



Linking coasts and catchments

Final Report

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Executive Summary

Background to research

Scotland's rivers, coasts and seas provide a critical resource for a range of human activities. In the past, links between human activities and the environment have been poorly managed, leading to a legacy of degradation. Global changes are giving rise to a range of new challenges such as increased flooding from sea level rise and storminess and proliferation of invasive or non-native species. Catchments are inextricably linked to coasts by the flow of materials, energy, nutrients and species through the medium of water.

Scotland is at a crucial juncture in developing a new regime for the management for coasts and seas under the Marine (Scotland) Act (2010). A range of marine plans are proposed at national and regional scales. A catchment scale approach to water quality issues has been developed through River Basin Planning and Management under the Water Framework Directive (200/60/EC). The first generation of plans is now being implemented. Scotland has developed some innovative, voluntary, bottom-up approaches through Coastal Partnerships and Integrated Catchment Management Partnerships. It is increasingly recognized that such approaches are key to achieving objectives by engaging those who need to act to influence the water environment.

The complex policy framework makes it challenging to develop 'an ecosystem approach' that will maximise benefits to water users and safeguard the natural capital upon which these benefits depend. This study explores a range of innovations needed to policy systems more effective and integrated across the catchment and coastal interface.

Objectives of research

- To identify the perspectives of practitioners and stakeholders working on catchment-coastal issues. What are the key challenges?
- To outline the range of policies and programs that operate in the coastal-catchment interface. Do they work well together or could collaboration be improved? What are the drivers for action and integration?
- To explore the barriers, opportunities, and mechanisms to integrate catchment and coastal management. What are the requirements for effective collaboration?

Research Activities

The project initiated a number of research activities to collect data and address the objectives. Activities included:

- Delivery of an open survey to 10 Scottish local coastal partnerships and 5 catchment officers to explore perspectives on coastal and catchment management integration in the current policy environment. Survey analysis identified major themes, opportunities and constraints. Interviews with individual officers followed up survey themes.

- A policy review and desktop analysis (including GIS) of key policy and legislative instruments identified links and overlaps relating to coastal and catchment policy in Scotland.
- Survey and literature review results fed into the development of a series of case study focus groups with coastal and catchment stakeholders. This included workshops and interviews with the East Grampian Coastal Partnership, River Dee Catchment Partnership; Moray Firth Partnership, Forth Estuary Forum, Highland Council, SEPA, SNH, University of the Highlands and Islands and Highlands and Islands Enterprise.
- Interim results discussed at the CATCH2 workshop in Edinburgh (with further interviews) and presented at a range of policy forums (e.g. Tay Estuary forum Annual conference).

Key findings and recommendations

- Coastal issues could receive greater attention in the catchment management process. This could be achieved by overcoming boundaries between freshwater and coastal specialists and targeting the next generation of river basin management plans to tackle coastal issues where justified.
- Practical collaboration occurs at a local level, depending on *ad hoc* arrangements, personalities involved and resource capacity. There is an asymmetry of representation of coastal stakeholders on catchment initiatives.
- Strategic programs driven by legislation are not always responsive to the practical needs arising in coastal catchments. While major (e.g. EU) strategic issues are being addressed voluntary partnerships often tackle issues that are important for the communities concerned. Support should be strengthened for voluntary initiatives and the important role they play in delivering objectives on the ground.
- There are unresolved questions about how the Water Framework Directive will coordinate with the Marine Strategy Framework Directive. Clear and concise direction is needed for catchment and Area Advisory Groups to input to forthcoming Marine Planning Partnerships, and in the interim work to achieve goals with Local Coastal Partnerships.
- Practical opportunities for collaboration exist between catchment and coastal partnerships. Both sides can join forces to identify and tackle tractable issues and use tools such as joint platforms to encourage better management and outreach.

Key words

Integrated Catchment Management, Integrated Coastal Zone Management, Marine Planning

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1. MAPPING THE KEY ISSUES

The issues for Scotland's coastal catchments vary according to the diverse geography, from muddy industrialized estuaries to wilderness sea lochs. A survey of local coastal partnership and catchment officers (n=14) highlighted and prioritised a range of issues that were diverse and dependent upon regional context. In particular respondents were asked to consider those priority issues at the coast-catchment interface (Table 1).

Table 1 – Key Issues at the Coast-Catchment Interface

Issue	Significance	Collaborative Solutions
Marine Litter	Often problematic at the tidal extents. Predominantly originates from catchment with pathways to the coast. Getting worse according to data.	A key MSFD indicator so further collaboration required due to statutory duties. Requires cross sector approach, behavior change and market responses.
Bathing Water quality	Stringency of standards increasing. Important to local economy and a range of recreational activities.	Opportunities to raise awareness in catchments about effects of legacy mining, sewage, agriculture and forestry on coastal recreation. Also dealing with sewer outputs in flood events. Remediation possible but also proper cost-benefit required.
Invasive and non-native species	Some moderate priority issues but major risks to sectors such as salmon fisheries and biodiversity conservation.	Solutions require co-ordination of a range of collaborative and voluntary programs.
Shellfish Water quality	A significant issue on the West coast coupled with increasing capacity	Diffuse and point source effects (sewage, agriculture and forestry) impact on this growing coastal sector.
Flooding or erosion	Likely increase issue due to global warming from the catchment side (flooding) and coastal sea level rise / storminess.	New approaches to making space for water will require dedicated projects in the inter-tidal zone. Majority of urban settlement and infrastructure is coastal.
Coastal Development	Impacts on morphology and biodiversity. Likely increase due to expanding sectors at sea (e.g. renewable energy infrastructure and aquaculture) making landfall at coast.	Integrated development/ planning with analysis of trade-offs and cumulative impacts to find best solutions. Ensuring joined up development occurs and includes relevant stakeholders from catchment and coastal bodies.

Figure 1 – Coastal Issues in the Catchments around Scotland

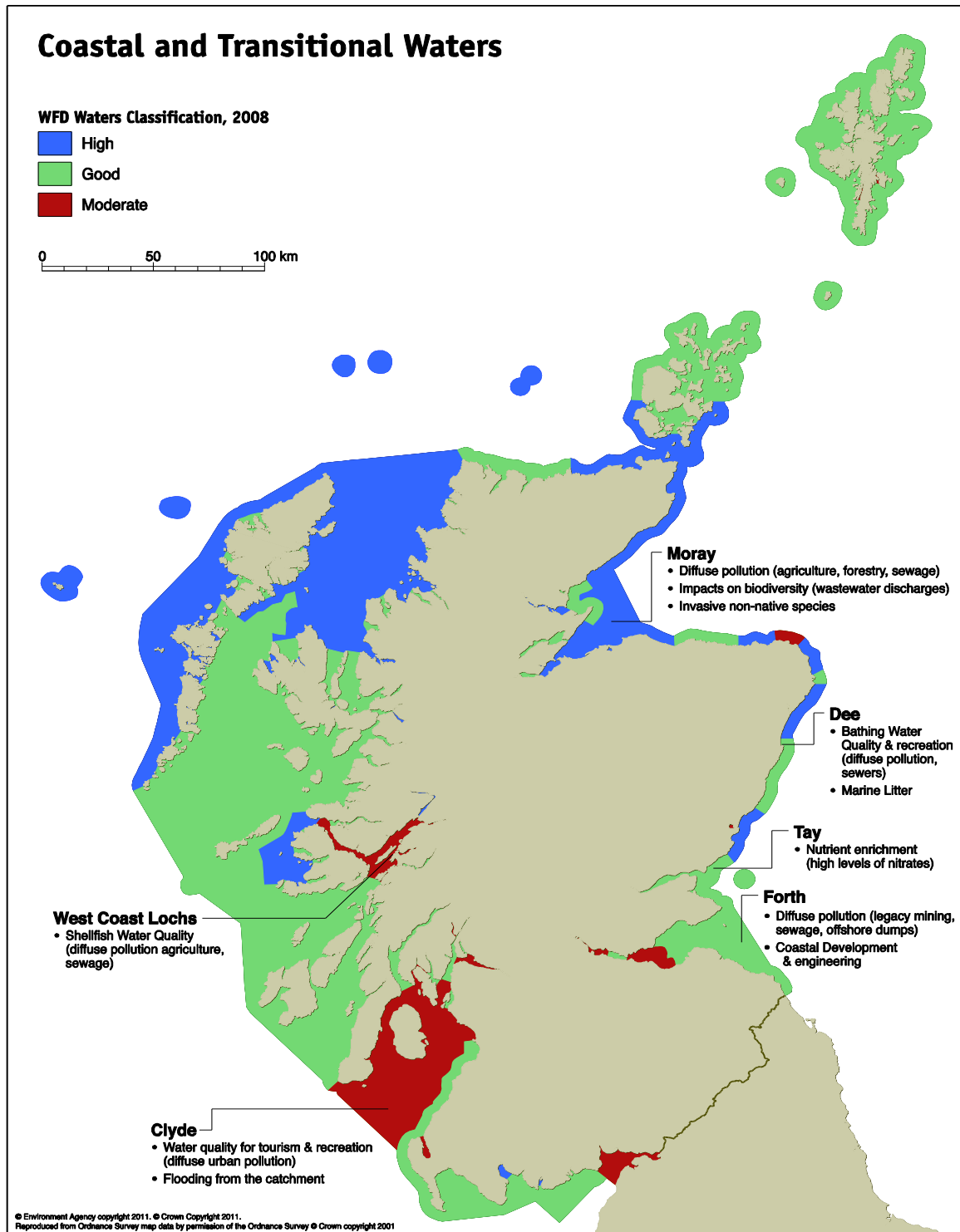


Figure 1 highlights the area covered by the 514 coastal and transitional waters in Scotland. Under the WFD the water bodies are classified for Ecological status at one of 5 levels. Most areas show moderate to high status but actions are required to improve quality and deal with varying issues in different waterbodies around the coast. Furthermore, the classification focuses on those issues covered by the legislation. A variety of other issues is important across the catchment coast divide. One of the major challenges is in coordinating different initiatives to work together across the land-sea divide. [Sources: Copyright Scottish Environmental Protection Agency]

2. THE POLICY CONTEXT OF THE COASTS

2.1 A complex mix of instruments

The policy environment for the coasts is complex with instruments that differ in spatial extent and sector. Regulation can focus on individual sectors (e.g. aquaculture, farming, fisheries or waste water) or on multiple sectors that impact on environmental quality (e.g. catchment wide diffuse pollution, biodiversity conservation or flooding) (Table 2).

Table 2 Key Institutions and Instruments relevant in the coastal zone

Institution or Instrument	Scale	Spatial Focus	Sector focus
Habitats Directive	EU	All	Biodiversity
Water Framework Directive (WFD)	EU	Catchment - coastal to 3nm	Multi-sector Good Ecological-Chemical Status
Marine Strategy Framework Directive (MSFD)	EU	Coastal marine to 200nm	Multi sector Good Env Status
Scottish Biodiversity Strategy (SBS)	National	Catchment - coastal	Biodiversity
National River Basin Management Plan (NRBMP)	National	Catchment - coastal to 3nm	Multi sector, see WFD
National Marine Plan (NMP)	National	Coastal marine to 200nm	Multi sector, see MSFD
National Planning Framework 2	National	All to 12nm. Selected issues 200nm	Multi sector
Area Advisory Groups (AAGs)	Regional	Catchment - coastal to 3nm	Deliver multi sector plans under NRBMP
Regional Marine Plan (RMP)	Regional	Coastal marine to 12nm	Deliver multi sector plans under NMP
Flood Management Plans	Regional	Unknown	Multi sector
Catchment Management groups (CMG)	Regional-local	Catchment	Multi sector – delivering WFD at local scale
Scottish Sustainable Marine Environment Initiative (SSMEI)	Regional-local	Coastal marine	Multi sector planning & coordination
Inshore Fishery groups (IFGs)	Regional	Coastal marine to 12nm	Sea Fisheries
Marine Protected Areas (MPAs)	Regional	Coastal marine to 200nm	Biodiversity conservation Marine (Scotland) Act
Special Areas of Conservation (SACs);	Regional	All	EU Biodiversity

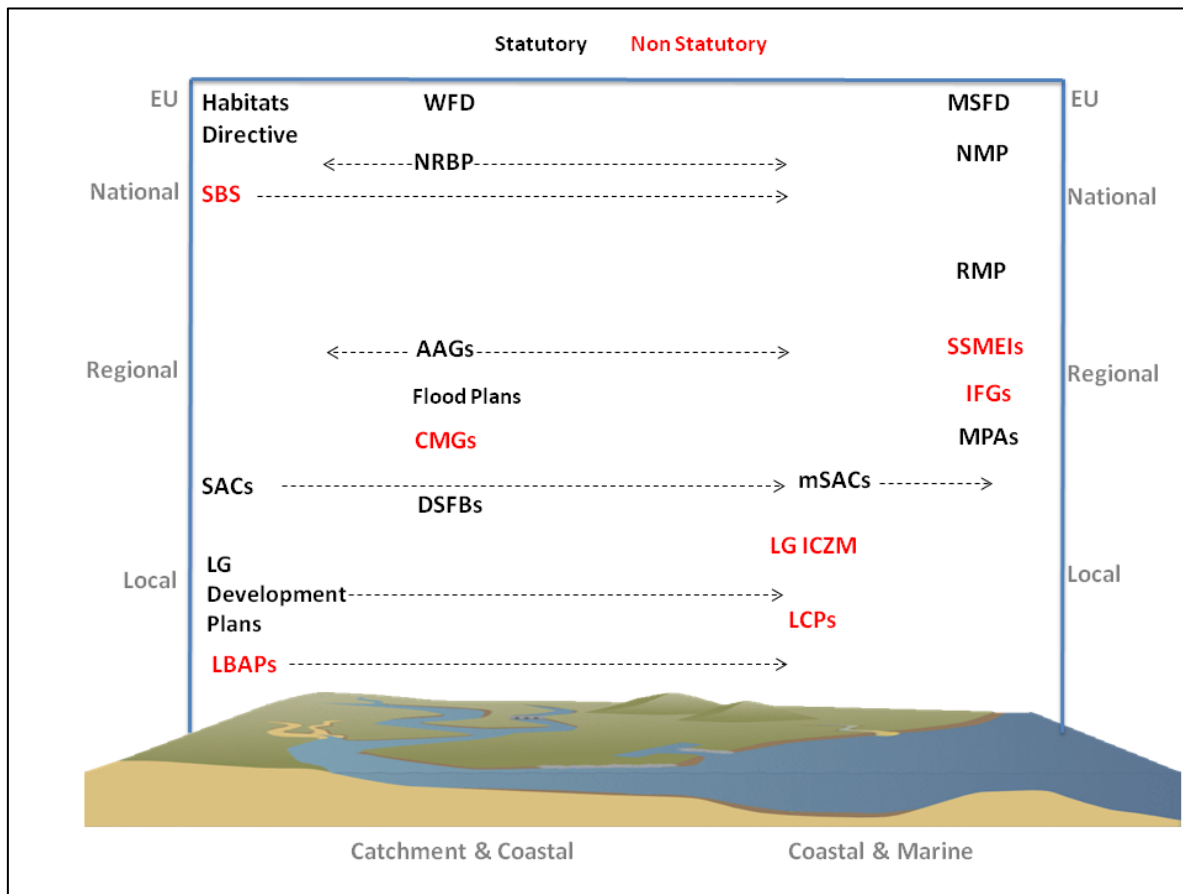
Marine SACs

District Salmon Fishery Boards, Fisheries Trusts (DSFBs)	Regional-local	Catchment	Freshwater fisheries
Local Government plans and Integrated Coastal Zone Management Plans (ICZM)	Local	Coastal marine (inshore)	Local planning, non statutory multi-sector
Local Biodiversity Action Groups (LBAPS)	Local	Catchment-Coastal	Biodiversity
Local Coastal Partnerships (LCPs)	Local	Coastal marine	Partnership building

2.1.1 Institutions overlap at the coast

The number of institutions that are involved in coastal and catchment management differs from region to region and these vary in terms of their statutory basis and design. For example, institutions responsible in setting the agenda in the Moray Firth include three local authorities, two Area Advisory Groups (River Basin Planning), an inshore fishery group, three District Salmon Fisheries Boards and a Fisheries Trust, three major ports, a conservation agency (SNH) and a local coastal partnership. The Instruments overlap in the coastal zone and create a multifaceted set of objectives and regulatory requirements (Figure 2, Table 2, see also Figure 5).

Figure 2 Instruments relevant to coastal zone management as identified by research participants.



2.2 Coastal catchment planning reforms

Coastal and catchment policies overlap in time as well as space, with a range of initiatives that are in development through to those that are mature. While river basin planning systems have evolved over the past decade and are entering the second generation, coastal and marine systems are undergoing significant reforms, driven primarily by the EU Marine Strategy Framework Directive and the Marine (Scotland) Act 2010. The survey responses highlight that the form and requirements of the proposed Marine Planning Partnership process are a concern to practitioners in catchment and coastal management. For example:

“We have to be realistic about the bigger picture that everyone will have to work towards – not just WFD or RBMP but both of those in tandem with marine planning at regional and national levels. The roles of SEPA, their AAGs, their Flood Risk Management Groups and their work programs for both flooding and catchment management are going to have acknowledge the impact of marine planning over the next couple of years” – Coastal Management Practitioner

2.2.1 New Marine Plans

Figure 3 Hierarchical plans across the Coastal Catchment Interface (Red = planning; green = biodiversity; blue = coastal / catchment)



Marine planning will place additional personnel and resource requirements on coastal stakeholders. These plans, in the eventual form that they take, will need to set objectives that mesh with river basin planning and catchment management when they touch on issues that cross boundaries (see Table 1). There is uncertainty as to the structure of regional marine plans, and debates are exploring the option that coastal partnerships may naturally be morphing into, or handing over to, Marine Planning Partnerships. Several coastal partnerships identified challenges over the expertise and resources required to deliver regional plans and questioned whether the coastal partnerships were fit for purpose. A more suitable model may be found from the river basin and catchment sphere where regional Area Advisory Groups deliver the WFD requirements, and partnership based catchment management groups (e.g. the Dee Catchment Partnership) build up engaged programs ‘on the water’. This complimentary process of nested

local, regional and national delivery may be required in the coastal sphere and indicates that there are lessons to be learned from the experiences of river basin planning.

The policy challenge is to deliver a joined up approach through aligning the objectives and systems which deliver them. It is important to consider the efficiency of the system in responding to the key issues, in particular the requirements of fulfilling European Directives, but also the added value and ‘buy in’ gained from building partnerships between coastal and catchment stakeholders.

2.2.2 Coordinating Initiatives

Figure 4 Institutions involved in the Coastal Catchment Interface at national to local scales



NB: in diagram above CMPs, CPs non statutory.

Due to the complexity of management in the coastal zone, resources will need to be allocated to integrate planning. Policy makers should explore alternative models that deliver efficiency in policy implementation, for example in meshing new policy priorities into existing groups where feasible. Figure 5a highlights the potential matches between Area Advisory Groups and forthcoming Regional Marine Planning Partnerships- clear guidance is required to encourage practical collaboration. In response to the survey question on whether further integration (of catchment and coastal management) was desirable, a coastal project officer stated:

“Yes, desirable, hopefully feasible. As the nature of coastal planning changes, now is a good time to mesh where overlap may already exist between coastal and catchment management, but in turning attention towards marine planning we must not lose sight of the coast, as perhaps the most important area where marine and terrestrial activities meet.”

The institutional complexity in the coastal zone is a barrier to achieving an integrated approach and is resource intensive, especially for stakeholders who are active in coastal and catchment management. Survey respondents reported that the effectiveness of partnerships between catchment and coastal practitioners was highly variable, and dependent upon personalities, relationships, time, resources, and regulatory drivers. For example, in the Moray Firth the

existence of a Special Area of Conservation (SAC) often provided a focus for partnership working. Respondents clearly supported integration but the preference was for improved knowledge exchange and networking rather than wholesale institutional reforms. Notable comments from surveys and focus groups included:

“Having a better knowledge of organisational remits and structures can result in considerable time saving as you are more able to target the right people for different issues or problems.” (Catchment Management officer).

“Although most public bodies highlight partnership working as being important as budgets and staff resources are reduced it is becoming increasingly difficult to give these partnerships the time they deserve to be effective.” (Catchment Management officer).

“I agree we need to work closer, and take opportunities to work closer if they are apparent. [There is] definite overlap between the two including stakeholder members so combined projects and information exchange are the way forward.(Coastal Management officer).

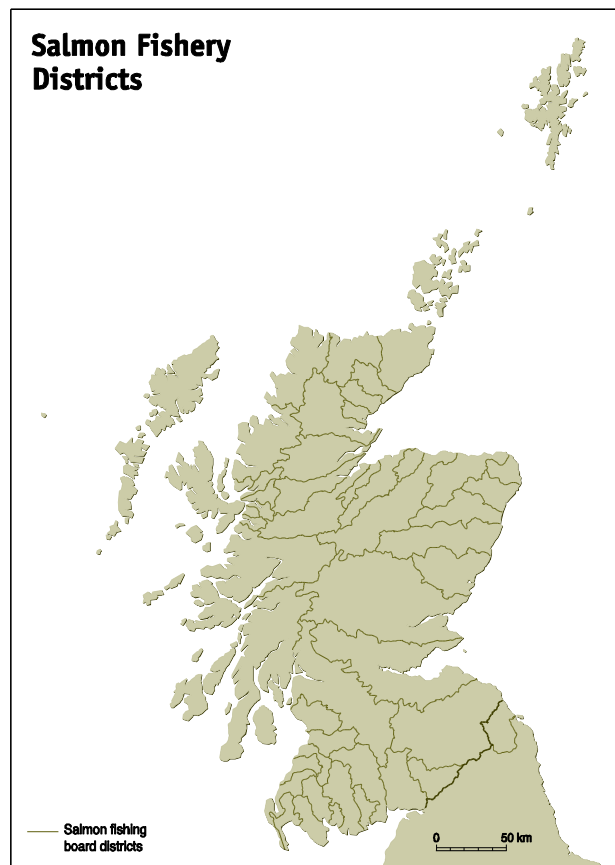
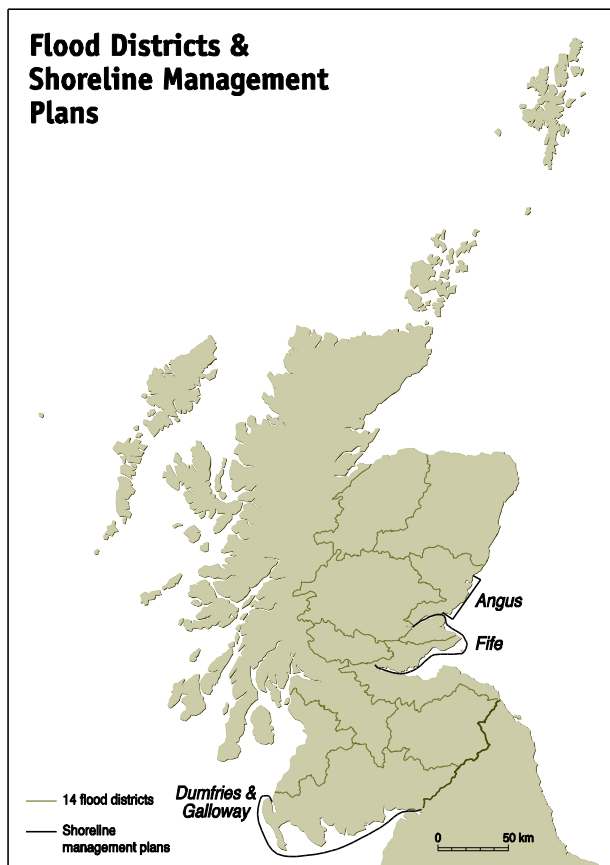
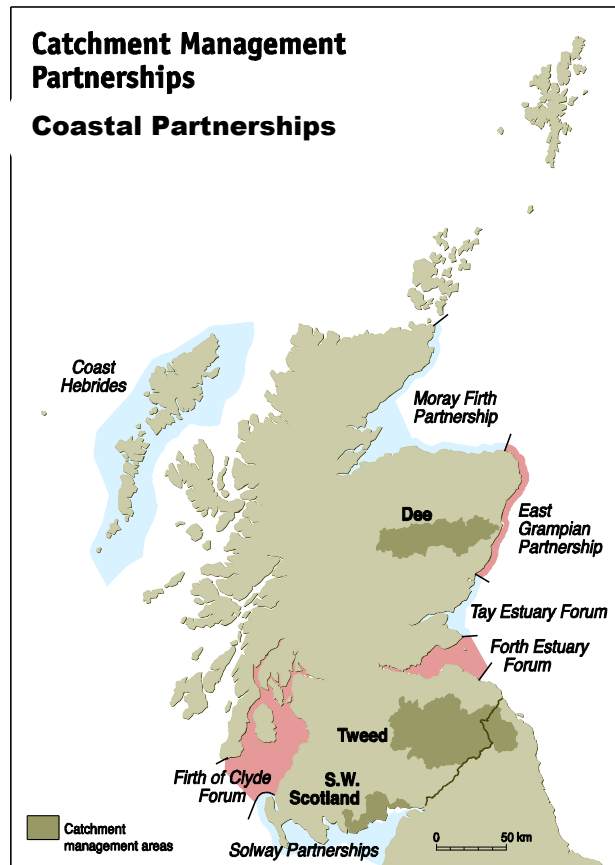
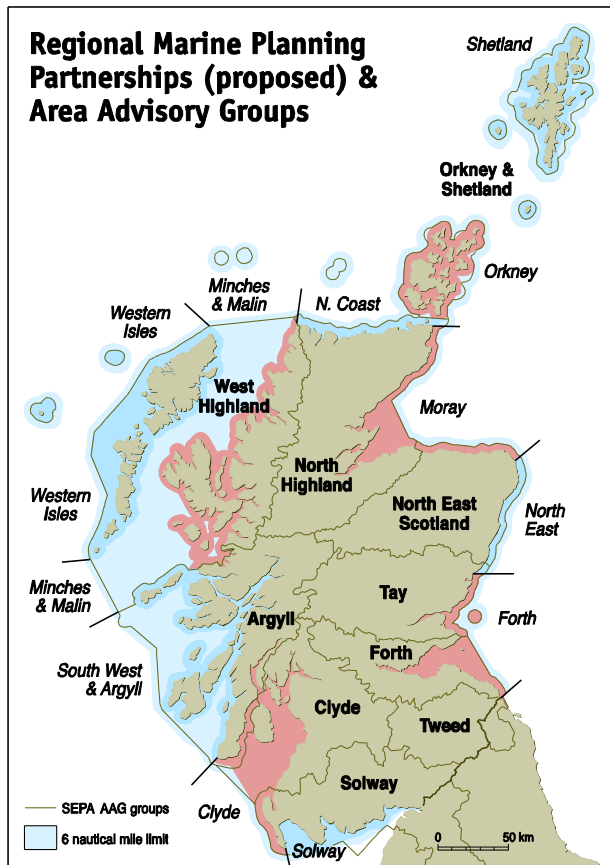
In summary, observations from our focus groups illustrate several ways forward:

- While boundaries will always fail to match, common sense and good relationships can work where there is minor overlap;
- Where significant overlaps occur, some integration would be helpful, especially when seeking to work on common objectives or apply for funding which covers common areas.
- Good leadership is one way to overcome mismatches;
- While core funding should focus on delivering priorities this should be balanced by recognising the benefits delivered by partnership working;
- Where feasible, groups should be combined or aligned to increase efficiency in planning and delivery.

Figure 5 (a,b,c,d) Making Links Across Initiatives

A= AAGs vs MPPs; B=CMPs vs CPs C=Flood Districts vs SMPs D=DSFBs

Sources: Copyright Scottish Environmental Protection Agency



3. INSTITUTIONAL CHALLENGES AND OPPORTUNITIES

3.1 Barriers to Integration

A survey of Scottish coastal and catchment practitioners and a series of focus groups with the Moray Firth and East Grampian regions identified a number of constraints to progressing integrated coastal and catchment management.

Table 3 – Barriers to integrated governance

Issue	Definition	Example
Scale mismatch	The problem or solution is not spatially consistent and may cross several boundaries. There is a mismatch of scale between problem and solution.	Litter on the coast is a problem causing loss of amenity, economic and ecological impact. The problem is societal, multi-sector and behavioural while the response principally occurs at the scale of local authorities.
Reciprocity	Benefits flow (or are perceived to flow) to one user group over another.	Several coastal practitioners felt that coastal issues were not a priority in river basin planning and this hindered partnership. Coastal partnerships identified that what happened in the catchment was critical for coastal quality and would like to see more involvement of catchment officers and river basin planners in coastal working groups.
Gatekeepers	Any reform to catchment and coastal integration must engage with and gain support from key institutions and stakeholders.	SEPA and Marine Scotland are the key institutions delivering river basin and marine planning at the regional scale and supporting catchment and coastal partnerships. Knowledge transfer between terrestrial and coastal spheres and ecosystem scale delivery will need the support (and resources) of these institutions. Building horizontal governance capacity.
Stakeholder engagement	Overlaps, representation, or limited resources for engagement.	Project officers are at full capacity in engaging with stakeholders in catchments and coasts. While engagement is critical in terms of gaining buy in and delivering objectives it is frequently overlooked against the priority of delivering core duties.
Transaction costs	The financial and human resource cost of engaging in coastal management.	Engagement takes time and resources. For example the MFP was member of 2 AAGs, secretariat to a SAC, part of a group developing a marine plan, and member of an IFG.

3.2 Opportunities for coastal and catchment integration

Surveys and workshops identified a number of areas where coastal and catchment management integration could be progressed. The focus was on pragmatic ways forward rather than wholesale ‘stitching up’ of programs.

Table 4. Opportunities for integration

Issue	Definition	Example
Collaboration over joint coastal issues	Institutions & project officers build relationships over joint issues	Identify projects with a marine planning and river basin or catchment outcome and work together. E.g. Developing joint regional coastal litter strategies that include synchronised objectives in catchment and coastal plans.
Knowledge exchange between staff	Sharing information between partners on ICZM & ICM to increase efficiency and collaboration.	Interviewees identified a lack of links between staff working on freshwater and marine, particularly in, but not limited to SEPA. There is scope for exchanges that drive institutional learning over catchment and coastal dynamics between staff at a policy level (e.g. Marine Scotland and SEPA) and between regional scale planning bodies (e.g. RBMP and MPPs). At project level (e.g. catchment and coastal partnerships) exchanges between officers can improve knowledge of objectives, strategies, plans, and joint funding opportunities. This can improve delivery and identify efficiencies & innovations.
Emerging management regimes	Do emerging Marine planning schemes such as, second generation RBMPs, national and regional marine planning, and extended integrated catchment management offer opportunities for reform?	The overlap of regional marine planning and 2 nd generation river basin planning at the coasts will require some integration of objectives, activities, and delivery. In addition the new responsibilities for flood management opens opportunity for developing links between coastal and catchment authorities. With further calls for expansion of catchment management programs at the local level, there is opportunity for coastal partnerships to engage in mutually beneficial planning.

Shared platforms and joint resourcing.

Increasing joint and collaborative resourcing of program outputs, delivery functions and awareness raising.

The use of a joint platform between different groups in a region can save time and money in reaching the various stakeholders, interest groups and members of the public. For example, the Tay AAG, along with the Tay and South Esk Priority Catchment Groups use shared platform of Tay Estuary Forum Conference to inform stakeholders of policy developments e.g. Diffuse pollution general binding rules. We advocate the use common platforms at a regional scale to maximise efficiency in communication and outreach and to reduce transaction costs and stakeholder fatigue. Such platforms can take an ecosystem approach (e.g. the relevant catchment-coastal system) and build cooperation where a joint response is required.

4. KEY ACTION POINTS AND RECOMMENDATIONS

Is further integration of the catchment and coastal sphere realistic? The findings of this project indicate that there is a case for increased integration and that pragmatic approaches to integrate objectives, activities and communication can improve outcomes and progress an ecosystem based approach for the coastal sphere. There appears to be support amongst coastal and catchment practitioners for a closer working relationship:

"I agree we need to work closer, and take opportunities to work closer if they are apparent. There is definite overlap between the two including stakeholder members so combined projects and information exchange are the way forward. (Catchment Management officer).

4.1 Key Actions:

- SCOTTISH GOVERNMENT should consider how to encourage cross-over between the cultural divide of freshwater and marine specialists within policy and scientific communities.
- SCOTTISH GOVERNMENT should develop guidance on how Area Advisory Groups and Marine Planning Partnerships will work together. This would include specific arrangements on a region by region basis.
- SCOTTISH GOVERNMENT should consider the expansion of integrated catchment management throughout Scotland including coastal interests where appropriate. Where feasible groups should be combined or aligned to deliver regional policy (e.g. River basin or regional marine plans).
- MARINE SCOTLAND should continue to support Local Coastal Partnerships as vehicles for policy delivery, extend their reach to cover new areas, and incorporate catchment interests where appropriate.
- SEPA should re-engage in Coastal Partnerships, as a transition at least until Regional Marine Planning Partnerships are in place for each coastal area. Small scale funding could be tied to realistic service provision for catchment management and river basin (WFD) outcomes.
- SEPA should explore involvement in Regional Marine Planning Partnerships as a vehicle to achieve requirements of the Water Framework Directive and the Marine Strategy Framework Directive.
- AREA ADVISORY GROUPS should consider how coastal issues can play a more prominent role in the next generation of management plans.
- AREA ADVISORY GROUPS, COASTAL PARTNERSHIPS and CATCHMENT MANAGEMENT PARTNERSHIPS should consider tractable issues in the coastal zone where collaboration can improve coastal sustainability. Objectives should be aligned across plans. Key issues include the reduction of coastal litter, maintenance of bathing water standards, invasive species, flooding, and coastal development. Other topics such as Diffuse Pollution seem to be well dealt with by dedicated national programs but non-statutory initiatives could support these with stakeholder engagement.
- COASTAL PARTNERSHIPS and CATCHMENT MANAGEMENT PARTNERSHIPS should actively consider how they can use joint platforms to integrate their work in the coastal zone. Examples include shared media (newsletters, websites, distribution lists) shared education and outreach (conferences, joint working groups) and shared projects.

- COASTAL PARTNERSHIPS should consider how they can act as service providers for catchment management in coastal and transitional waters
- CREW/ SCOTTISH SCIENTISTS should consider commissioning studies to improve the co-ordination of scientific monitoring and socio-economic data collection across the land / sea interface to address issues in the catchment coastal zone.

Appendices: Survey Instrument

CATCH2 HEI Project: Linking Catchment and Coastal Planning

<http://www.crew.ac.uk/projects/catchment-management-planning>

Project leader: Dr Tavis Potts, Scottish Association for Marine Science, tavis.potts@sams.ac.uk

The Scottish Association for Marine Science and the University of St Andrews are conducting a survey of local coastal partnerships and practitioners to gather views on the integration of catchment and coastal planning. The aim of the research is to explore opportunities and approaches for coastal and catchment management groups to work more closely in delivering an ecosystem approach to management.

Please answer the following questions and return to the email address above indicating what group or region you represent. Questions may be cut and pasted into email or returned as an attachment. If possible, please return answers by the 22nd December 2011.

1. What kind of interaction, if any, does your coastal partnership have with a local or regional catchment management process?
2. What are the major issues in the catchments above your coast/estuary that impact your region? Do you consider these issues in the management of the coastal zone?
3. Are you aware of any particular projects developed by catchment management teams?
4. Do you engage in knowledge transfer activities, projects, data exchange, or staff exchange with catchment management groups? If yes, please clarify what activities?
5. What issues aid or obstruct collaboration with those working in the catchment?
6. What do you think are the best opportunities for collaboration with organizations involved in catchment management?
7. Is the integration of coastal and catchment planning and management desirable or feasible? If it was to occur, what would it look like? What are the key challenges?
8. What do you think is the appropriate scale for integration of catchment and coastal initiatives?
9. Does your initiative constitute an ecosystem approach to the coastal zone? What is needed to make this approach operational?
10. If money, resources and time were no obstacle, what kind of work would you want to see the coastal partnership do in the catchment?

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