essential to form early partnerships to tackle the issues in a sustainable way.

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