

NRA-Wales 46

Glaslyn/Dwyrhyd/
Artro Catchment
Management Plan
Consultation
Report Summary

N.R.A - Welsh Region
REGIONAL TECHNICAL (PLANNING)
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NRA

*National Rivers Authority
Welsh Region*

**Guardians of
the Water Environment**

ENVIRONMENT AGENCY



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INTRODUCTION

The rivers, lakes, estuaries and coastal waters of Wales are subject to large and rapidly increasing demands from the users of water. Many different uses interact, or compete for water or water space, and inevitably come into conflict with one another. The National Rivers Authority (NRA) is the major manager of the water environment in England and Wales and has the responsibility to reconcile conflicts between water users as well as its general duties that include:-

- Maintenance and improvement of water quality by control of pollution in surface and groundwater.
- Flood defence for people and property.
- Flood warning.
- Management of water resources.
- Maintenance and improvement of fisheries.
- Conservation of the natural water environment.
- Promotion of water based recreation.
- Navigation (in some rivers).

The NRA believes it can only carry out its work by adopting the concept of integrated catchment management. This means that a river catchment is considered as a whole and the actions in each of the NRA areas of responsibility must take account of the possible impact on the other areas.

The NRA has decided to formally present its catchment management policies to the public via Catchment Management Plans which will be produced for all the rivers in Wales by 1998. The Plans are intended to provide a link between the NRA and the users of water in each 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 general public are invited to comment on the NRA's proposals for the future management of the catchment.



YOUR VIEWS

The Glaslyn/Dwyrhyd/Arthro Catchment Management Consultation Report is our assessment of the state of the catchment and identifies the key issues which need to be resolved. The most important are outlined in the tables at the end of this summary report.

- We need your views.
- What do you think about the plan in general?
- Have we identified all the uses?
- Have we identified all the issues?
- What do you think about the options proposed?

If you would like to comment on the Consultation Report or receive a free copy of the full document please write to:

**THE AREA CATCHMENT PLANNING CO-ORDINATOR,
NATIONAL RIVERS AUTHORITY,
'HIGHFIELD', PRIESTLEY ROAD,
CAERNARFON, LL55 1HR.
TELEPHONE: 01286 672247**

Please send your comments in writing, but if this is not possible contact us on the telephone number above.



CATCHMENT STATISTICS

GENERAL

Area	508km ²	
Population	19000 (estimated)	
Ground Levels	Max height	1085m(AOD) (YrWyddfa, Snowdon)
Tide Levels	Mean High Water Springs	2.44m (AOD)
	Mean low water springs	NODATAAVAILABLE

WATER RESOURCES

Annual Average Rainfall (Range 1000-4000mm)	3266mm (Cwm Dyli)
Primary Gauging Stations	4 (Beddgelert, Colwyn, Porthmadog (2))
Principal Reservoirs	7 (Tanygrisiau, Llydaw, Stwlan, Morwynion, Eiddew Mawr, Eiddew Bach, Tecwyn)

WATER QUALITY

River Classification		Estuary Classification	
Very Good	72.2km	Good	29.9km
Good	3.2km	Fair	0.5km
Fair	None	Poor	None
Poor	None	Bad	None
Bad	None		

FLOOD DEFENCE

Length of main river in catchment	129km
Length of main river within Internal Drainage District	61km
Length of adopted ditch within Internal Drainage District	41km
Length of flood banks maintained by NRA	20km
Area at risk of flood (tidal or river)	1,700Ha

FISHERIES

Length of watercourse designated under EC Directive (78/659/EEC) on "The Quality of Fresh Waters needing Protection or Improvement in Order to Support Fish Life".

Salmonid	20.3km
Cyprinid	None
Mean Declared Catch 1975-93	

	Salmon	Sea Trout
Artro Rods	4	100
Dwryd Rods	35	137
Glaslyn Rods	52	469
Glaslyn Nets	28	204

FLOOD DEFENCE

Flood defence activity within the Plan area is concentrated upon the maintenance of tidal and fluvial defences, main river watercourses and the tidal doors at Porthmadog.

As a consequence of the extensive areas of flood and coastal plains throughout the Plan area there are 4 Internal Drainage Districts (IDDs). Two of the IDD's are associated with the Glaslyn and one each with the Dwyryd and Arthro.

Elsewhere in the Plan area flood defence work consists mainly of shoal removal and river management schemes carried out as necessary. There are no main river major flooding problems where property is affected although the agricultural flood plains are inundated from time to time. There are, however, a few isolated cases of flooding to properties associated with ordinary watercourses.

A three year prioritised programme for the production of Water Level Management Plans will be undertaken at sites agreed with the Countryside Council for Wales.

Flood defence is one of the important considerations in the planning process and the NRA will be actively involved in liaison regarding any proposed development or proposed allocation for development in sensitive areas.

The preparation of maps by the NRA that show the areas liable to flooding has commenced. These will be available as reference documents for the determination of Town and Country Planning applications by the local authorities.



RECREATION

The water environment is a key feature of the important tourist industry in the area. Bathing takes place at the EC identified bathing waters of Talybont, Dyffryn Ardudwy, Llandanwg, Harlech and Morfa Bychan, and also at Shell Island.

Water based activities are centred on the Glaslyn estuary at Porthmadog and the mouth of the Artro near Shell Island. There are four sailing/boating clubs within the Plan area. The Royal Madog Yacht Club and the Porthmadog and Trawsfynydd Sailing Club are based in Porthmadog. The Shell Island Sail and Rowing Boat club and the Llanbedr and Pensarn Yacht Club are based within the Artro estuary at Shell Island.

Other immersion sports such as water and jet skiing have become increasingly popular as has the use of power boats and coastal cruises, although access to the harbours is restricted to periods around high tide.

As most of the Plan area lies within the Snowdonia National Park it is of high amenity value, particularly for walking and climbing. River side access is sporadic and disjointed but key areas include the Glaslyn upstream of Aberglaslyn bridge, the lower Ysgethin and the lower Cynfal and Teigl. Picnic sites are relatively few and far between and few facilities exist for bird watchers even though the quality of bird watching, particularly in the coastal areas, is high.



CONSERVATION

The three catchments are of high conservation value, exhibiting a range of key habitats from river include source to the sea. These include upland peat mire, valleys faced with ancient woodland which descend into gorges containing oceanic mosses and liverworts, and extensive coastal dune systems.

There are 32 sites of Special Scientific Interest (SSSI), 4 of which have National Nature Reserve (NNR) status offer part of the site. In the upper reaches of the catchments, the key wetland sites are Llynau Llagi and Adar, Hafod Garregog acidic mine and the extensive blanket bog of the

Migneint. Both upland and lowland river sections are ideal for birds notably kingfisher, merganser, sand martin, wagtails and dippers.

Coastal sites include the extensive dune systems of Morfa Harlech, Morfa Dyffryn and Morfa Bychan adjacent to which are small areas of saltmarsh and extensive mudflats. Slightly inland, Llyn Ystumllyn, Pont Croesor, and Glaslyn marshes are important for wildfowl and wading birds.



The quality of riparian habitats on the Glaslyn is reflected by the continued increase in numbers of recorded signs of otters and the extension of their range, particularly in the upper catchment. This contrasts with the very low numbers on the Dwryd and their absence from the Artro and Ysgethin.

The area is archaeologically rich, with the 66 Scheduled Ancient Monuments (SAMs) representing less than 10% of all currently known sites. Many of these sites are concentrated in Arduwy between Talsarnau and Llanaber. This area represents a potential grade 1 historic landscape, primarily because of the density and quality of sites and their setting from Neolithic through to recent times.

DEVELOPMENT AND LAND USE

The Plan area is entirely within the County of Gwynedd. The vast majority of the catchments lie within the district councils of Dwyfor and Meirionnydd, although the headwaters of the Colwyn arise in Arfon Borough Council's area. Approximately 85% of the Plan area is within the Snowdonia National Park (SNP). The SNP Committee is responsible for planning/development control activities in the whole of Meirionnydd and for those parts of Dwyfor and Arfon that lie within the Park.

The Gwynedd Structure Plan was adopted in November 1993, the consultation period for the Dwyfor Pre-Deposit District Wide Local Plan ended April 1995 - the SNP Draft Consultation Park Wide Plan is expected during 1995.

The population of the Plan area is approximately 19,000, located predominantly in the major population centres of Blaenau Ffestiniog, Penrhyndeudraeth, Harlech, Porthmadog and Criccieth. Slate quarrying

is still a feature of the area, although not as widespread as it once was. The history of mineral exploitation has left a legacy of derelict land characterised by accumulation of mineral wastes.

A number of energy schemes have been developed in the area, most notable of which is the Magnox Nuclear Power Station at Trawsfynydd. Power generation here has now ceased and an alternative use for the site is currently under consideration. Hydroelectric stations at Maentwrog, Cwm Dyli and Tanygrisiau supply power to the National Grid, and proposals involving a number of smaller installations within the area are currently under consideration.

The Plan area is predominantly rural, with the main agricultural uses consisting of sheep farming in the upper reaches, gradually changing to mixed beef and sheep further down the valleys. Only in the area of the Glaslyn Estuary is the land fertile enough to support any large scale dairy units.

There are a number of large areas of afforestation, the largest of which are the Beddgelert Forest on the Colwyn and the Llyn y Garnedd Forest on the Dwyryd.

FISHERIES

The fisheries of the Plan area are predominantly salmonid, although eels, sea lamprey, river lamprey, brook lamprey, minnow and three spined stickleback are all found locally within the catchments. Llyn Bodlyn on the Ysgethin contains one of the three remaining natural populations of Arctic Charr in Wales.

Salmon and sea trout are present in all catchments and occupy all sections of river downstream of permanent barriers to migration. Information from juvenile salmonid surveys undertaken since 1986 indicates that the salmon has a far more restricted distribution than the trout on all three catchments.

Upstream of the barriers, there are important brown trout populations in the rivers and the many lakes of the area. These form a very important genetic resource as stocking has been limited or absent in most waters leaving stocks in a mainly natural genetic condition.

Acidification has been identified as a major problem on some of the Glaslyn tributaries, particularly the Colwyn and some of the lakes and upper sections of the Dwyryd and Artro systems.

Two salmon draft nets operate in the Glaslyn estuary. Amongst the local angling fraternity this is a controversial fishery, as it is alleged that the

NRA-operated tidal doors at Porthmadog harbour delay the migration of sea trout and salmon, making them more vulnerable to the harbour net fishery. Studies by NRA fisheries scientists have shown that fish do delay in the harbour. The tidal doors partially contribute to this, but there is no evidence that this causes unacceptable exploitation of fish by the netmen.



WATER RESOURCES

Water for potable use is abstracted from surface water sources by Dŵr Cymru Welsh Water and, to a lesser extent, by individual properties not connected to the mains supply. This accounts for 25 of the 51 licensed abstractions within the Plan area. There are a total of 12 abstractors licensed for industrial use and a further 4 licensed for agricultural use.

By far the largest use of water within the Plan area is that abstracted for the generation of hydroelectric power. The 10 licensed abstractions allow up to a total of 1,094,211 Ml/a to be abstracted for this purpose. Water is also imported into the Dwyryd catchment from the neighbouring Eden catchment to support the hydroelectric power scheme at Maentwrog. However, all the water abstracted is returned to the Plan area. Such abstractions in many instances cause unnatural flow regimes below the point of abstraction, which may be impacting upon the fish populations.

There are no major aquifers in the Plan area, with groundwater sources being limited to a few surface fractured weathered zones. Consequently, the area is exempt from the need for a licence for groundwater extraction, irrespective of use.

WATER QUALITY

The water quality in the rivers covered by the Plan is generally very good, an important factor given:-

- The rivers play an important role in attracting tourists.
- That compliance with the bacteriological standards of the EC Bathing Waters Directive is required for identified waters.
- The high value of the fisheries and conservation interests.

- The potable water abstractions by Dŵr Cymru Welsh Water from upland sources.

However, even though rainfall acidity is not naturally very high, the volume of rainfall within the Plan area gives rise to high annual acid deposition. The absence of neutralising bases within the soil results in periodic acid flushes which affects the water quality of the entire Plan area. The acidity is exacerbated in some parts of the catchments by large areas of afforestation and there are localised problems of elevated levels of copper and zinc due to the effects of low pH on mineral outcrops.

There are 26 sewage disposal works operated by Dŵr Cymru Welsh Water in the area, with a further 7 privately operated. All are monitored to ensure compliance with discharge consent conditions.

The most significant impact of sewage is evident in the bathing water of Morfa Bychan, where statistical analysis indicates that the waters have only a marginal probability of compliance. There are also problems of poor aesthetic quality due to sewage derived debris at Harlech and Llandanwg.

Inland, the Barlwyd and Ceunant Sych in and near Blaenau Ffestiniog respectively, have poor aesthetic quality due to sewage derived debris from storm sewer overflows.

A further problem in the Blaenau Ffestiniog area is the periodic contamination and discolouration of the rivers by slate dust.

Agricultural run-off combined with an abundance of stagnant drainage ditches has resulted in elevated ammonia and, depressed dissolved oxygen levels in the lower section of the Caseg.



ISSUES AND OPTIONS

The following tables list the 26 issues which the NRA has identified within the Glaslyn/Dwyrhyd/Artro Plan Area. We would like to hear from you if:-

- You think there are other issues which have been missed.
- You think that we have not considered all the options available.
- You have any views on the options suggested.
- You have any other information about the catchment or any comment about its future management.

Issue No: 1			
Low pH values and elevated zinc levels due to acidification on the Colwyn, Prysor, Cynfal and Arthro.			
Options	Responsibility	Advantages	Disadvantages
Identify local causes of acidification (e.g. acid rain / land drainage/ afforestation) , and investigate cost benefit of remedial measures e.g. liming.	NRA	Information to determine future action.	Cost (unknown). Potential damage to naturally acidic habitat if liming option pursued.
Research and development to identify and evaluate options for amelioration of impact.	NRA,NERC,WO, DOE	Identification of best option and costs.	Cost (£25K).

Issue No: 2			
Elevated metals in some reaches of the Glaslyn due to disused mine-workings and natural outcrops of metal ores.			
OPTIONS	Responsibility	Advantages	Disadvantages
Undertake catchment monitoring programme to identify specific sources of contamination.	NRA	Information to determine future action.	Cost (unknown).
Evaluate possible mitigation measures for discharges from targeted sites.	NRA	Management information to determine future action.	None.
Implementation of realistic mitigation measures at specific sites.	Local Authorities, Site Owners	Improvement to water quality and landscape.	Cost (unknown). May not be able to implement as no liabilities on previous owners of abandoned sites. Conflicts with archaeological interests.
Apply for derogations for zinc, copper and pH if demonstrated a natural phenomenon.	DOE,NRA	All reaches will achieve River Ecosystem RE1.	No real improvement in water quality.

Options	Responsibility	Advantages	Disadvantages
Full sewage treatment at Criccieth (scheduled for 1995).	DCWW	Assured compliance at Criccieth and contribution to improvement at Morfa Bychan.	Cost (unknown). Scheme will not address other source inputs and waters may still fail to comply.
Evaluate compliance following completion of remedial work at Criccieth.	NRA	Information to assess compliance and to establish whether other inputs affect the water.	None.
Improve sewage treatment at Porthmadog. Current regime known to give rise to very high levels of bacteria in estuary adjacent to EC beach. (Scheduled for 1996).	DCWW	Improved WQ at high amenity harbour and at popular but unidentified estuary beaches. Reduce bacterial levels in estuary adjacent to EC beach. Protection of and possible improvement of shellfishery.	Cost (unknown). A need to relocate outfall may affect SSSI. Scheme will not address other source inputs and waters may still fail to comply.
Investigate bacterial levels inshore of the Morfa Bychan outfall after completion of the Porthmadog scheme.	NRA,DCWW	Information on the effect of all the schemes on the water's compliance.	Cost (unknown).

Issue No: 4			
Poor aesthetic quality of identified bathing waters at Harlech and Llandanwg beaches due to sewage derived debris.			
OPTIONS	Responsibility	Advantages	Disadvantages
Install screening facilities on outfalls and improve treatment system at -	DCWW	Improved aesthetic quality of identified beaches.	
Llandanwg (scheduled for 1999)	DCWW		Cost (unknown).
and Harlech (scheduled for 2003).	DCWW		Cost (unknown).

Issue No: 5			
Glaslyn estuary in Class B due to aesthetic effect of sewage discharges from Porthmadog STW and storm sewage overflows.			
Options	Responsibility	Advantages	Disadvantages
Improve sewage disposal facilities at Porthmadog and improve storm overflows to reduce their spill frequency. (Scheduled for 1996).	DCWW	Improved aesthetic quality of the estuary. Upgraded classification of the estuary. Protection of and possible improvement of shellfishery.	Cost (unknown).

Issue No: 6			
High ammonia and low dissolved oxygen levels in the Caseg due to diffuse agricultural pollution and stagnant drainage channels.			
Options	Responsibility	Advantages	Disadvantages
Programme of farm inspections/liason with agricultural community, NFU/ FUW.	NRA	Establish targeting of sites for improvements.	Cost (unknown).
Improve farm effluent management and handling/ storage facilities.	Farmers	Water quality improvements and reduced risk of prosecution.	Cost (unknown).
Examine potential for improvement by changing the flow regimes in low lying drainage channels.	NRA/Riparian landowner	Management information to determine future action.	Cost (unknown). Impact on agricultural interests, if implemented.

Issue No: 7			
Poor aesthetic quality in the Barlwyd and Cewnant Sych due to storm sewage discharges.			
Options	Responsibility	Advantages	Disadvantages
Improve screening and re-set spill weirs. (In DCWW priority list for 1995-2000).	DCWW	Improved aesthetic quality.	Cost (unknown).
Assessment to determine impact of scheme.	NRA	Assessment of improvement in aesthetic quality and identification of any resolved problems.	Cost (unknown).

Issue No: 8			
Periodic solids contamination in the Afon Barlwyd and upper reaches of Afon Goedol by slate quarry dust.			
Options	Responsibility	Advantages	Disadvantages
Undertake catchment monitoring programme to identify specific sources of contamination.	NRA	Establish targeting of sites for improvements.	Cost (unknown)
Improve pollution prevention methods at identified sites.	Site Owners	Improved Water Quality.	Cost (unknown).

Issue No: 9			
Induced unnatural Flow Regime on the Glaslyn upstream of Llyn Gwynant due to the Cwm Dylli Hydroelectric Scheme.			
Options	Responsibility	Advantages	Disadvantages
Seek to negotiate a more natural flow pattern.	NRA	Restored fish population. Increased recreational resource. Improved opportunity for stock conservation.	Cost (unknown). Owner resistance. May reduce power generation.

Issue No: 10			
Reduced fish population in the middle Dwyryd due to the un-natural Flow Regime imposed by the Tanygrisiau Hydroelectric Scheme.			
Options	Responsibility	Advantages	Disadvantages
Seek to negotiate a more natural flow pattern.	NRA	Restored fishery and improved fishing conditions. Increased recreational resource. Improved opportunity for stock conservation.	Cost (unknown). Owner resistance. May reduce power generation.

Issue No: 11			
Adverse impact on fish populations of Maentwrog Hydroelectric Scheme due to unsatisfactory compensation flow.			
Options	Responsibility	Advantages	Disadvantages
Seek to negotiate a more natural flow pattern.	NRA	Restored fishery and improve fishing conditions. Increased recreational resource. Improved opportunity for stock conservation.	Cost (unknown). Owner resistance. May reduce power generation.

Issue No: 12			
Determination of abstraction licence(s) applications for hydroelectric schemes need to be based on consistent environmental considerations.			
Options	Responsibility	Advantages	Disadvantages
Seek to target schemes to least sensitive rivers.	NRA,CCW,SNP	Sensitive rivers protected. Both use of NRA,CCW and developers resources. Fewer licence applications refused.	Development costs to NRA and CCW (unknown). Reduction in power generation potential. Inconsistent with NFFO Order(s).
Developers only to apply for licences at environmentally robust sites.	Power generators	As above.	As above.

Issue No: 13 Compensation flow from Eiddew Mawr is inadequate to maintain the tributaries of the Artro.			
Options	Responsibility	Advantages	Disadvantages
Increase compensation flow from Eiddew Mawr.	NRA	Restored fish populations. Increased recreational resource. Improved opportunity for stock conservation.	Cost (unknown). Owner resistance. Impact on water supply.

Issue No: 14 Decline in area and quality of wet grassland due to drainage and agricultural improvement has impacted on water populations.			
Options	Responsibility	Advantages	Disadvantages
Restore wet grassland habitats.	NRA,CCW,SNP	Restored bird populations. EC Habitats Directive requirements satisfied.	Cost (unknown). Landowner resistance. Lack of compensatory mechanism. Requirement for ongoing management.

Issue No: 15 Impact on riparian habitats/native species by spread of alien plants.			
Options	Responsibility	Advantages	Disadvantages
Eradicate /control invasive species.	NRA,CCW,GCC, SNP	Restoration of riparian habitats.	Cost (unknown). Ongoing management required.

Issue No: 16 Glaslyn and Dwyrdd are priority otter catchments requiring immediate implementation of a management strategy in line with the Otter Strategy for Wales.			
Options	Responsibility	Advantages	Disadvantages
Implement Strategy.	NRA,CCW,GCC, SNP,NWWT	Secured and enhanced otter populations.	Cost (unknown). Habitat restoration requires landowner consent. May not enhance otter populations.

Issue No: 17 Damage to Ystymlyn SSSI through drainage.			
Options	Responsibility	Advantages	Disadvantages
Control willow scrub rise water levels and control grazing.	NRA,CCW, Landowner, RSPB	Restored site as regionally important wetland.	Capital cost £100K+ ongoing management required.

Issue No: 18 Lack of birdwatching facilities within Glaslyn/Dwryd estuary.			
Options	Responsibility	Advantages	Disadvantages
Provide Hides.	NRA,GCC	Improved recreational facility for birdwatchers.	Cost - £3K/hide. Landowner agreement required. New public access may be required.

Issue No:19 Need for improved riverside access.			
Options	Responsibility	Advantages	Disadvantages
Improve footpath network.	NRA,SNP	Improved amenity.	Cost (unknown). Landowner agreement required.

Issue No: 20 Lack of Canoe Access Agreements within the Plan Area.			
Options	Responsibility	Advantages	Disadvantages
Establish 1 access agreement within the area.	NRA,WCA	Facilitation of controlled access for canoeists.	Cost (unknown). Landowner resistance. Fishermen resistance.

Issue No: 21			
Need to improve the mooring facilities and maintain adequate channel for boating at Shell Island.			
Options	Responsibility	Advantages	Disadvantages
Agree and establish a maintenance programme for moorings and channel.	Meirionnydd D.C., NRA, SNP	Simplified maintenance procedures, better access and mooring facilities.	Cost (unknown).

Issue No: 22			
Risk of damage to brown trout genetic integrity from stocking.			
Options	Responsibility	Advantages	Disadvantages
Effective stocking policy and/or development of a brown trout strain suitable for local water.	NRA, Fishery Owners	Re-established or preserved locally adapted population.	Cost (unknown). Timescale if selected breeding needed.

Issue No: 23			
Low fish population levels in parts of the Glaslyn and Dwyryd catchments.			
Options	Responsibility	Advantages	Disadvantages
Continue regional monitoring programme.	NRA	Identification of problem areas to target remedial action.	Cost (unknown).

Issue No: 24			
Physical barriers to fish migration on the Croesor and Edno.			
Options	Responsibility	Advantages	Disadvantages
Investigate the potential for easing permanent barriers.	NRA, Fishery Owners	Identification of potential for improving the fisheries.	Cost (unknown). Resistance from some local user groups. Implications for genetic integrity of natural trout populations if access provided.

Issue No: 25 Lock of coarse fishing venues within the Plan Area.			
Options	Responsibility	Advantages	Disadvantages
Encourage introduction of coarse fisheries when advising potential developers.	NRA, Tourist Board, Fishery Owners	Facilitate the establishment of coarse fishing venues.	Cost (unknown). Potential for escape of alien species into salmonid waters.

Issue No: 26 Llyn Mair is devoid of fish.			
Options	Responsibility	Advantages	Disadvantages
Undertake a study to identify the factors limiting the introduction of a sustainable fishery.	NRA, SNP	Management information on the factors limiting the introduction of a sustainable fishery.	Cost (unknown).
Evaluate options to allow the introduction of the fishery.	NRA, SNP	Management information to determine future action.	None.
Implement most cost effective option.	NRA, SNP	The reintroduction of fish into an otherwise fishless lake in a high profile tourist area.	Cost (unknown). A sustainable fish population may not be achieved.

Issue No: 27 Preparation of Water Level Management Plans.			
Options	Responsibility	Advantages	Disadvantages
Prepare plans for all sites agreed with CCW.	NRA, CCW, WO, NWWT, RSPB, Councils, Landowners	Working document to manage for conservation/ agriculture. Cost (unknown).	Possible landowner resistance. Lack of compensating mechanism. Hydrological data required.

