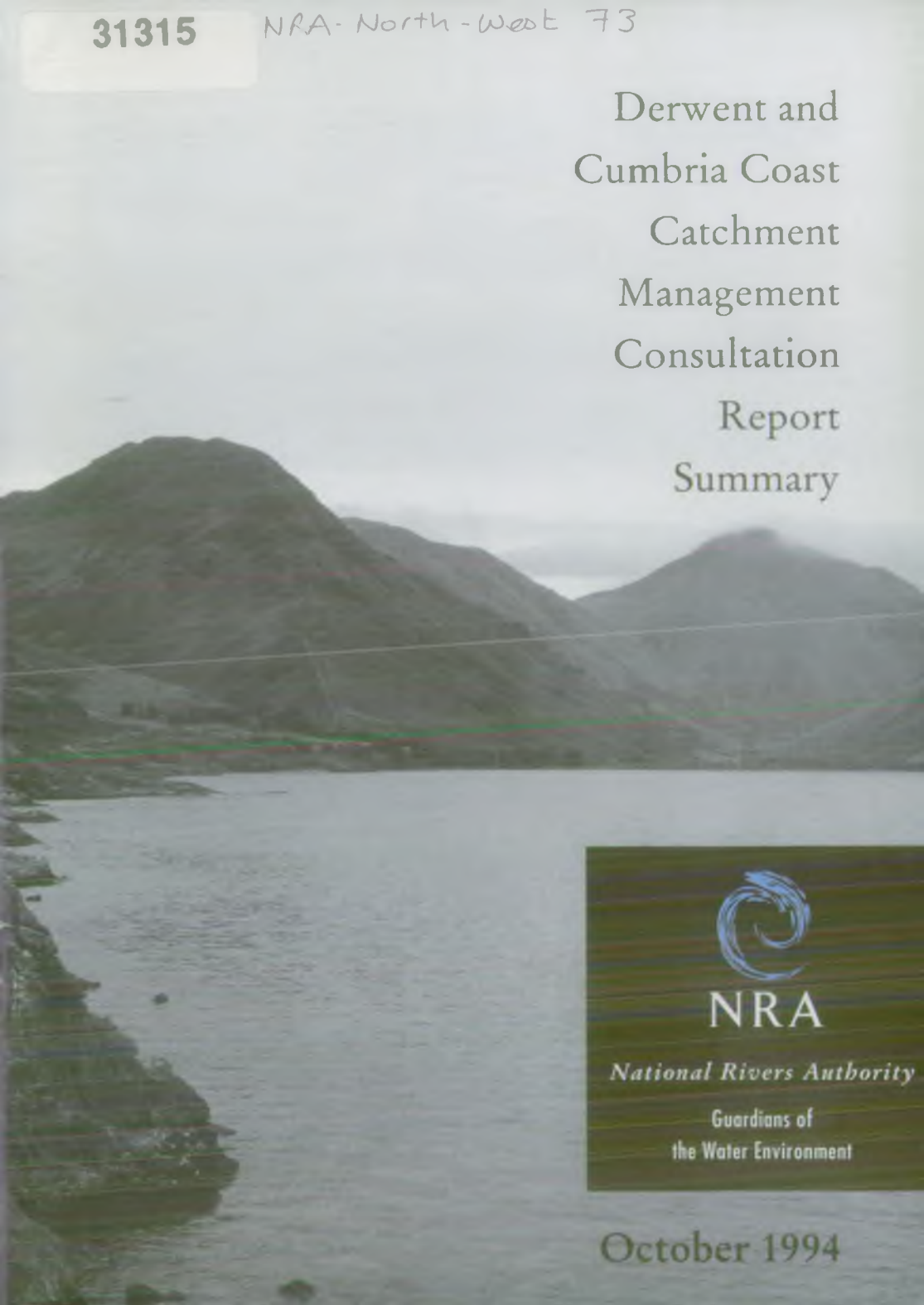
Derwent and Cumbria Coast Catchment Management Consultation Report Summary



NRA

National Rivers Authority

Guardians of the Water Environment

October 1994

INTRODUCTION

The National Rivers Authority (NRA) is involved in the management of all aspects of the water environment in rivers and underground waters, and also has wide responsibilities in estuaries and coastal waters.

In particular the NRA has responsibilities in the following areas:

BNFL, Sellafield

- improving water quality and controlling pollution
- land drainage, flood defence and flood warning
- conservation of water resources and controlling abstraction
- maintaining and improving fisheries and recreation
- protecting nature conservation in water related habitats

The natural geographical unit within which these responsibilities are discharged is the river catchment.

The NRA recognises that it can best carry out its work by adopting the concept of integrated catchment management. This means that a river catchment is considered as a whole and that the various NRA activities are carried out within an overall integrated plan.

To achieve this, the NRA has decided to present its catchment management proposals to the public via Catchment Management Plans. The Plans are intended to provide a link between the NRA and the 'users' of the water environment in the catchment, so that the Authority can better reflect their interests whilst carrying out its duties. For this reason, each Plan includes a consultation phase during which the local community and interested organisations are invited to comment on the NRA's proposals for the future management of the catchment.

Front Cover Photograph: Wast Water

YOUR VIEWS

The Derwent and Cumbria Coast Catchment Management Plan Consultation Report is the NRA's initial analysis of the issues facing the catchment. The most important issues, and some options for action, are listed in the final section of this summary.

We want to hear your views.

- Have we identified all the issues?
- Have we identified all the options for resolving the issues?
- Have you any other comments on the issues and options listed?

Comments on the Derwent & Cumbria Coast Catchment Management Plan Consultation Report should be received by 20th January 1995.

To comment or obtain a copy of the full Consultation Report, please write to:

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THE DERWENT AND CUMBRIA COAST CATCHMENT

The catchment comprises almost 1600 km^2 and includes the Rivers Annas, Irt, Mite, Esk, Calder, Ehen, Derwent and Ellen as well as their tributaries and associated coastal waters.

The catchment also contains eight major lakes: Bassenthwaite, Derwent Water, Loweswater, Crummock Water, Buttermere, Ennerdale, Wast Water and Thirlmere Reservoir.

Much of the catchment lies within the Lake District National Park and, as the name suggests, water is a vital part of this nationally important landscape. Consequently the health of the rivers, lakes and coastal waters is of crucial importance in helping maintain the rugged beauty of the area.

DERWENT AND CUMBRIA COAST CATCHMENT AREA MAP

LAND USE AND DEVELOPMENT

The catchment is largely rural with agriculture being the dominant land use and industry. The upland areas support sheep farming with some beef cattle. Dairy farming becomes increasingly important lower down the valleys and predominates in the low lying coastal areas. There is significant coniferous forestry activity on the catchment mainly in Ennerdale Valley, around Bassenthwaite and to the South and West of Wast Water.

The bulk of the population is concentrated towards the coastal fringe, principally in the towns of Whitehaven, Workington and Maryport. The largest industrial concern, British Nuclear Fuels' Sellafield plant, also lies on the coast.

The catchment lies within the County of Cumbria and a large proportion is also within the Lake District National Park.

The strategic planning basis for the area is set out in the Cumbria and Lake District Joint Structure Plan.

Allerdale and Copeland Borough Councils are responsible for District matters.

The emphasis of planning policy in the catchment revolves around:

- strong environmental protection
- clear priority for housing to meet local need
- fostering the local economy and maintaining the roles of the main settlements to accommodate growth.

Local and structure plan proposals indicate that population is unlikely to rise in the period to 2006.

The number of residents can increase dramatically in the summer because of the importance of tourism within the catchment, especially around Keswick.

WATER QUALITY

The NRA aims to maintain and improve, where possible, the quality of waters for all who use them.

Water quality in the catchment is generally very good, with 97% of the classified river stretches meeting RE1 or RE2 objectives in the NRA's new River Ecosystem Water Quality Classification system (RE1 very good and RE2 good water quality).

Ouse Bridge, Bassenthwaite

Locally, some river stretches suffer from acid stress and elevated zinc levels from disused mines and quarries. These problems occur in the upper tributaries, notably of the River Derwent, and are beyond the control of the NRA.

In other areas problems are caused by:

- Industrial discharges
- Farm drainage problems
- Effluent discharges from sewage treatment works and sewerage systems.

A number of these problems are in the process of being resolved, and this will lead to improvements in water quality during the lifetime of this plan.

FISHERIES

The NRA aims to maintain, improve and develop fisheries in the catchment.

The Esk, Irt, Calder, Ehen and Ellen support significant fisheries for salmon and sea trout. The River Derwent is in the top handful of salmon rivers in the country. It is the only oligo-mesotrophic major river in England and, as such, is of national conservation and fisheries importance.

Rare fish of national and international importance are present in the catchment. Char are found in Loweswater, Crummock Water, Buttermere, Ennerdale and Wast Water. Bassenthwaite Lake and Derwent Water are the only remaining sites in Britain where vendace are found.

Coarse fishing on the catchment is more limited and is concentrated on some of the lakes and smaller tarns of the area.

To assist the passage of migratory fish over obstacles there are fish passes at various locations throughout the catchment. Natural obstacles to migratory fish remain on several rivers.

Fisherman, Bassenthwaite

The NRA has fisheries responsibility in coastal waters for a distance of six nautical miles. There is a small commercial drift net fishery for salmon and sea trout in these waters.

Extensive commercial sea fishing takes place in these waters and is regulated by the Cumbria Sea Fisheries Committee (Cumbria S.F.C.). Regular liaison takes place between the NRA and Cumbria S.F.C. on matters of joint interest.

The NRA is producing a detailed fisheries management plan for the catchment to create a structured overall approach to fisheries management and draw together all interested parties.

WATER RESOURCES

Thirlmere

The NRA aims to conserve and ensure the proper use of water resources.

Water supplies in the catchment are generally sufficient to meet current demand, but must be carefully managed to avoid derogation to environmental interests or current water users.

There are large abstractions for industrial and drinking water supplies with the bulk of this water being taken from surface rather than groundwater sources.

The BNF Sellafield plant is the single largest industrial user with eight licences to abstract from a number of different sources. These include Wast Water, the Rivers Ehen and Calder and from mines and boreholes.

North West Water Ltd. (NWW Ltd.) abstracts substantial quantities of water for potable use, notably from Thirlmere reservoir, Crummock Water, Ennerdale Lake and the River Derwent. Almost half this water is exported from the catchment by NWW Ltd's Thirlmere aqueduct.

FLOOD DEFENCE

The NRA aims to protect people and property from flooding. To help achieve this, parts of the river system are designated as statutory 'Main River'. This designation allows the NRA to take certain regulatory actions and also spend money on the maintenance and control of the channel where this is economically viable.

Flood alleviation, Keswick

Major fluvial flooding of large numbers of properties is largely restricted to the towns of Keswick and Cockermouth. A flood alleviation scheme was constructed at Keswick in 1987 and 1988 and a similar scheme is in the pipeline for Cockermouth.

The NRA will continue to liaise with local Planning Authorities to ensure development does not increase flood risk.

To reduce the impact of flooding the NRA will continue to operate flood warning zones for the coast and at Keswick and Cockermouth.

CONSERVATION

The NRA aims to conserve, further and enhance the conservation interest of the water environment.

The catchment is important in conservation terms and this is reflected in the large number of special landscapes, ecosystems and archaeological sites which are protected by specific designations.

The quality of the landscape is recognised by several designations including the National Park which covers a significant proportion of the catchment. Water is a vital element of this landscape. Important coastal landscapes are also recognised as the catchment contains part of the Solway Coast Area of Outstanding Natural Beauty and St Bees Head is designated Heritage Coast for its dramatic sandstone cliffs.

The catchment is rich in archaeological interest including a number of sites which have been designated as Scheduled Ancient Monuments.

Bassenthwaite Lake is a National Nature Reserve and Wast Water, Ennerdale and Buttermere are designated Sites of Special Scientific Interest (SSSI). The Rivers Derwent and Cocker are of National Importance as the only remaining oligomesotrophic major river system in England. The catchment is also important for its populations of rare fish. Other notable species on the catchment include natterjack toads at a number of coastal sites and the freshwater pearl mussel in the Rivers Ehen and Irt. In addition, recent evidence suggests that otters are present but rare throughout the catchment.

RECREATION AND AMENITY

The water environment is important to local communities for a variety of leisure activities and a key attraction for the important tourist industry.

Sailing, windsurfing, canoeing and sub-aqua are the main active watersports occurring on the catchment and take place to a greater or lesser extent on all the major lakes. Canoeing is the only active watersport which can feasibly take place on the rivers and a number of access agreements exist between the British Canoe Union and various riparian landowners. However, there can still be conflict between angling and canoeing.

Sea bathing occurs at five designated bathing waters along the coast and none of these waters consistently pass the requirements of the E.C. Bathing Water Directive. Work is in hand to ensure compliance with the Directive by the 1996 bathing season.

The network of rights of way near or alongside water, together with the opportunities that exist for parking and picnicking, are key features in allowing people to maximise the waterside experience.

Maryport Marina

The NRA does not own any recreational facilities in the catchment area and recognises that opportunities to further recreation will mainly arise through the flood defence capital and maintenance programmes and collaborative projects with other bodies.

ISSUES AND OPTIONS

The following tables list the 42 issues identified by the NRA's initial analysis of the Derwent and Cumbria Coast Catchment.

We would like to hear from you if:

- you think there are additional Issues
- you think there are additional Options for action
- you have any views on the Options suggested
- you have any other comment about the future management of the catchment.

SUMMARY OF ISSUES AND OPTIONS

Issue	Pollution by Farm Drainage		
Options	Responsibilities	Advantages	Disadvantages
Continue to have input to MAFF and NFU publications.	NRA	Maintain high profile	Message becomes too familiar and risks being ignored
Encourage adoption of Code of Good Agricultural Practice and Farm Waste Management Plans.	NRA, MAFF, Farming Community	Prevention of pollution	
Continue to enforce farm drainage regulations.	NRA	Prevention of pollution	
Continue liaison with farming community, NFU/MAFF/ADAS	NRA	Maintenance of good relations, open discussion and continuance of real improvements	
Continue to press for improvements to MAFF grant scheme	NRA	Farmer identifies NRA as ally	
Use bacteriophage tracers to locate silage clamps which pollute springs in limestone areas	NRA	Trace polluters who were previously very difficult to detect	Not guaranteed to effectively trace the problem installations
Prosecute polluters where appropriate	NRA	Deterrent effect costs of NRA action recovered	Makes farmers more wary of talking to NRA
Campaigns in affected catchments	NRA	Trace polluters and improve water quality	Can be labour intensive and take staff away from other work

MAFF - Ministry of Agriculture Fisheries and Food
NFU - National Farmers Union
ADAS - Agricultural Development and Advisory Service

Issue	Acid Stress in the Upper Tributaries		
Options	Responsibilities	Advantages	Disadvantages
Develop strategy for long term management and identify full range of options.	NRA	Stretegic approach to the problem is established	
Continue monitoring to pick up any changes.	NRA	Improvements or deteriorations will be picked up	
Continue liaison with the Forestry Authority and examine the potential for broadleaved planting	NRA and Forestry Authority	Forestry does not make the problem any worse	
Active liming of the affected catchment	NRA	Some short term benefits	Short term and not cost beneficial. Impact on fragile ecology of important acid habitats
Continuing reduction in acid enhancing aerial emissions	DoE/Industry	Main cause of enhanced acidity is dealt with. Polluter pays. Principal upheld.	Not likely to be significant progress in the short term

Issue	Lack of Rural Sewerage Leading to Localised Pollution		
Options	Responsibilities	Advantages	Disadvantages
Seek to influence local development through liaison with local Planning Authorities	NRA and local authorities	Stems the problem and prevents a deterioration	Long standing problems will remain
Pursue all opportunities to promote adoption of first time rural sewerage by North West Water Ltd., local authorities or other bodies	NRA/NWW Ltd. and local authorities	Reduction in pollution	Unlikely to be possible in short to medium term
Further investigate and quantify the problem	NRA/NWW Ltd.	Allows targeting of limited resources to areas of greatest need	

DoE - Department of the Environment

Issue	Lack of Sewage Treatment along the Cumbria Coast		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Ensure provisions of E.C. Bathing Water Directive and Urban Wastewater Directive are complied with	NRA/NWW Ltd.	Compliance with legal requirements	Investment outside these requirements is unlikely to be undertaken this century, so long standing problems identified elsewhere may not be addressed
Seek solutions to problems not covered by the provisions of these directives	NRA/NWW Ltd.	Areas of need outside the requirements of the directives may be addressed	Areas of need outside the requirements of the directives may not be addressed until after 2000

Issue	Impact of Combined Sewer Overflows (CSO)		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Prioritise list of unsatisfactory CSOs on a cost benefit basis ensuring statutory requirements are dealt with	NRA/NWW Ltd.	Limited work that is achievable will be targeted effectively	Outstanding problems will remain unsolved
Continue discussions with NWW Ltd. to find best solution to unsatisfactory CSOs not covered by current agreed investment plans	NRA/NWW Ltd.	Solution ready if funding becomes available	
Continue monitoring frequency of operation against design criteria and assess level of solids retention	NRA/NWW Ltd.	Establish performance and any impacts	
Divert Keswick STW storm discharge to River Derwent	NWW Ltd.	Increased dilution. Reduced threat to stock watering in Wath Beck	Occasional discharge of treated sewage to Wath Beck. Anglers and others may see storm discharge to Derwent as allowing a deterioration
Extend works, with new enlarged outfall to Derwent	NWW Ltd.	Terminate all discharges to Wath Beck	Unlikely to go ahead due to spending restriction imposed on water companies

EC - European Community
STW - Sewage Treatment Works
CSO - Combined Sewer Overflow

Issue	Pollution caused by Contaminated Surface Water Outfalls		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Rectify cross connections	NWW Ltd.	Reduce threat of NRA prosecution	
Monitor outfalls	NRA	Establish any improvement	On-cost to NRA
Inspect premises and educate owners/tenants and mount 'campaign' on industrial estates	NRA	Reduce pollution and potential for future pollution. Increase awareness of industrialists	Long term cost/ commitment. Labour intensive
Consent outfalls	NRA	Standards are a legal requirement	Consent would be to a third party, ie Estate Owners and not to those causing pollution. NRA seen to be accepting pollution

Issue	Development in Areas where Sewers/Sewage Treatment Works are at or near their Design Capacity		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Discuss with NWW Ltd. to quantify the problem and look at long term solutions	NRA/NWW Ltd.	Prevention of pollution	Significant investment unlikely because of spending restrictions imposed on water industry
Seek to influence development plans in critical areas by liaison with planning authorities	NRA/local planning authorities	Short term solution	Pressure to develop cannot be restrained indefinitely
Monitor strategic locations downstream of affected works	NRA	Early warning of problems and prioritisation of existing ones	
Ensure developers meet the cost of extra treatment required	Developers	Prevention of pollution	

Issue	Impact of Open Cast Coal Mining		
Options	Responsibilities	Advantages	Disadvantages
Continue close liaison at both district and regional level with British Coal	NRA	Ensures good input at all stages from planning to final reinstatement	
Reinstatement of previously damaged fish spawning areas	NRA	Increase area available for salmonid spawning	
Ensure appropriate reinstatement of River Keekle channel	NRA/British Coal	Removal of man-made channel	
Monitor ground and surface water quality in the area where the Walkmill Deep mine spoil heap is buried	NRA	Early warning of potential problems due to leachate	

Issue	Fish Stocks - Status and Management		
Options	Responsibilities	Advantages	Disadvantages
Continue strategic survey of juvenile fish stocks	NRA	Provides detailed data on status of juvenile stocks. Will provide a picture of areas that are performing well and those that are not	
Continue anti-poaching/ enforcement activity. Ensure prosecutions are taken as necessary	NRA/Sea Fisheries Committee	Provides protection of fish stocks in marine and freshwater environments. Acts as a significant deterrent to potential illegal activity	
Continue National R and D project into use of catch statistics to determine fish stock size	NRA	Evaluates catch statistics in relation to management of fish stocks and determines how they can be used to estimate stock size	
Continue operation of anglers log book scheme	NRA/Anglers and Associations	Provides management information on catch related to fishing effort, methods and flows	

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Issue Continued from page 15	Fish Stocks - Status and Management		
Options	Responsibilities	Advantages	Disadvantages
Continue to operate automatic fish counters	NRA	Provides information on size and timing of fish runs and quantitive information on flow requirement of migratory fish	
Assess nursery streams for suitability for restocking	NRA	Enables optimum number of juvenile salmonids to be planted out where restocking takes place	
Review current stocking practice	NRA	Provides management information on most appropriate life history stage of fish to be utilised for restocking	
Continue National R and D project to examine effectiveness of salmonid stocking strategy	NRA	Aims to identify most cost effective strategies for stocking migratory salmonids in order or maximise returns of adult fish to fisheries	
Produce a fisheries management plan to create a structured overall approach to fisheries management in the area. Relate plan to both local issues and National R and D investigations. Consult and publicise widely	NRA	Will establish a comprehensive and cohesive strategy for fisheries management in the area involving the South and West Cumberland Fisheries Association and other interested parties	
Continue investigation to obtain baseline information on char populations in Ennerdale and Wast Water		Information will allow informed decision making	

Issue	Problems with Degraded Fish Habitat and Lack of Comprehensive Information on Habitat Quality		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Programme of weed clearance and manual gravel raking in spawning areas suffering from siltation and compaction	NRA and riparian owners	Increase availability of suitable spawning areas. Should lead to enhanced fish stocks	
Undertake comprehensive survey to identify areas where habitat rehabilitation may be appropriate	NRA	Work can be targeted in logical way	

Issue	Impact of Gravel Extraction and Disposal on Fisheries and Conservation Interest		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
NRA Gravel Removal for Flood Defence Purposes			
Stop gravel removal	NRA	Save money. No damage to conservation or fisheries interests	Potential for flooding of land and property
Continue removing gravel as at present	NRA	Reduction in flood risk	Access problems, and potential conflict with fisheries/ conservation. Cost of disposal of gravel
Remove gravel little and often	NRA	Reduced impact on fisheries and conservation	More frequent disturbance to local residents. Loss of economies of scale. Possibly less effective flood defence
Create gravel traps at convenient locations	NRA	May reduce impact on fisheries and conservation	Cost of construction. Possible impact on visual amenity in the National Park. May create obstruction to fish migration

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Issue Continued from page 17	Impact of Gravel Extraction and Disposal on Fisheries and Conservation Interest		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Gravel Removal by Riparian Owners to Improve Angling Interest			
Continue consenting gravel removal on an ad hoc basis	NRA/ Riparian owners		Benefit to overall fishery uncertain
Better control of bulk removal of gravel by landowners based on holistic approach to the catchment	NRA	Better fisheries and conservation management. Reduced threat of erosion	Physical enforcement in remote areas

Issue	Illegal Exploitation of Migratory Salmonids Inland and Coastal Waters		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Continue with anti-poaching enforcement action. Liaise with anglers. Take prosecution as appropriate	NRA	Provides protection of fish stocks. Acts as deterrent to potential illegal activity	
Monitor effectiveness of new Sea Fisheries Byelaws in protecting migratory fish. Liaise with Cumbria Sea Fisheries Committee	NRA and Cumbria Sea Fisheries Committee	Protect fish stocks in coastal waters	

Issue	Properties at Risk from Flooding		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Do nothing	NRA	No cost	Flood risk remains
Assess flood risk areas for compliance with standards of service for flood defence		Expenditure can be targeted where most appropriate	
Where cost beneficial include schemes within NRA's capital programme	NRA	Prevention/ reduction of flood risk	Cost

Issue	Requirement for Conservation Survey of River Corridors		
Options	Responsibilities	Advantages	Disadvantages
Await results of National R and D project into river habitat survey methodology	NRA	Tailor-made system available for high quality surveys to be done	Waiting until the system is available in 1995
Undertake surveys using current river corridor survey	NRA	Some data would be made available	Incomplete information would necessitate re-doing the work when the new system becomes available

Issue	River Corridor - Habitat Enhancement		
Options	Responsibilities	Advantages	Disadvantages
Await habitat survey methodology to assess where improvements can be made	NRA	Proposed improvements will be based on hard information	
Pursue ad hoc improvements	NRA	Some improvements will occur	Resource implications. Work may not be targeted where there is greatest need

Issue	Pollution from Oatlands Deep Mine Spoil Heap		
Options	Responsibilities	Advantages	Disadvantages
Land reclamation scheme	British Coal and site owners	Information available on previous scheme. One-off expenditure	Previous scheme failed
Drainage interception and treatment	Not yet known	New treatments now available and effective	On-going cost to responsible party. Appropriateness of any treatment will require thorough investigation
Diversion of River Keekle away from the spoil	NRA	Removes pollution	Cost. Potential disturbance to other river uses

Issue	NIREX Project - Potential Threats to Water Quality		
Options	Responsibilities	Advantages	Disadvantages
Complete protection of the aquifer during exploratory drilling	NIREX	Compliance with NRA groundwater protection policy avoids contamination of aquifer	
Monitor drilling works and associated consented discharges to ensure no deterioration in water quality	NRA	Maintain surface water quality and quantity	

Issue	Impact of Cleator Sewage Treatment Works		
Options	Responsibilities	Advantages	Disadvantages
Increase volume treated	NWW Ltd.	Abandonment of smaller works and the storm overflows	Greater volume discharged at a point source
Increase standards of treatment	NWW Ltd.	Greater security of water quality target class	Not a statutory requirement so funds may not be available due to restriction on spending imposed on water industry
Move outfall	NWW Ltd.	Secure water quality at Keekle/Ehen confluence	
Remove colour problem from effluent	NWW Ltd.	Reduce aesthetic impact	

Issue	Eutrophication and Algal Blooms in Bassenthwaite Lake and Loweswater		
Options	Responsibilities	Advantages	Disadvantages
Bassenthwaite		Reduce main P loading on the lake	Presence of chemical plant
Phosphate removal from Keswick STW effluent	NWW Ltd.	Situation kept under constant review	
On-going monitoring of all significant inputs to the lake	NRA	Production of recommendations for further study and management action	
R and D project into the status of rare fish	NRA		
Loweswater			
On-going monitoring to assess situation	NRA	Will help define way forward	

Issue	Vulnerability of Bassenthwaite Lake to Spillages on the Main A66 Trunk Road		
Options	Responsibilities	Advantages	Disadvantages
Installation of interceptors along part of the A66 to hold chemical spills	Cumbria C.C./NRA/ Dept of Transport	Contain spills. Intercept general run-off	Initial cost. Maintenance. Vandalism
Close liaison with emergency services	NRA	Will ensure all services are aware of Bassenthwaite Lake importance	
Co-ordinated internal NRA emergency plan	NRA	Rapid response and best use of all possible internal resources	

Issue	Mine Drainage Pollution in Great Clifton Surface Water Drain Discharging to the River Derwent		
Options	Responsibilities	Advantages	Disadvantages
Initially to maintain chemical and biological monitoring	NRA	Build up database on volumes and constituents	Not resolving the problem
Request treatment of discharge if necessary	British Coal North Housing	Reduce levels of contamination	Trying to prove who has responsibility. Chemical treatment plant required
Accept that there has 'always been' a mine water discharge and do nothing		None	Possible localised deterioration in the Derwent. Anglers complain about loss of fishing

Issue	Impact of Broughton Moor STW on Furnace Gill		
Options	Responsibilities	Advantages	Disadvantages
Convey sewage to new sewage treatment facilities planned for Cumbria Coast	NWW Ltd.	Remove discharge from Furnace Gill	Funds available post 2000. Until then the problem will remain

Issue	Canalisation of the Lower River Calder		
Options	Responsibilities	Advantages	Disadvantages
Assess the significance to fisheries	NRA	Identify possible improvements to the fishery	

Issue	Impact of the Yearly Abstraction on River Flows and Migrating Salmonids during Times of Low Flow		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Reduce abstraction to only that needed by British Steel and Soapery Beck	NRA	Slightly enhanced flow in the River Derwent	Salmonids migrating downstream cannot return to the River Derwent due to lack of flow in the mill stream leading to increased fish mortality
Install fish screen at intake to mill stream	NRA	Fish cannot enter mill stream and get stranded and/or caught in British Steel abstraction screen	Practical difficulties may mean such a screen would be impossible to install effectively
Maintain current position and make further investigations	NRA	Probably only a minor impact on fishery from current arrangements mainly at the screen on the British Steel abstraction. A more informed decision is likely to be a better decision	
Investigate effectiveness of current screening arrangements of British Steel intake	NRA/British Steel	Information on effectiveness of screening facility. Allows informed decision making	

Issue	The Potential Impact of Recent Introduction of Coarse Fish on the Vendace Population in Bassenthwaite Lake		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Undertake R and D project to examine likely impact of coarse fish (especially ruffe) on the vendace	NRA	Provision of information on ecology of coarse fish in relation to potential impact on vendace. Production of recommendations for appropriate management of fishery	Cost. Limited Fisheries capital programme

Issue	Re-Stocking the River Ellen with Salmonids following Recent Pollution and Severe Fish Mortality		
Options	Responsibilities	Advantages	Disadvantages
Determine numbers and life history stages for restocking based upon assessment of kill and survey work previously carried out	NRA	Enables optimum number of salmonids to be planted where restocking takes place	

Issue	Flood Risk and Low Flow Problems Caused by Eskdale Green Mill Pond		
Options	Responsibilities	Advantages	Disadvantages
Advise the owner of the condition of the dam, the consequences of dam failure and his responsibilities	NRA	Responsible party fully aware of the situation	Situation status quo
Advise owner to continue keeping the mill pond empty until structural integrity is restored	NRA/Owner	Potential for flooding alleviated	Private water supply lost. Interesting pond of conservation value will be lost temporarily
Encourage owner to revoke abstraction licence or alter conditions to alleviate potential for low flows in the river	NRA/Owner	Low flows alleviated	Private water supply lost. Interesting pond of conservation value will be lost if pond not maintained
Ensure strict enforcement of current licence should abstraction be recommenced	NRA	Firm licensing management approach	Dam may remain in present state of repair

Issue	Complaints of Low Flows in the River Irt below Wast Water		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Ensure all licence conditions are complied with by British Nuclear Fuels	NRA	Ensure legal abstraction only	
Quantify concern of complainants	NRA and complainants	Clearer understanding of nature and level of people's concerns	
Review flow information for the River Irt, and measure flows in River Bleng	NRA	Gives fuller picture of the flow conditions in the river	
Consider setting a minimum acceptable flow for the Upper Irt and discuss abstraction arrangements with BNF if current minimum flow is too low	NRA	Setting of environmentally appropriate figures for flows in the Upper Irt, should the current flow prove to be too low	

Issue	Impact on the River Derwent by Augmentation from Thirlmere Reservoir		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Modify the arrangements if resources are likely to be required on a regular basis	NRA/NWW Ltd.	Incorporates measures to protect the environment. NRA have control of potential impact on water quality, fisheries, conservation and water resources interests	

Issue	Waterlogging of Agricultural Land on Low Lying Land between Bassenthwaite and Derwent Water		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Initiate research project identify the causes and extent of the issue	NRA	Clarify the position and allow rational decision making	Cost

BNF - British Nuclear Fuels

Issue	Dumping of Shopping Trolleys in the River Derwent at Workington		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Continue to pressurise the supermarkets to manage the trolleys better	Trolley owners	Encourage 'deposit paid' trolleys and better security during closure hours	
Continue removing trolleys	Council/ NRA	Short term relief from the problem	On-going cost and problem not solved
Explore other options including legal action as a last resort	NRA	Possibly stop problem penalise the responsible party	

Issue	Pressure on the NRA to Deepen and Divert the River Annas as it Outfalls to the Sea		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Divert and deepen the channel	NRA	Alleviate flooding of farm land. Potential for improvements to the fishery. Easy maintenance of proposed pedestrian bridge in this area	Damage to SSSI and Natterjack Toad population. Benefits are only short term, and dredging would need to be undertaken regularly. Cost. Dredging will cause increased erosion of the cliffs at Selker Bay and threaten 4 properties with early abandonment
Do nothing	NRA	Maintenance of SSSI and nationally important Natterjack Toad population. Fulfils NRA duty to conserve. No cost	Some continued flooding of farmland. Coastal erosion will continue and the 4 properties may eventually have to be abandoned. No potential for improvement to the fishery
Await results of consultants report to Copeland Borough Council on possible coastal protection scheme	Copeland Borough Council	More informed decision making	Compromise which satisfies all interests will be difficult to find

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Issue Continued from page 27	Pressure on the NRA to Deepen and Divert the River Annas as it Outfalls to the Sea		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Maintain status quo by dredging and gravel deposition at toe of cliff	NRA	No worsening of present land drainage situation or erosion	Cost

Issue	Long Term Future of the Cumbria Coastal Rail Line acting as Sea Defence Structure		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
British Rail maintain as an operational line	British Rail	Maintenance of the embankment is guaranteed. No cost to NRA	
British Rail close as an operational line	British Rail		Question of maintenance of the embankment as a sea defence structure arises

Issue	Gravelling up of Coastal Outfalls in Allonby Bay		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Continue to respond to tidal events and remove gravel as required	NRA	Minimal cost. Flexibility	Response time to attend all sites. Repeated work may stretch resources
Lengthen outfalls and install flap valves	NRA	Outfall should remain free if pipe extended beyond normal gravel build up	Costly option. Outfall pipe may act as a gravel trap and compound the situation. Gravel may block the flap valve in extreme circumstances and worsen the problem
Do nothing	Leave to others	No cost	NRA may be criticised for not responding. Wider flooding may result

Cont'd

Issue Continued from page 27	Gravelling up of Coastal Outfalls in Allonby Bay		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Establish protocol on access, to mitigate ecological damage during emergency work	NRA and English Nature	Ecological damage minimised/prevented	

Issue	Development Control and Land Drainage Consent Enforcement on Pow Beck, Whitehaven		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Encourage Whitehaven habour development to proceed	Whitehaven Development company	Resolves major land drainage problem in vicinity of harbour	Financial contribution will be sought from NRA
Do nothing and leave to appropriate local authority	Copeland Borough Council	No cost to NRA	Problems may remain
Consider making Pow Beck statutory 'main river' by reviewing under as yet unpublished main river guidelines	NRA	Further investigation into culverting problems and possible solutions	Extra cost to NRA
Restrict further development and culverting	NRA and local planning authority	Strict enforcement would stop the problem worsening	Existing problems remain. Complete block on development

Issue	Flood Risk at Cockermouth		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Design and implement new flood defence capital scheme to improve level of flood protection	NRA	Reduction in flood risk	

Issue	Flood Risk at Maryport Habour		
Options	**Responsibilities**	**Advantages**	**Disadvantages**
Participate in port of Maryport Habour development which improves flood alleviation	Jointly with Allerdale Borough Council	A scheme which provides reduced flood risks would result. Example of co-operation with the District Council	Financial contribution will be sought from NRA
Do nothing and leave to appropriate local authority	Allerdale Borough Council	No cost to NRA	Problems may remain if no scheme is implemented

Issue	Flood Risk at Braystones on the River Ehen		
Options	Responsibilities	Advantages	Disadvantages
Design and implement new flood defence capital scheme to improve level of flood protection	NRA	Reduction in flood risk	

Issue	Risk of Tidal Flooding at Parton		
Options	Responsibilities	Advantages	Disadvantages
Do nothing	NRA	No cost	Flood risk remains during tidal surge events
Install tidal gates to alleviate against wave action and flooding through railway access	NRA	Good cost benefits	Assets on seaward side of embankment not protected
Get involved in Copeland Borough Council project for Coastal protection	NRA/ Copeland Borough Council	Demonstrates co-operation on coastal problems. Protects more property on seaward side. Less maintenance costs in the long term. No design costs to NRA	Delay in installing the protection works so properties remain at risk

Issue	Risk of Tidal Flooding at Ravenglass		
Options	Responsibilities	Advantages	Disadvantages
Do nothing	NRA	No cost	Flooding risk remains
Maintain the scheme works constructed in 1979	NRA	Flood risk reduced	Will cost money from the revenue budget. Repairs carried out in 1992/93 proved expensive
Build new sea wall	NRA	Least disturbance of SSSI Provides good defence standards. Flood risk further reduced	Has big impact on existing property owners affected. Affects leisure use on the beach, ie boat owners
Other options further offshore	NRA	Less impact on local residents of Main Street and leisure users of beach. Flood risk further reduced	Big impact on SSSI May affect coastal processes particularly in the Selker Bay area

SSSI - Site of Special Scientific Interest

Issue	Unknown Status of the Nationally Rare Freshwater Pearl Mussel		
Options	Responsibilities	Advantages	Disadvantages
Undertake a joint study with English Nature to assess distribution and population size	NRA and English Nature	Ascertain status to allow rational management decision	

Issue	The Return of Otter to the Catchment		
Options	Responsibilities	Advantages	Disadvantages
Monitor for otter signs during other routine activities	NRA	Continuation of monitoring begun by otters and rivers project	
Train other NRA river bank staff to recognise otters and otter signs	NRA	More eyes on the river bank	
Undertake limited habitat improvement on the Ellen	NRA	Greater chance of maintaining a good otter population	Other areas with more impoverished habitat need prior attention from limited resources
Undertake limited habitat improvement on River Waver and Wampool immediately to North of Catchment	NRA	Evidence of recent colonisation. Securing population here will provide bridgehead into catchment plan area	Capital cost

NRA

National Rivers Authority