

VISITOR MANAGEMENT ON THE AFON MAWDDACH CATCHMENT STUDY AREA (AMCSA)



MANAGING 'UNOFFICIAL' WHITE WATER KAYAKING

Contents

i	Abbreviations & Translations Tables	3
ii	Introduction	4
Section One : Recreational Opportunities in the AMCSA		
1.1	Direct River Recreation	6
1.1.1	White Water Kayaking	6
1.1.2	Angling	8
1.1.3	Gorge Walking and Wild Swimming	8
1.2	Indirect River Recreation	9
1.3	Summary of AMCSA Recreational Opportunities	10
Section Two: The Issues of Kayaking on the AMCSA		
2	Recreational, Access and Environmental Issues	11
2.1	Recreational Issues	11
2.2	Access Issues	11
2.3	Environmental Issues	12
2.4	Summary of the Issues of Kayaking on the AMCSA	14
Section Three: Current Management of Kayaking on the AMCSA		
3.	Current Strategic Management Frameworks and Site Specific Management Actions and Techniques	15
3.1	Current Strategic Management Frameworks	15
3.1.1	Recreational Management	15
3.1.2	Access Management	17
3.2	Current Site Specific Management	19
3.2.1	Direct: Visitor Management: Regulating Visitor Use	19
3.2.2	Indirect: Visitor Management: Information and Education	21
3.2.3	Indirect: Site Management: Site Restoration	22
3.3	Summary Of The Current Strategic Management Frameworks And Site Specific Management Actions And Techniques.	22
Section Four: Recommendation for the future Management of White Water Kayaking on the AMCSA		
4	The Management Dilemma	23
4.1	Management Recommendations: Information and Education	23
4.1.1	Planning Communication Projects	23
4.1.2	Get in at the Beginning	25
4.1.3	Codes of Conduct and Guidelines	25
4.1.4	Communication Tools	25
4.2	Monitoring the Situation	27
4.3	The Future of AMCSA	27
5	Concluding Comments	28
6	References	29

List of Abbreviations

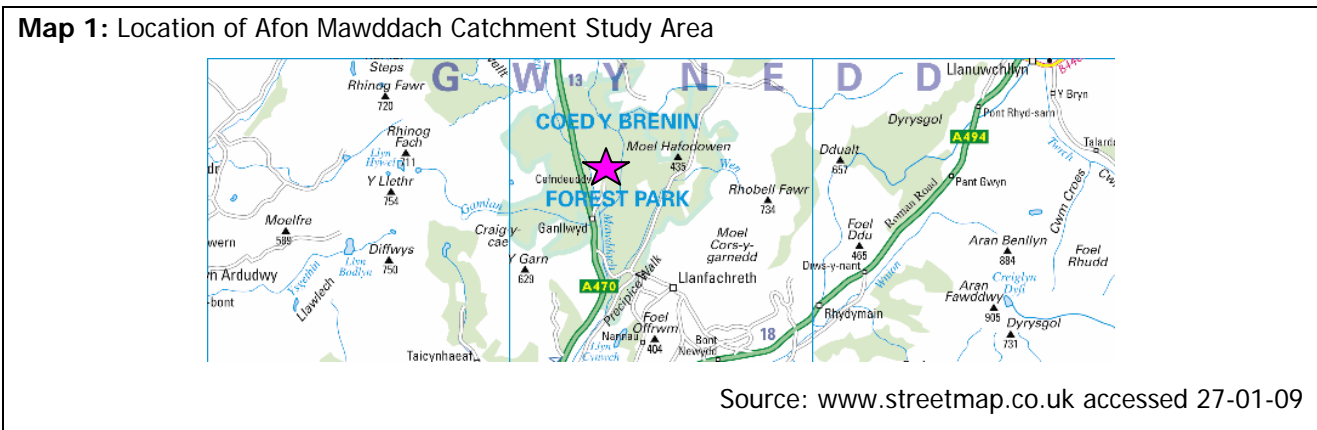
AMCSA	Afon Mawddach Catchment Study Area
BCU	British Canoe Union
BMC	British Mountaineering Council
CCW	Countryside Council for Wales
CROW	Countryside and Rights of Way
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EAW	Environment Agency Wales
FCW	Forestry Commission Wales
LAC	Limits of Acceptable Change
n.d.	No date
NAW	National Assembly of Wales
NNR	National Nature Reserve
NT	National Trust
ROS	Recreation Opportunity Spectrum
SAC	Special Area of Conservation
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
TOMM	Tourism Optimisation Management Model
UoB	University of Brighton
VAA	Voluntary Access Agreements
WAG	Welsh Assembly Government
WCA	Welsh Canoe Association
WRR	Water Related Recreation

Welsh Translations

Afon	River
Coed	Wood/ Forest
Rhaedr	Waterfall

i. Introduction

This case study focuses on the visitor management within the Afon Mawddach Catchment, in Snowdonia National Park, just North of Dolgellau in the Coed Y Brenin forest (see map 1) Although there are many recreational opportunities within the catchment, this study focuses on the management of white water kayaking.



In 2007 the Welsh Assembly Government (WAG) gave £100k to the Countryside Council for Wales (CCW) and Forestry Commission Wales (FCW) to run six water access pilot projects, one of which was the Afon Mawddach (WAG, n.d.). The Mawddach and its tributaries were selected as an exemplar project by FCW and CCW as it presented a wide range of common issues that are faced when managing natural area recreation; multiple private and public land owners, existing recreational users, environmental designations, a wide variety of recreational opportunities, suiting a wide range of abilities and interests (Snowdonia Active, 2007). The pilot project report has not yet been published.

The Afon Mawddach Catchment Study Area (AMCSA) is comprised of 5 main rivers; Afon Mawddach, Afon Gain, Afon Eden, Afon Gamlan and Afon Wen; broken down into 6 runs. The AMCSA has been determined by recommended access points on each river, according to a welsh rivers kayaking guidebook (Sladden, 1998) (see Figure 1a). The study area for this project is smaller than the WAG pilot project, which extends further downstream, incorporating additional tributaries and calmer waters.

Section 1: Recreational Opportunities in the AMCSA

1.1 Direct River Recreation

1.1.1 White Water Kayaking

AMCSA provides kayakers with the opportunity to experience a range of challenging white water, from the very extreme 1km grade V to VI stretch of the Afon Gamlan, to the slightly tamer 8Km of grade III to IV- of the Afon Eden (see box 1 below for explanation of river grading). Figure 2 below gives an idea of the type of kayaking experience offered.

Figure 2: Images of the Gain, Upper Mawddach and Gamlan (respectively)



Source: www.ukriversguidebook.co.uk Photo Credits: Clissold (n.d); Thomas, (1996-97); Jon ICC, (2002)

Box 1: Grading of Rivers

- Grade I** **Easy:** moving water with the odd disturbances in the shape of small, regular waves and slight meanders.
- Grade II** **Moderate:** the water is faster and rapids are more frequent; rocks, waves and small stoppers are found but always with an obvious channel.
- Grade III** **Harder:** the pace quickens with fairly big waves, and stoppers which are quite capable of holding a boat firmly. Rapids are much more continuous and, although the route is fairly obvious, it is necessary to be able to manoeuvre the kayak well.
- Grade IV** **Difficult:** long stretches of heavy rapids and falls with irregular waves and often powerful holding stoppers. The route is not obvious from the water, and bank inspection is usually necessary. A mistake or swim could be serious.
- Grade V** **Extremely difficult:** longer rapids, large drops with very big waves, dangerous stoppers and rocks to negotiate. This is a challenge to any canoeist. Although never absent in the lower grades, in grade V, substantial danger is always a possibility. Continual inspection and/or protection is often necessary.
- Grade VI** **Limit of navigation:** a line down exists - just. Luck may often play a part. There is always a real risk to life. Very favourable water conditions and protection may make rapids of this grade feasible. Very skilful paddling and the ability to pick the ideal days are also involved. Most of the time, however, they are too dangerous to canoe.

Source: Sladden (1998: 27-28)

These rivers are ideal for experienced, advanced kayakers and should not be attempted by novices. Table 1 summarises the nature of the rivers. None of the rivers have access agreements and so kayaking takes place on an ‘unofficial’ basis. Access to the put-ins and take-outs are via small roads off the A470 (T), except the Gamlan which is accessible via a footpath. There are no facilities or signposting at these access points, though there are parking lots located along the lower Mawddach, where many of the runs converge and finish (as seen in Figure 1 b). There is no promotion of kayaking, except from kayaking guidebooks, websites and friends.

The Welsh Canoeing Association’s Paddle Report has recorded 109 descents of AMCSA from 1998 onwards (WCA, ongoing). These voluntary recordings are not inclusive of all descents, therefore accurate user numbers cannot be extrapolated. However they do indicate that kayaking goes largely unnoticed and an on average occurs in groups of 3-7. There are around 100 days a year when the river flows are suitable, predominantly in the winter and spring (Buckley, 2008).

Table 1: Summary of the AMCSA

River/ Afon	Upper Mawddach	Gain	Eden	Lower Mawddach	Gamlan	Wen
Distance	9km	6km	8km	5km	1km	4km
Grading	V - portage	IV+ to V- portages: Pistell Y Cain	III to IV-	IV - weir	V to VI	IV; two IV+ drops, one V drop
River Features	Gorges, Drops and Waterfalls	Rapids, steepening into gorges, drops and waterfalls	Increasingly difficult as it closes into a gorge	Large Weir to start, moving onto falls then bolder gardens	Relentless drops including a 25 foot waterfall	Gorge with grade III rapids, made harder by fallen trees and drops.
River Levels	Rivers need to be in medium to high spate, different water levels create altering hazards.					
Get in and Take Outs	All accessible via small roads of the main A470 (T) road. Except Gamlan which requires using footpaths					
Accessibility	Footpaths, forest tracks and roads are never far from the rivers edge. Making access for river inspections, portages and emergency exits easier.					
Facilities	Make use of existing car parks, public toilets and Coed Y Brenin Visitors Centre					
Access Rights	No Access Agreements Exist					

Source: Sladden, 1998.

1.1.2 Angling

The AMCSA provides for salmon and sea trout angling. The angling season runs from March 20th to October 17th (Dolgellau Angling Association, n.d.a). There are four clubs with bank ownership and/or fishing rights along the AMCSA; Dolgellau Angling Association, Prysor Angling Association, Prince Albert Angling Society and Roger Edwards (Fishing Wales, n.d.). Combined they hold fishing rights on the Eden, upper and lower Mawddach from the confluence of the Gain to just after the confluence of the Gamlan. There are no fishing rights on the Gain, Wen or Gamlan. Just downstream of the AMCSA is a successful EA Hatchery, which restocks the AMCSA and other tributaries with trout and salmon and the very rare freshwater pearl mussel (Dolgellau Angling Association, n.d.b).

1.1.3 Gorge Walking and Wild Swimming

Gorge walking and wild swimming occur 'unofficially' within the AMCSA (Jones, 2008). The Rhaedr Mawddach on the upper Mawddach is recommended by the Wild Swimming book (Start, 2008).

1.2 Indirect River Recreation




The AMCSA runs through the heart of the Forestry Commission Coed Y Brenin and Tyddyn Glwadys recreation sites, providing a scenic backdrop to walking, mountain biking, horse riding, picnicking and orienteering. Figure 3 indicates facilities and activities offered. The FCW site is complimented by the National Trust (NT) site around the Lower Mawddach and Gamlan, as well as other public rights of way. Particular attractions are waterfalls, (see figure 4) and opportunities to view rare species and habitats.

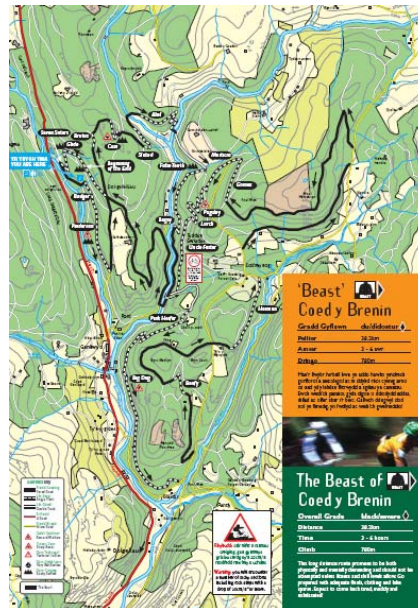
Figure 3. Forestry Commission Wales Coed Y Brenin Visitor Centre; Facilities, Activities and Trail Maps.

Facilities:



Activities:

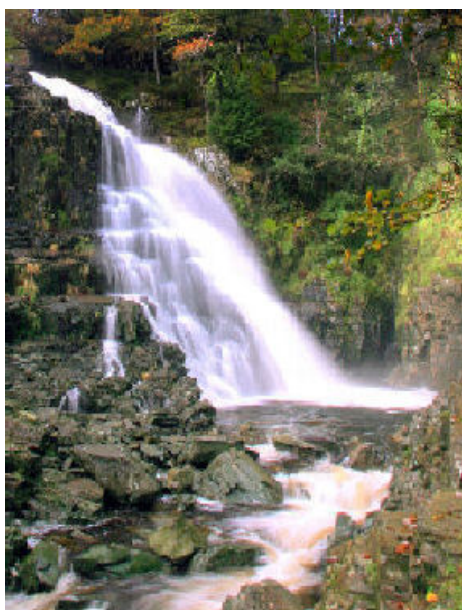
-  Open access, Waymarked walks and miles of Public Rights of Way.
-  Open access on forest roads.5 Waymarked routes and Bridleways.
-  Open access on forest roads, Bridleways.



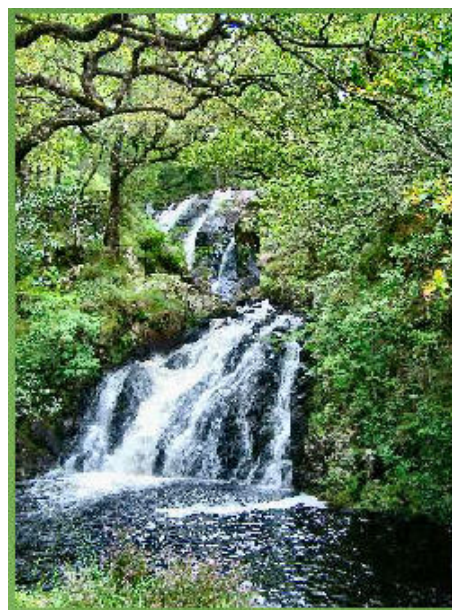
Source: Forestry Commission Wales (n.d.a,b,c)

Figure 4: Waterfall Attractions in the AMCSA

Rhaedr Ddu: Afon Gamlan



Rhaedr Pistell: Afon Gain



Source: www.snowdoniaguide.com accessed 27-01-09

1.3 Summary of AMCSA Recreational Opportunities

The AMCSA provides opportunities for a range of visitor experiences from leisurely activities, such as a walk along the Afon Eden Trail to a spot of fishing, to the more exhilarating white water kayaking and mountain biking; from the 'modern' experience of the visitors centre to the 'semi-primitive' experience of the Gain (Clark and Stankey, 1979).

Current 'unofficial' activities lack the promotion that established ones receive, due to the lack of access rights. This is unfortunate as there is potential for the Forestry Commission Wales (FCW) to expand the activities and experiences offered within the Coed Y Brenin recreation site, with minimal capital costs, as infrastructure such as access roads, car parks and visitor amenities, plus staffing already exist. However as they either do not own the land and/or the fishing rights, it is not their river to promote activities upon.

Section 2: The Issues of Kayaking in the AMCSA

2. Recreational, Access and Environmental Issues

Though there are a range of issues arising from recreational use of AMCSA, this section will focus on a sample of core issues. There are two main issues; user conflicts (recreational and access based) and environmental concerns.

2.1 Recreational Issues

Recreational conflict occurs when there is a perceived or actual mis-match between the goals of recreational users (Ewert et al, 1999). Occasionally conflicts occur between kayakers and anglers; only 12 warnings compared to 81 un-noticed and 16 welcomed descents (WCA, Ongoing). Conflict primarily occurs as kayakers disturb anglers and 'their' fish. The actual effect of kayaking on angling is inconclusive, with some reporting catches immediately after kayaks pass and others saying it ended their fishing day (Hendry et al, 2000). Angling is a solitary, tranquil activity that is at odds with the dynamic, groups of kayakers. However, with so many unnoticed descents (WCA, ongoing) it seems face-to-face conflict is limited, a common finding in recreational conflict (Cessford, 2002). Alternate 'good' conditions for anglers and kayakers reduce conflicts, with most suitable kayaking levels occurring during the angling closed season (Buckley, 2008). Conflict is more likely when levels are rising to or falling from spate or if paddled at low levels.

2.2 Access Issues

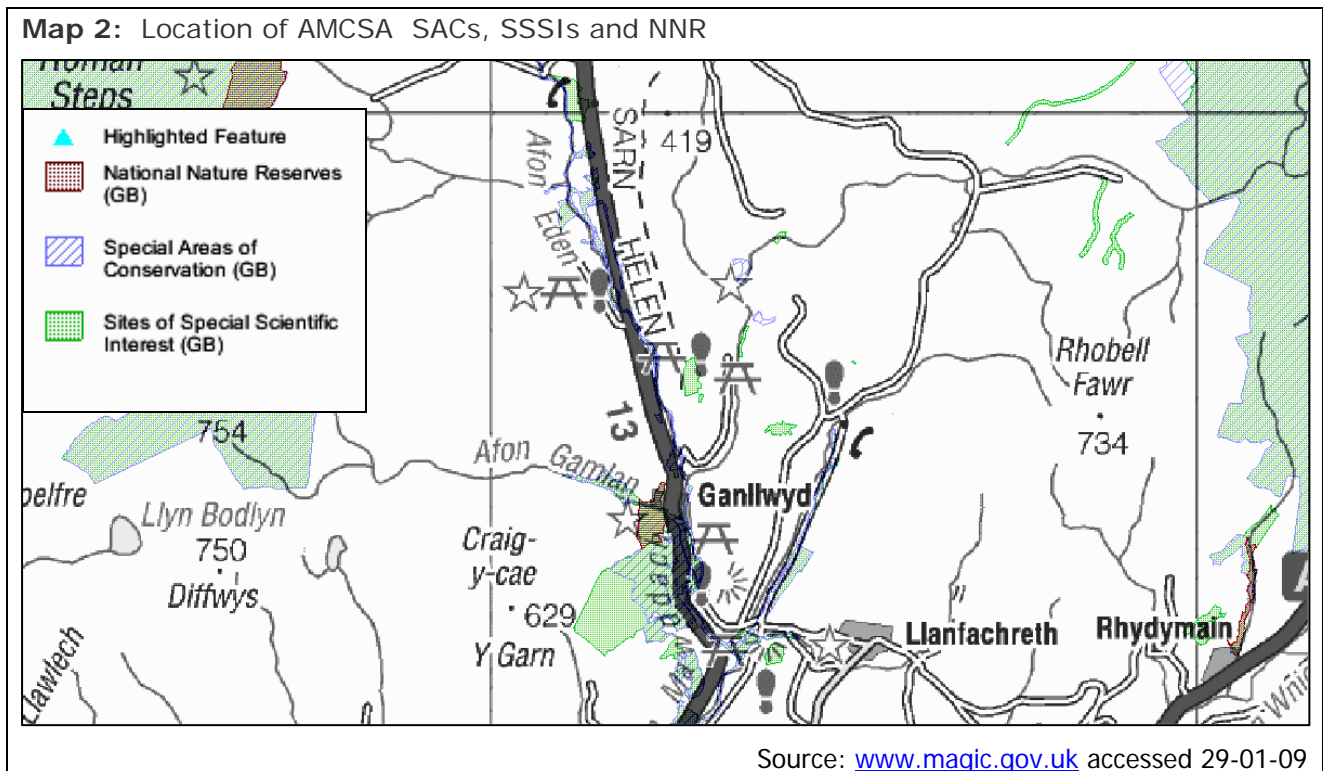
Without agreed access kayakers are trespassing and since anglers own the rights to most of the river sections, it spurs a more socio-economic, political conflict. Anglers pay large sums of money to secure and maintain access rights, providing exclusive access to enjoy their sport undisturbed (Church et al, 2007), whereas kayakers have free usage. Therefore Church et al (2007) argues that the goal difference theory of recreational conflict is eclipsed as...

'...this property based conflict is largely understood and articulated through discourses of legally enforceable rights... and morally based claims that compete for absolute primacy, regardless of the level of interpersonal conflict that actually exists.'

Church et al, 2007:p214

2.3 Environmental Issues

Additionally, anglers are concerned that kayaking will damage the riparian environment, such as disturbing spawning beds; a legal offence (Salmon and Freshwater Fisheries Act, 1975). CCW shares these concerns as the AMCSA is designated under two Special Conservation Areas (SACs), three Sites of Special Scientific Interest (SSSIs) and one National Nature Reserves (NNRs), all encompassed by Snowdonia National Park. Map 2 below gives an indication of the locations of these special features with table 2 giving more details.



Information on the approximate location of different species and habitats can be gained from SAC management plans (Clark et al, 2008 & Garrett, 2008) and SSSI citations (CCW, 2003, 2004, 2007a). The level of detail given in these reports is beyond the scope of this study, however they indicate the sensitive nature of the AMCSA and locate particular 'hot-spots'. For instance the Floating water-plantain (*Luronium natans*) though not abundant, is a rare example of survival on moving water; it is predominantly prevalent upstream of Pont Y Grible, the 'get in' for the Eden run.

Table 2: Designations on the AMCSA

Name	Designation	Reasons for Designation - Summary		River Sections
		Primary Reason SAC	Qualifying SAC	
Meirionnydd Oakwoods and Bat Sites (Existing)	SAC	<p>Old sessile oak woods with Ilex and Blechnum in the British Isles: Notable bryophyte species include the endangered <i>Sematophyllum demissum</i> and the nationally scarce <i>Campylopus setifolius</i> and <i>Leptoscyphus cuneifolius</i>.</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) * Priority Feature</p> <p>Lesser horseshoe bat: <i>Rhinolophus hipposideros</i></p>	<p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>European dry heaths</p> <p>Tilio-Acerion forests of slopes, screes and ravines * Priority feature</p> <p>Bog woodland * Priority feature</p>	Eden, Wen, Gamlan & lower Mawddach. Small sections of upper Mawddach.
Sources: Joint Nature Conservation Committee (n.d.) & Garrett, 2008				
Afon Eden - Cors Goch Trawsfynydd	SSSI & SAC	<p>Freshwater pearl mussel <i>Margaritifera margaritifera</i></p> <p>Floating water-plantain <i>Luronium natans</i></p>	<p>Active Raised Bog- Priority Feature</p> <p>Transition mires and quaking bogs</p> <p>Atlantic Salmon <i>Salmo salar</i></p> <p>Otter <i>Lutra lutra</i></p>	Eden, Wen, Gamlan & lower Mawddach.
Sources: Joint Nature Conservation Committee (n.d.), Clark et al, 2008. CCW, 2003-04.				
Bedd y Coedwr and Tyddyn Gwladys river sections	SSSI	<p>Geological Features: Three major mineral veins. Outcrops form the banks on sections of the Upper Mawddach.</p>		Small sections of the Upper Mawddach
Source: CCW, 1953, 1977, 1981, 1989				
Ganllwyd	NNR & SSSI	<p>Biological and geological features. The woodland at Ganllwyd is considered to be one of the best in Wales/UK/Europe for its mosses and liverworts. The lichen flora of the woodland and parkland trees is of exceptional importance. The site underpins part of the Meirionnydd Oakwoods and Bat Sites Special Area of Conservation.</p>		Section of the Gamlan
Source: CCW, 2007a				

The SAC and SSSI management plans (CCW, 2007b; CCW, 2008; Clark et al, 2008; Garrett, 2008) discuss the potential damage that water related recreation (WRR) may cause, with specific mention of gorge walking and white water kayaking. The main concerns were over damaging bryophytes, disturbing or damaging salmon spawning beds and freshwater pearl mussels, disturbing otters and silting caused by bank disturbance. Damage could mostly occur through kayaking in low water levels and increased use. The recommendations of these plans will be discussed in section 3.

A recent survey by CCW's Senior Reserves manager of potentially vulnerable areas revealed no detectable evidence of damage caused through recreational use over the past 10 years (Oliver, 2008). However increased publicity and use could increase the risk of damage (Oliver, 2008). Although recreational damage to SSSIs is minimal compared to agricultural damage (English Nature, 2003), it is important to note that gorges have become safe havens for many plants, as they are agriculturally worthless (Woods, 2008).

2.4 Summary of the Issues of Kayaking on the AMCSA

The main sustainability and visitor management issues arising from white water kayaking on the AMCSA result from occasional recreational conflicts with anglers, greater conflicts over legal access and environmental concerns. This is representative of findings within the University of Brighton studies (UoB, 2001, 2004, 2006). It is important to note that these issues are varied across the AMCSA, as conservation designations, fishing rights and land ownership vary. Table 3 below gives an indication of the level of issues experienced on each section.

Table 3: Varying Levels of Issues from Kayaking in the AMCSA

Issue Intensity	River Section	Designations	Fishing Rights
I n c r e a s i n g ↓	Gain	None	None
	Wen	SSSI/SAC	None
	Gamlan	SSSI/SAC	None
	Upper Mawddach	Partial SAC/Geological SSSI	After confluence of Gain
	Lower Mawddach	SSSI/SAC	Above confluence of Wen
	Eden	SSSI/SAC	Full

Section Three: Current Management of White Water Kayaking on the AMCSA

3. The Current Strategic Management Frameworks and Site Specific Management Actions and Techniques

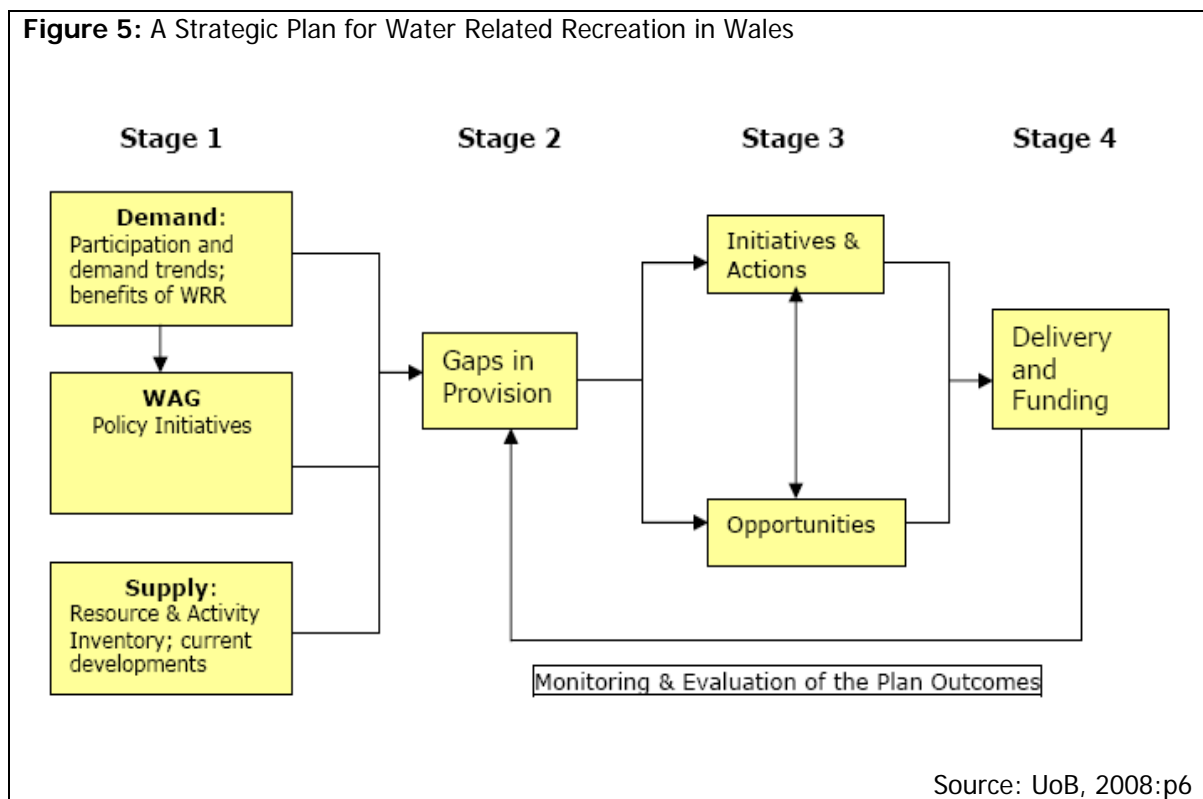
3.1 Current Strategic Management Frameworks

3.1.1 Recreational Management

The management of WRR has afforded a lot of attention since its omission from the CROW Act in 2000. Table 4 provides a sample of some of the research and strategies that have been produced. A common theme is to provide sustainable, inclusive access for WRR, so as not to compromise the social, economic or environmental characteristics of the resource.

Table 4: A Sample of Research and Strategies Exploring and/or Promoting Water Related Recreation	
Publication Name	Source
• Waterways for Tomorrow.	DEFRA (2002)
• Water-Based Sport and Recreation: The Facts	University of Brighton: DEFRA (2001)
• Game plan: a strategy for delivering government's sport and physical activity objectives	DCMS/Strategy Unit (2002)
• Planning Policy Guidance 17: Planning for open space, sport and recreation	Department of Communities and Local Government (2002)
• Waterways for Wales: Improved Quality of Life Through the Sustainable Development of Waterways in Wales	British Waterways (2003)
• Waterways for Wales: The Way Forward	British Waterways (2004)
• An Assessment of the Economic Impact of Water-Related Recreation of the Spey Catchment in 2003	Spey Catchment Management Plan Partners (2004)
• Catching the Wave: A Water Sports Tourism Strategy for Wales	Visit Wales (2004)
• Improving Access for Canoeing on Inland Waters: A Study of Feasibility of Access Agreements: Technical Report	University of Brighton: The Countryside Agency (2004)
• Your Rivers for Life: A Strategy for the Development of Navigable Rivers 2004 -2007	Environment Agency (2004)
• Sport and Physical Activity Strategy: Climbing Higher	Welsh Assembly Government (2005)
• Putting Pilot Voluntary Canoe Access Agreements in Place: Final Report	University of Brighton: The Environment Agency (2006)
• Time for Wales to Go with the Flow	Welsh Canoe Association (2006)
• A Better Place to Play: Our Strategy for Water-Related Sport and Recreation (2006-2011).	Environment Agency (2006)
• A Strategic Plan for Water Related Recreation in Wales	University of Brighton: (2008)
• SPLASH: Water Recreation Challenge Fund for Wales	Environment Agency (n.d)
• TAN 16: Sport, Recreation and Openspace	Welsh Assembly Government (2009)
• Scope of the short inquiry into access along inland water	National Assembly Wales (2009)

The most relevant plan is the Strategic Plan for Water Related Recreation in Wales (UoB, 2008). Though not explicitly adhering to any visitor management framework, elements of the Tourism Optimisation Management Model (TOMM) are apparent (Manidis Management Consultants, 1997). Figure 5 diagrammatically illustrates the structure of the framework. The steering group of the plan included British Waterways, CCW, EAW, FCW, Sports Council for Wales, Visit Wales, WAG and Welsh Local Government Association. Therefore their WRR policies will not be discussed.



As propagated by TOMM, the plan aims to find the optimal conditions for WRR.

'The optimal conditions cover the broad spectrum of the economic, market opportunity, environmental, experiential and socio-cultural factors and as such, reflect the entire tourism system.'

KI TOMM (n.d.)

The plan explores the value of WRR, for health, social inclusion, environmental protection and the economy, whilst considering political priorities, current participation, future trends; both domestic and tourism based and key drivers for change. It will evaluate current physical resources, from the activities they can support to their accessibility. Where gaps are identified initiatives and actions will be taken to meet demand, such as WAG pilot

projects. However the feasibility of the WRR plan is yet to be seen, as previous access case studies uncovered many implementation challenges (UoB 2004; 2006).

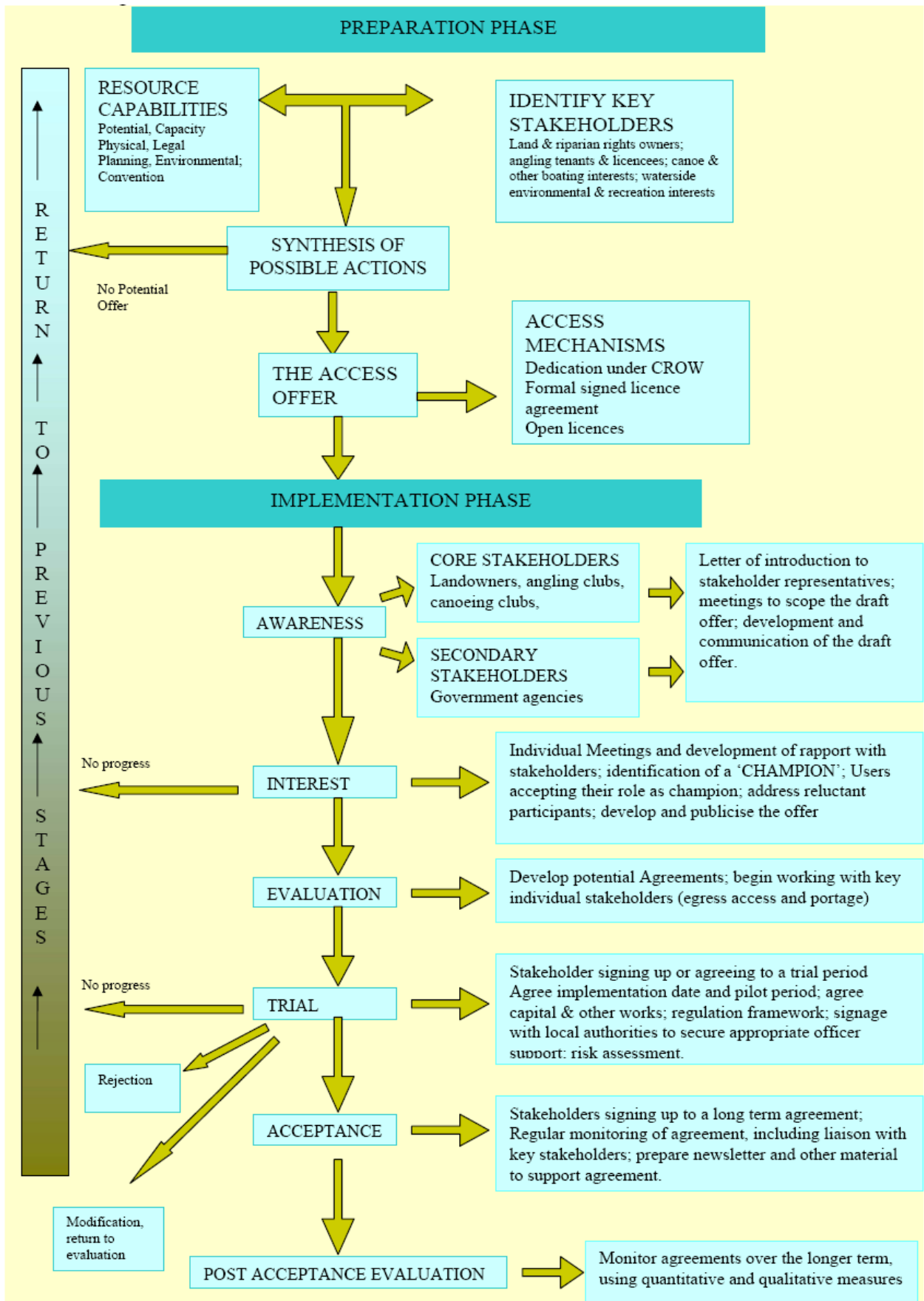
The advantage of mimicking the TOMM model is that it encourages a positive growth approach that does not focus on limitations. It has proven itself as a good model for managing large land areas, under assorted ownership whilst incorporating a wide-range of stakeholders (Newsome et al, 2007). However a major disadvantage is the large volume of information that needs to be collected (Crowe, 2005); a process that is currently underway (UoB, 2008).

The plan calls for National Governing Bodies to express their specific experiential needs, with the identification of strategic sites; mirroring aspects of the Recreation Opportunity Spectrum (ROS) (Clark & Stankey, 1979). The advantage of the ROS framework is that the greater the range and number of opportunity areas identified, the greater the flexibility managers have in ensuring conflicts, such as discussed in section 2 can be mitigated.

3.1.2 Access Management

There is no kayaking access agreement in place on the AMCSA, along with 98% of other non-tidal rivers in Wales (UoB, 2008). The Government believes access should be negotiated through voluntary access agreements (VAA), with the EA providing downloadable DIY VAA kits (www.environmentagency.gov.uk accessed 05-05-08). The UoB (2006) proposed a critical path framework to VAA (see figure 6), however unlike the Best of Both Worlds (n.d.) guide from 'conflict to consensus', there is no cut off point at which you have 'hit the wall'. A position that the WCA access campaign feels it has reached and therefore is seeking legislative change (www.kayakingisnotacrime.org.uk accessed 01-02-09). The idea of the framework is to reach a consensus that suits all stakeholders, which is loosely based upon Limits of Acceptable Change (LAC) (Stankey et al, 1985).

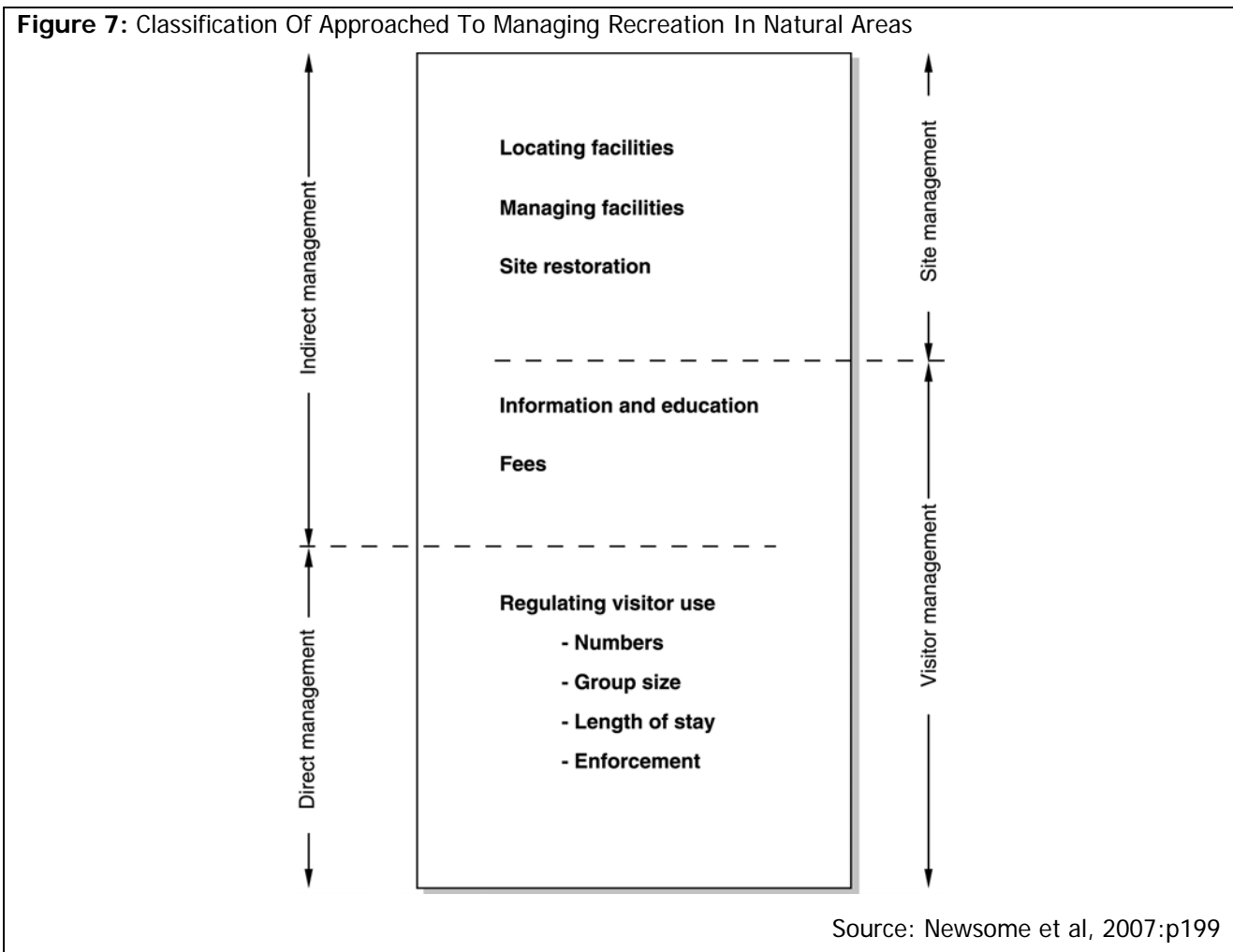
Figure 6: Critical Path Framework to Voluntary Access Agreements



Source: UoB 2006:p6

3.2 Current Site Specific Management Actions and Techniques

The implementation of the above frameworks relies on site specific management actions and techniques. Broadly speaking these can be divided into visitor management and site management, direct and indirect, as illustrated in figure 7 (Newsome et al, 2007). This section explores how currently white water kayaking management on the AMCSA is primarily visitor management orientated, using both direct and indirect methods.



3.2.1 Direct: Visitor Management - Regulating Visitor Use

As the primary property and/or rights owners the Angling associations are managing white water kayakers, by prohibiting usage, through the use of signs alongside the bank (see figure 8). These restriction signs encapsulate conflicts discussed in previous sections. It portrays the management of WRR as loosely based on a Carrying Capacity approach; inferring that spawning beds cannot 'carry' WRR, with even angler numbers managed through a restrictive fees and permit system. Though focusing on the Ecological Carrying

Capacity of the river, as section 2 noted this is also about Perceptual Carrying Capacity; that the river cannot be shared by more users.

Figure 8: Signs Erected at the Confluence of the Gain and Upper Mawddach



Photo Credit: Author, 2008

Kayaking forums have discussed the signs and contacted FCW over their legality, as they are on open access FCW land and are not bilingual (<http://www.ukriversguidebook.co.uk/forum/viewtopic.php?f=3&p=355704> accessed 01-02-09). FCW replied no permission was granted to erect signs, which along with the unprofessional presentation does little to regulate visitor behaviour.

In addition the framework on which they are loosely based, Carrying Capacity has largely been discredited as a method of recreational management, due to the complex and uncertain connections between recreation and environmental degradation (Newsome et al, 2007). Without monitoring systems and enforcement powers the anglers are failing to manage kayakers.

CCW have a responsibility to manage the SAC's and SSSI's that cover these rivers. The SAC management plans (Clark et al, 2008 & Garrett, 2008) give recreation management proposals; including temporal and spatial zoning, coinciding kayaking with higher flow

Visitor Management Managing White Water Kayaking on the AMCSA levels, whilst limiting user numbers, (Garrett, 2008), with a strong emphasis on regulation, monitoring and enforcement (Clark et al, 2008). These are sustainable approaches to managing recreation in a National Park (Crowe, 2005). The plans are limited by their lack of detail and their recent writing means they are yet to be enacted.

The plans conform to an Ecological Carrying Capacity model with no allowance for 'acceptable' recreational degradation, as would be expected through LAC (Stankey et al, 1985). This is probably because the plans are conservation, not recreation focused. However the very rare and site specific species could mean that degradation would never be 'acceptable'.

A problem with CCW managing recreation would be that *'Obtaining regulation of an uncontrolled activity may however be seen as management for conservation. Legal opinion should be sought on this point'* (Clark et al, 2008:p29). Essentially, depending on the methods used to manage recreation, CCW could be seen to be condoning the trespassing kayakers. Irrespectively CCW have to monitor these sites and evidence gathering is impartial.

3.2.2 Indirect: Visitor Management – Information and Education

The sport's governing body, WCA aims to provide information and education to kayakers through their website, which covers topics such as 'Earning Your Welcome' and 'Environment and Legislation' (WCA, n.d). Although providing useful information it does not give site/habitat specific considerations and only reaches those who access the website. Therefore its scope of influencing kayaker behaviour is limited.

The WCA have recently made access to the National White Water Centre free. The promotion of unrestricted access (except dam release restriction) at another resource, is a management technique for redistributing use (Sharpley, 1993). However the AMCSA provides for a more extreme, primitive experience so it is questionable what effect this may have.

3.2.3 Indirect: Site Management – Site Restoration

FCW are looking into the prospect of clearing harvested and windblown trees from the rivers within their area (Liddy, 2008). River clearance would draw funds from the EA's SPLASH fund, aimed at projects that increase the accessibility of water. Similarly to CCW they are concerned about being seen to be promoting an activity which takes place on an illegal basis, but are aware of their remit to promote recreational access and their responsibilities to trespassers under the Occupiers Liability Act (1984).

3.3 Summary of the Current Strategic Management Frameworks and Site Specific Management Actions and Techniques

This section though discussing management of recreation issues, has highlighted yet another conflict arising from organisation's remits to promote sustainable WRR and the land/right owner's refusal to share access. This creates a management dilemma, especially for CCW who do not want to stop kayaking (CCW, 2008), but need to manage it for the sake of the SAC, SSSI's and NNR. However recreation management could be seen as condoning an illegal activity. This has resulted in the current situation whereby 'unofficial' kayaking is being 'managed' unsustainably, with no mitigation, monitoring or enforcement. In addition the site specific management techniques are ineffective in influencing kayakers behaviours, which should be the first tool used in recreational management (Eagles & McCool, 2000). The way forward from this situation will be discussed in section 4.

Section Four: Recommendations for the Future Management of White Water Kayaking on the AMCSA

4. The Management Dilemma

Whilst numerous management frameworks and techniques are available for managing outdoor recreation (Newsome et al, 2007) and kayaking specifically (Williams 2007), the range of available techniques is determined by legal accessibility. As previously concluded there is a management dilemma on the AMCSA; 'how to reconcile the promotion of the sustainable kayaking without condoning its illegal nature'. Working towards alternate resources or attaining legal access would remove this dilemma, both of which are currently underway (Snowdonia Active, 2007; UoB, 2008; WAG, 2009). Figure 9 provides a simplified overview of the options for management on the AMCSA.

However in the meantime, kayaking still occurs and needs to be managed, as irrespective of ownership or legal access there is a requirement for CCW to manage the designated sites and for the WCA to responsibly govern its sport. This section recommends ideas on impartial management. Management techniques would rely on indirect visitor management, through increased information and education, which are not site specific; therefore avoiding accusations of condoning 'unofficial' kayaking on any particular resource. This section uses themes from Scottish Natural Heritage's guide 'Communication, not Conflict' (SNH, 2004a).

4.1 Management Recommendations: Information and Education

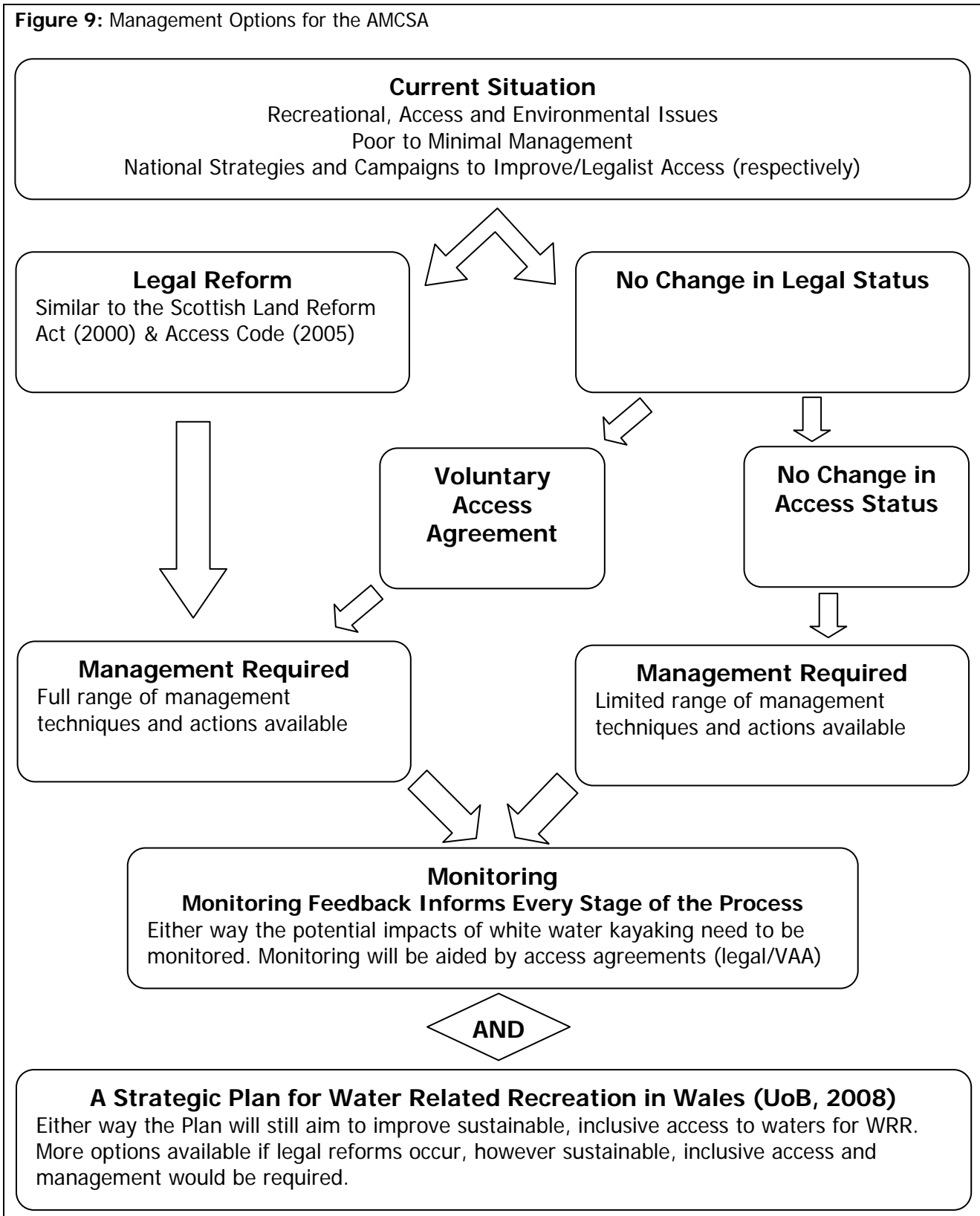
Luckily the AMCSA is self-restricting as its 'good' river levels reduce user conflict and mitigate environmental damage. Equally the difficulty of the river limits the number of paddlers and group sizes. This self-mitigation is in line with CCW ideas of keeping user levels low and coinciding use with high-flows. It is important that acceptable flow levels, including specific times when the river should be avoided, are made publicly available; this is when information and education play a role.

4.1.1 Planning Communication Projects

It is important to identify the key issues, objectives and audiences so communication is focused and thus influential. Therefore it is recommended that the WCA and CCW sign a

Memorandum of Understanding, as Canoe England and Natural England have done (BCU, 2003). Collaborative working is integral to the following recommendations.

Figure 9: Management Options for the AMCSA



4.1.2 Get in at the beginning

Influencing visitor behaviour should occur as early as possible (SNH, 2004a), by ensuring instructors are promoting sustainable kayaking. The WCA could place more emphasis on sustainable kayaking in their sport development frameworks. However not all kayakers participate through 'official' and/or Welsh frameworks, therefore it would be beneficial to promote sustainable kayaking through multiple channels, such as magazines and websites.

4.1.3 Codes of Conduct and Guide Lines

Although the WCA has a broad code of conduct, it maybe necessary to create more targeted ones, e.g. Kayaking in - designated areas – gorges - the Mawddach Catchment. Equally resource specific guides could be produced, such as the Afon Ddu Gorge guide (Sustainable Use of Snowdonia, n.d). The guide highlights special features to look out for in the gorge and ways to protect it. This can act as an influencing tool, but also add to the visitor's experience by creating extra interest (Keirle, 2002). Impartial writing that focuses on the resource and general WRR do's and don'ts could avoid promotion of any particular activity.

4.1.4 Communication Tools

Leaflets and booklets are the commonest forms of communication (SNH, 2004a). Due to WRR audience, waterproof booklets as developed for the Afon Ddu Gorge would be appropriate (Sustainable Use of Snowdonia, n.d). However distributing leaflets and keeping them up to date is costly.

















Nowadays websites are often people's first port of call (SNH, 2004) and have the advantage of being;

- easy and cost effective to update
- accessible around the world, 24-7
- capable of providing a range of media experiences, e.g. videos and blogs

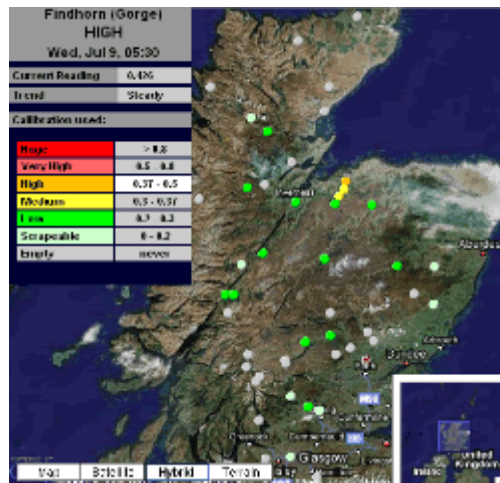
The British Mountaineering Council has established a web-based, Regional Access Database, (www.thebmc.co.uk) incorporating temporal and spatial zoning, by highlighting when there's unlimited, restricted or no access due to environmental or social considerations; providing additional information via the information tool. In Scotland

'Where's the Water' provides an on-line, interactive map, graduated on kayaking river levels, with trend data attached (www.wheresthewater.com). These formats (see figure 10) could be integrated into existing on-line kayaking guides for Welsh rivers (www.canoewales.com). If well-designed and frequently updated it could provide an effective tool for influencing decisions at the start of their 'Recreational Journey' (SNH, 2004b). This has the added benefit of reducing the miles driven in search of water and the 'since we're here now, we'll scrape down' mentality; both characteristics of unsustainable kayaking.

Figure 10: Examples of Web based Guides

 General information	 Seasonal restrictions	 Parking restrictions	 Group advice	 On CRoW land	
Crag Name	BMC Area	Climbing Area	Access	Advice	Restrictions Apply
Abercastle (Ynys Deullyn cliffs)	Wales	Pembroke North		  	
Arch Zawn	Wales	Pembroke South			
Auk's Buttress (Little Orme)	Wales	The Ormes		   	1 Mar - 15 Aug Nesting Birds

Source: <http://www.thebmc.co.uk/bmccrag/Search.aspx?s=-1&t=&r=34>



Source: www.wheresthewater.com

4.2 Monitoring the Situation

The riparian environment is already monitored, via CCW monitoring the SACs and SSSIs and the EA hatchery monitoring fish. However user numbers are not effectively monitored. Although the WCA paddle report (WCA, ongoing) could be further promoted, other direct methods could be employed, for instance monitoring AMCSA car parks. It may be possible to correlate any degradation with user numbers, however this is notoriously difficult due to a non-linear association (Stankey et al, 1985). However information collated can inform future action and management plans.

4.3 The Future of AMCSA

With legal access, management frameworks such as LAC, which would take into consideration all stakeholders acceptance levels (Stankey et al, 1985) could be considered. Also more direct management could be undertaken, such as hardening access points to prevent bank erosion and silting or putting up signs, as on the Afon Glaslyn (see figure 11). Minimal work would be required if the area was zoned as 'semi-primitive' (Clark and Stankey, 1979), equally minimalist maintenance helps manage numbers (Newsome et al, 2007). Free permits could be issued from the FCW visitor centre, making monitoring easier and kayakers identifiable, a common plea from anglers when negotiating VAA (UoB 2004, 2006). By demonstrating how the AMCSA could be sustainably managed, if legal access were granted, perhaps rights holders would realise their BATNA (Best Alternative To Negotiated Agreement) i.e. a continuation of the current situation, is not so desirable after all (Eagles and McCool, 2000).

Figure 11: Onsite Management Techniques at the Afon Glaslyn



Source: <http://www.snowdonia-active.com/news.asp?newsid=596>

5. Concluding Comments

The Mawddach and its tributaries were selected by FCW and CCW as an exemplar pilot project, due to the complexity of management issues surrounding white water kayaking on this particular catchment. This report has only been able to summarise some of the core elements, so hopefully the forthcoming pilot project report provides greater insight into the potential to reconcile recreational, environmental and access issues on the AMCSA.

At present the predominant land/rights owners are failing to manage kayaking sustainably, as it occurs despite signage prohibiting use, with no monitoring or regulation. The lack of legal access has left bodies such as CCW and FCW in a management dilemma; how to reconcile their remits to promote recreational access and manage their sites without condoning kayakers trespassing. The current management of white water kayaking is therefore predominantly based around the river's own exclusive nature, as it requires particular flows levels and talented kayakers. However there are fears that as more kayakers become proficient in extreme white water paddling, the delicate nature of this highly designated conservation area could be put at risk.

Strategies are underway to try and improve the access to inland waters in Wales. However all management plans reviewed were in their infancy, so time is now needed to monitor their progression.

Recommendations were made to impartially increase awareness about the sensitivities of the AMCSA and riparian environments in general, with a promotion of sustainable kayaking through information and education, focusing on the coaching framework and website guides.

In the meantime CCW and the EA continue to collate environmental data, which if collected alongside kayaker numbers could provide valuable information to uncover the links, if any between kayaking and riparian disturbance and degradation. Hopefully then providing the basis for sound, sustainable management plans for the future.

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