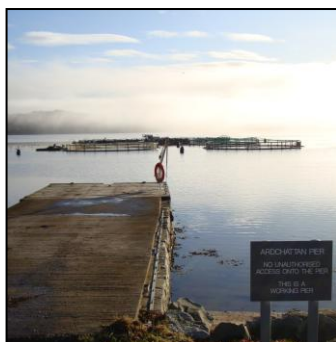


Loch Etive Integrated Coastal Zone Management Plan

March 2011



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Mandarin

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Integrated Coastal Zone Management Plan

Loch Etive

A Spatial Planning Framework
for Future Development

Marine & Coastal Development Unit, Planning Services, Argyll & Bute Council

Funded by



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Contents

Acknowledgements	4
Foreword	5
1. Introduction	6
1.1 National and International Context for Marine and Coastal Planning	6
1.2 Local Context for Coastal Planning	7
1.3 Integration with Other Plans and Policies	7
1.4 Aims of the Integrated Coastal Zone Management Plan	8
1.5 Loch Etive ICZM Group	9
2. Site Description	10
2.1 Physical Setting	10
2.2 Geology	11
2.2 Hydrography	11
3. Guide to using the Loch Etive ICZM Plan	
3.1 Plan Outline	13
3.2 How can I use the Loch Etive ICZM Plan?	14
4. General Policies	17
5. Cross Cutting Environmental Themes	20
5.1 Natural Heritage Interests	21
5.2 Wild Migratory Salmonids	29
5.3 Archaeological and Historical Sites	31
5.4 Invasive Non-Native Marine Species	34
5.5 Water Quality	39
5.6 Climate Change	44
6. Activities and Infrastructure	46
6.1 Aquaculture	47
6.2 Commercial Fishing	56
6.3 Recreational Activities	60
6.4 Commercial Shipping	69
6.5 Coastal and Marine Infrastructure	71
6.6 Forestry and Agriculture	75
6.7 Marine Renewable Energy	78
6.8 Marine Science	82
7. Coastal Policy Zones	84
7.1 Introduction	84
7.2 Policy Zone Information	84
Policy Zone A: Ardmucknish Bay and Dunstaffnage Bay	86
Policy Zone B: North Connel to Achnacree Bay (Connel narrows)	98
Policy Zone C: Achnacree Bay to Achnacloch	108
Policy Zone D: Achnacloch to Bonawe Quarry	118
Policy Zone E: Bonawe Quarry to Ardmaddy Bay	132
Policy Zone F: Ardmaddy Bay to Glen Etive	143
8. Monitoring and Review	152
8.1 Implementation and Review	152
8.2 Monitoring	152
9. Action Plan	153
Glossary	156
References	162
Bibliography	165

Appendices

Appendix I	Summary of Local Authority Development Plan policies relevant to Loch Etive ICZM Plan	167
Appendix II	Development of Policy Guidance for Policy Zones	171
Appendix III	Development scenarios for aquaculture development	172
Appendix IV	Details of wildlife recording schemes	173
Appendix V	Sites, habitats and species of significance	174
Appendix VI	Additional information on Invasive Non-Native Species	176
Appendix VII	Statutory consultees for development consents/licences	178
Appendix VIII	Contact details for non-statutory and statutory consultees for development applications	179
Appendix IX	Summary of legislation, national policy and guidance relevant to Aquaculture in Scotland	182
Appendix X	Codes of conduct and environmental programmes	184
Appendix XI	Loch Etive ICZM Group – stakeholders involved in the development of the plan	186

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Foreword

The coastal area of Argyll and Bute is exceptional and is one of our prime assets. It provides a unique resource from which present and future economic, social, and environmental well-being can be derived. It is a living and working environment, home to a large proportion of Argyll and Bute's population, and hosts a great diversity of industrial and recreational activities, each playing an important role in the area's economy.

The Argyll and Bute Council Structure Plan outlines the Council's objectives for coastal planning and emphasises the necessity of working with all the relevant sectors to fully harness the productive capacity of the marine and coastal area, whilst safeguarding its unique environmental qualities through sustainable development.

This plan has been designed to complement the Argyll & Bute Development Plan (Structure and Local Plan) and will be a significant piece of guidance for the use and development of the coastal zone of Loch Etive over the next five years. The plan aims to assist decision-making in relation to development proposals, help minimise conflicts of interest and guide future investment. The policies and recommendations have been formulated after reviewing the current use of the area and identifying key coastal management issues and development opportunities. Underpinning the entire process has been extensive consultations with local communities, stakeholders and relevant and competent authorities.

Our aspiration is that this plan will be used by these same groups and organisations, to guide sustainable management of the coastal and marine resource, in order to secure the future of both the natural environment and the economic needs of the communities that are dependent on it.



B. Marshall

Councillor Bruce Marshall
Environment Spokesperson, Argyll and Bute Council

1. Introduction

Marine planning and decision-making to date has been sector specific with limited joined-up thinking or consideration of other users of the area. Given the recent development pressures on coastal areas of Argyll and Bute, and the competition for space between sectors such as fishing, aquaculture, recreation and tourism, there is a need for a more integrated approach to deliver the sustainable use of our marine resources. There is also a need to take fuller account of the socio-economic characteristics of the coastal area and provide a framework for the promotion of local economic development.

Integrated Coastal Zone Management (ICZM) is a process by which these issues can be addressed:

The objective of ICZM is to establish sustainable levels of economic and social activity in our coastal areas while protecting the environment. It brings together all those involved in the development, management and use of the coast within a framework that facilitates the integration of their interests and responsibilities

Department for Environment Food and Rural Affairs (DEFRA), 2006

Argyll and Bute Council initiated the Loch Etive ICZM project as a means of accomplishing the sustainable management of this significant marine area.

1.1 National and International Context for Marine and Coastal Planning

The UK and Scottish Government are subject to international obligations to protect and manage the marine environment under instruments such as the World Summit on Sustainable Development, OSPAR, EU Marine Strategy Framework Directive, Water Framework Directive, Birds and Habitats Directives and Convention on Biological Diversity.

On 10 March 2010, Scotland's Marine Bill received Royal Assent, making it the Marine (Scotland) Act. The Act provides a framework which will help balance competing demands on Scotland's seas. Its main measures include:

- a new statutory marine planning system to manage competing demands for the use of the sea whilst protecting the marine environment;
- a simpler licensing system, minimising the number of licences required for development in the marine environment to cut bureaucracy and encourage economic investment;
- improved marine nature and historic conservation with new powers to protect and manage areas of importance for marine wildlife, habitats and historic monuments; and
- improved protection for seals and a new licence system to ensure appropriate management when necessary.

Scottish Ministers must prepare and adopt a national marine plan and the Act also allows for a system of regional marine planning where Scottish waters would be divided into Scottish Marine Regions. Regional plans would then be developed by a Marine Planning Partnership made up of relevant local stakeholders. Marine planning at the scale of the Loch Etive ICZM plan would sit within the regional level of this proposed structure.

The National Planning Framework and consolidated Scottish Planning Policy (SPP) have been taken into account in the development of this plan. In addition, the Scottish Government has also developed national strategies and strategic frameworks for aquaculture, sea fisheries, agriculture and forestry, in order to promote rural development and sustainable resource management.

1.2 Local Context for Coastal Planning

The Argyll and Bute Structure Plan 2002 provides a strategic overview for future development of the land and sea area of Argyll and Bute and outlines the Council's objectives for coastal planning.

It recommends the preparation of Coastal Framework Plans for seven priority coastal areas, including Loch Etive, and sets out that these plans should be developed by working with the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), the local enterprise companies, neighbouring authorities, other partner and community organisations and interest groups. The knowledge and expertise of existing coastal fora and the tripartite working groups should also be harnessed to contribute to the coastal framework planning process.

In line with the Structure Plan, the Local Plan supports the evolution of the coastal planning process to further inform the assessment of marine aquaculture development in Argyll & Bute. The Loch Etive ICZM plan will therefore be a material consideration in the determination of planning applications for aquaculture development.

While the Loch Etive ICZM Plan is an Argyll and Bute Council plan, the head of Loch Etive is actually part of Highland region. In order to develop a plan that followed the ecosystem approach it was agreed to include all of Loch Etive in the plan and therefore guidance for this part of the loch has been developed in partnership with Highland Council. A map showing the area of jurisdiction of each local authority is included in Appendix I.

The process of developing this plan and its policy guidance has been influenced by the following Guiding Principles, which together will help the Council to achieve an effective balance between the needs of our communities, and the development of the economy with minimum impact on the environment.

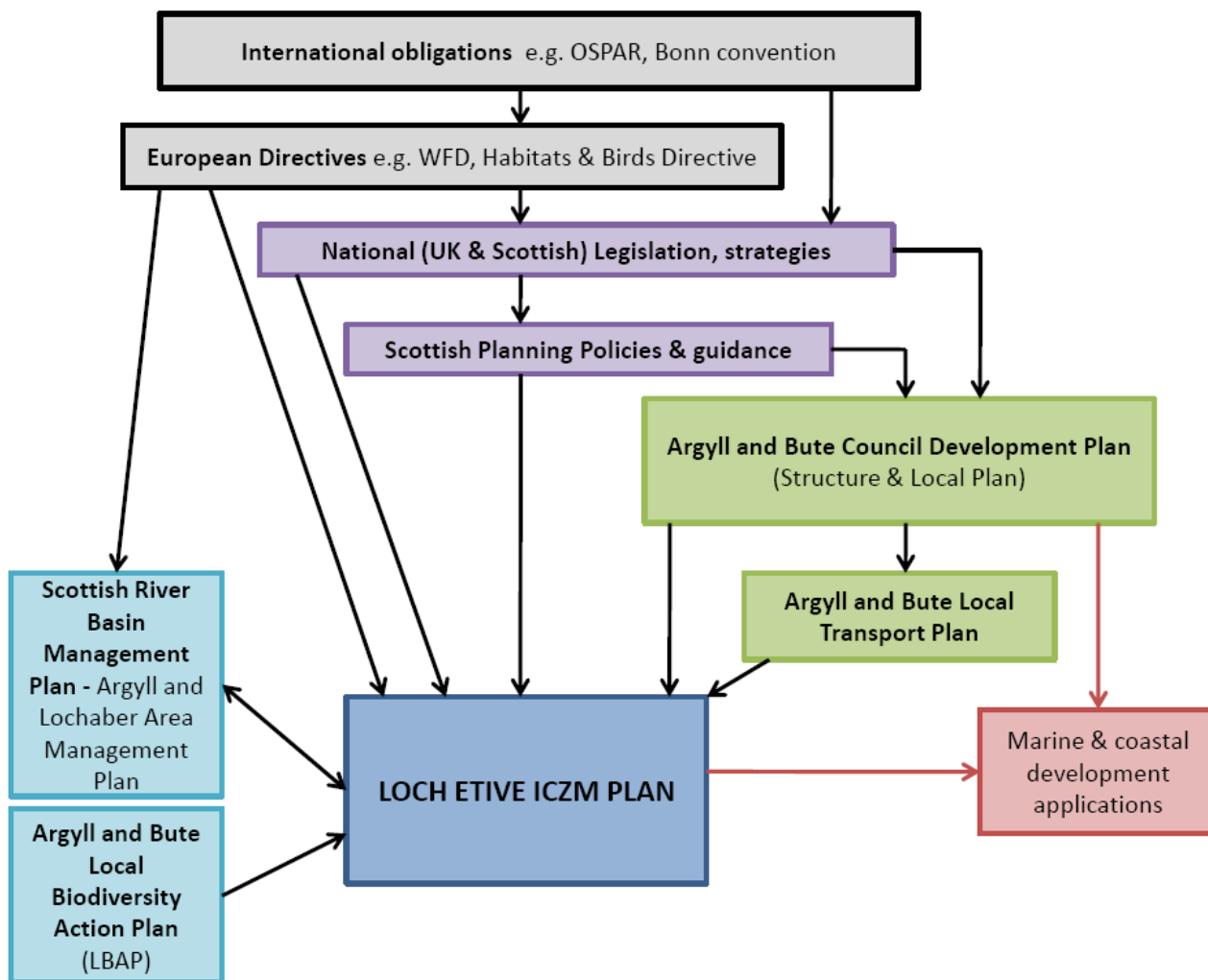
- (a) Developing, empowering and including our communities
- (b) Protecting, enhancing and managing natural resources and environment
- (c) Developing the economy using innovative and creative solutions
- (d) Taking an open, honest and accountable approach
- (e) Taking decisions that will maximise benefit and minimise impact across these areas

In addition the plan reflects priorities for the economy and environment set out in the Argyll and Bute Community Plan 2009 – 2013, which aims to deliver local and national outcomes through partnership working, as agreed in the Councils Single Outcome Agreement with the Scottish Government.

1.3 Integration with Other Plans and Policies

Integration with other plans and policies is vital to ensure compliance with the requirements of international, EU, UK and Scottish policy instruments and to avoid duplication of effort. The diagram below is a schematic representation of the relationship between the Loch Etive ICZM plan and other plans and policies at local, national and international levels.

Plans and policies taken into account in the development of this plan are listed in the SEA Environmental Report which supports the plan.



1.4 Aims and Objectives

The Loch Etive ICZM plan is non-statutory and aims to provide guidance for Argyll and Bute Council and Highland Council planners, other regulators and stakeholders on the future use and development of the marine waters and surrounding coast of Loch Etive for the next five years (2011 – 2016).

The objectives of the Loch Etive ICZM Plan are:

- 1) To provide guidance for local authority planners, regulators and stakeholders to guide future marine and coastal development to sustainable locations, and assist decision-making for development proposals.
- 2) To provide guidance and recommendations to help minimise conflicts of interest, assist management and future planning of marine and coastal activities and guide future investment.
- 3) To recognise, promote and help safeguard areas important for marine and coastal wildlife, habitats, landscape and historic heritage.
- 4) To ensure the views, aspirations and needs of local stakeholders and communities are captured and recognised, through maximising opportunities for stakeholder involvement in the plan development process.

This plan complements, and should be used in conjunction with the Argyll and Bute Development Plan (Structure & Local Plan) and Highland Council Development Plan, which includes policies relevant to various types of development in the coastal zone, including aquaculture, harbours, piers and marinas. An overview of Development Plan policies that are particularly relevant to this plan is provided in Appendix I.

Given the Council's new responsibilities for aquaculture, particular emphasis is placed on developing

policies to help guide future aquaculture development to appropriate areas by taking account of other activities and environmental sensitivities. These policies and guidance on scale and location of new aquaculture development will be used by Argyll and Bute Council as supplementary guidance, and will be a material consideration in the determination of planning applications for new or modified aquaculture developments.

In addition, the plan identifies potential conflicts of interest between activities and highlights broader issues for the attention of the relevant agencies and marine users in the form of recommendations.

1.5 Loch Etive ICZM Group

A group with a broad community and stakeholder composition was established and coordinated by Argyll and Bute Council's Marine and Coastal Development Unit. This group was encouraged to become involved in a voluntary management process that facilitated the following:

- Identification and discussion of issues facing the coastal area;
- Development of co-operation between stakeholders, and
- Provision of co-ordinated action to generate sustainable development and integrated management.

The entire process has involved extensive consultation through public meetings, "one to one" meetings and correspondence. Information, agreements and recommendations from this group have been fed into the development of the plan.

2 Site Description

2.1 Physical Setting

Loch Etive is located 6 km north-east of Oban, in northern Argyll and extends 30km from its mouth at Ardmuckish Bay to Glen Etive at the head of the loch.

The loch extends from its mouth, which includes Dunstaffnage and Ardmucknish Bay, inland through the narrow strait of Connel to a sheltered, but expansive series of bays. Lower Loch Etive has a generally low lying landscape, punctuated by more prominent steep sided hills to the north. The steep sided enclosed upper loch is narrow and fjord like in character, feels relatively remote and undeveloped, with little habitation and minimal access (Grant 2006).

Settlement is focussed around the entrance to the loch and either side of Bonawe Narrows. The landscape surrounding the loch supports a mixture of grazing, forestry and natural mixed forest of ash, oak, birch, hazel and rowan (Holt 1991), with salt-marsh, rocky and shingle shores (Barne *et al.* 1997).

The area covered by the Loch Etive ICZM Plan is shown in Figure 2.1 below.

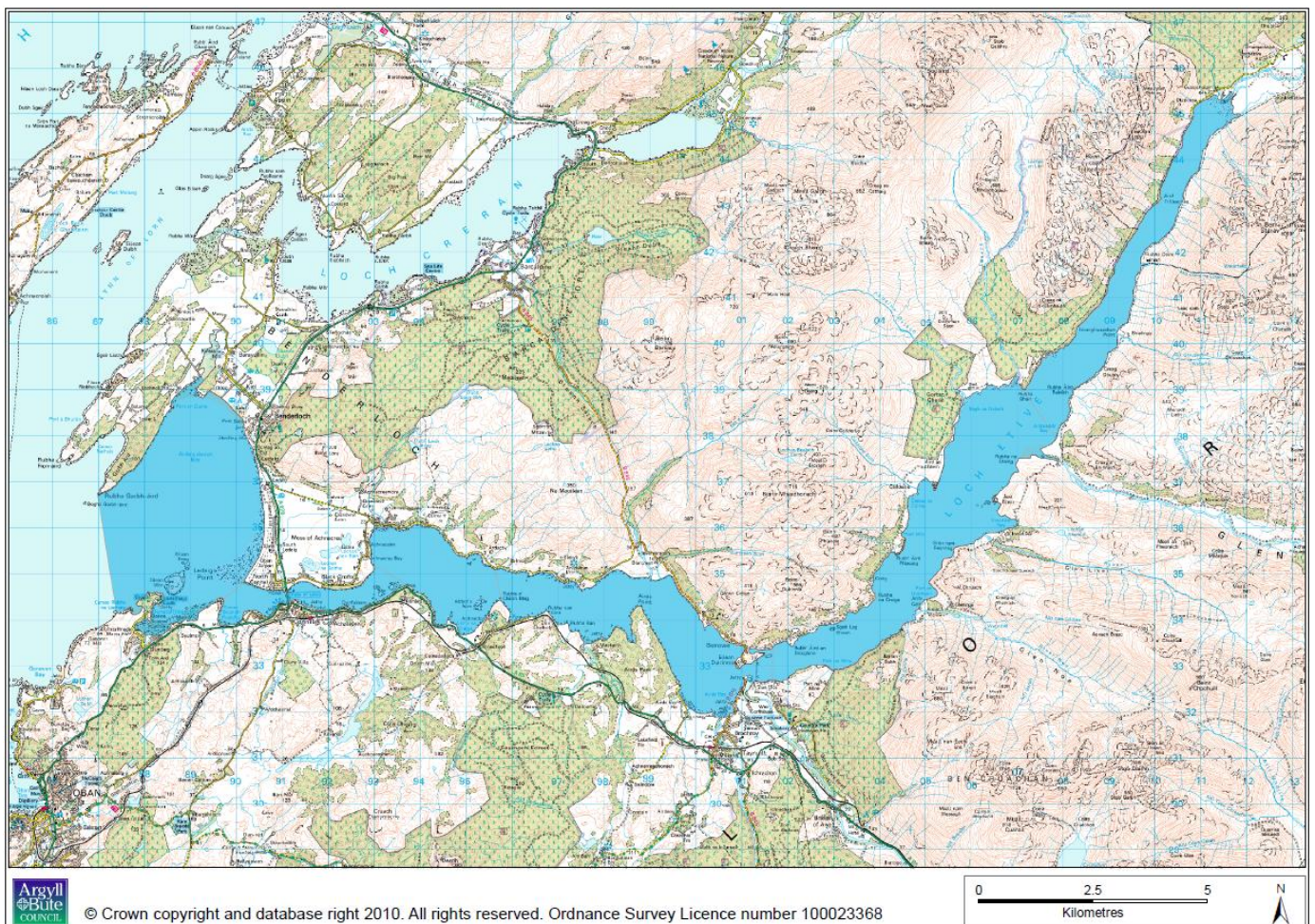
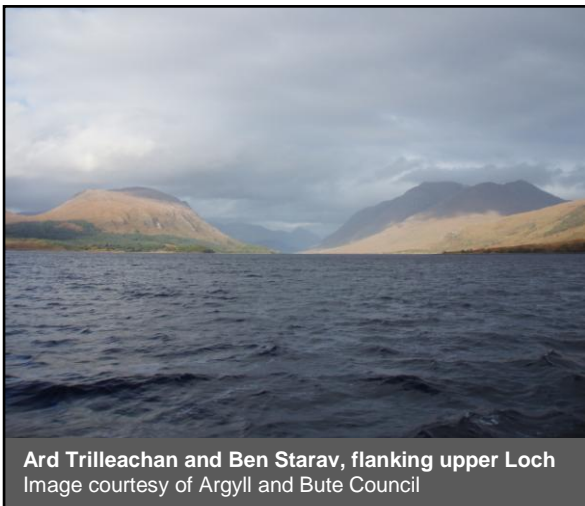


Figure 2.1 Loch Etive and surrounding area

2.2 Geology

Loch Etive can be described as a glacially-over-deepened trough (Boulton *et al.* 1991). The loch has been eroded by the flow of ice from successive glaciations over the last two million years (Howe *et al.* 2002).

The geomorphology of Loch Etive is responsible for the scenic qualities of the Loch and provides the essential physical framework for the biological processes that make the loch unique. Physical features of interest include the Falls of Lora; the deep basin north of Bonawe, the 'fjord-like' nature of upper Loch Etive, with the rocky coastal edge flanked by Ben Cruachan and Ben Starav massifs and other mountains; and the fan-deltas at the mouth of Glen Kinglas, Glen Liver and Glen Noe.



Geologically, the loch basins are developed within a mixture of igneous and metamorphic rocks, dominated by the Etive igneous complex, which lies beneath the entire inner loch (Howe *et al.* 2002). The outer loch comprises intermediate (andesitic) and acidic lavas and tuffs of the Lorn Plateau of Old Red Sandstone (Devonian) age (Howe *et al.* 2002). The highest points form Ben Cruachan (1126 m) and Ben Starav (1078 m). To the south and west, the topography changes to low lying lava hills which continue down to the south side of the mouth of the loch. (Holt 1991).

Fjords or sea lochs are the result of glacial scouring, producing relatively deep bodies of inshore water which are of significant geological value. The rapid sedimentation rates of sea lochs can provide large volumes of fine-grained sediments which have the potential to provide valuable high-resolution records of climate change both on a large scale, long term (thousands of years) and short term (annual and decadal) (Howe *et al.* 2002). A high resolution seismic and gravity coring survey, conducted in September 2000 revealed a total sediment thickness of 30-60m that has accumulated on the floor of the upper loch since the last glacial re-advance.

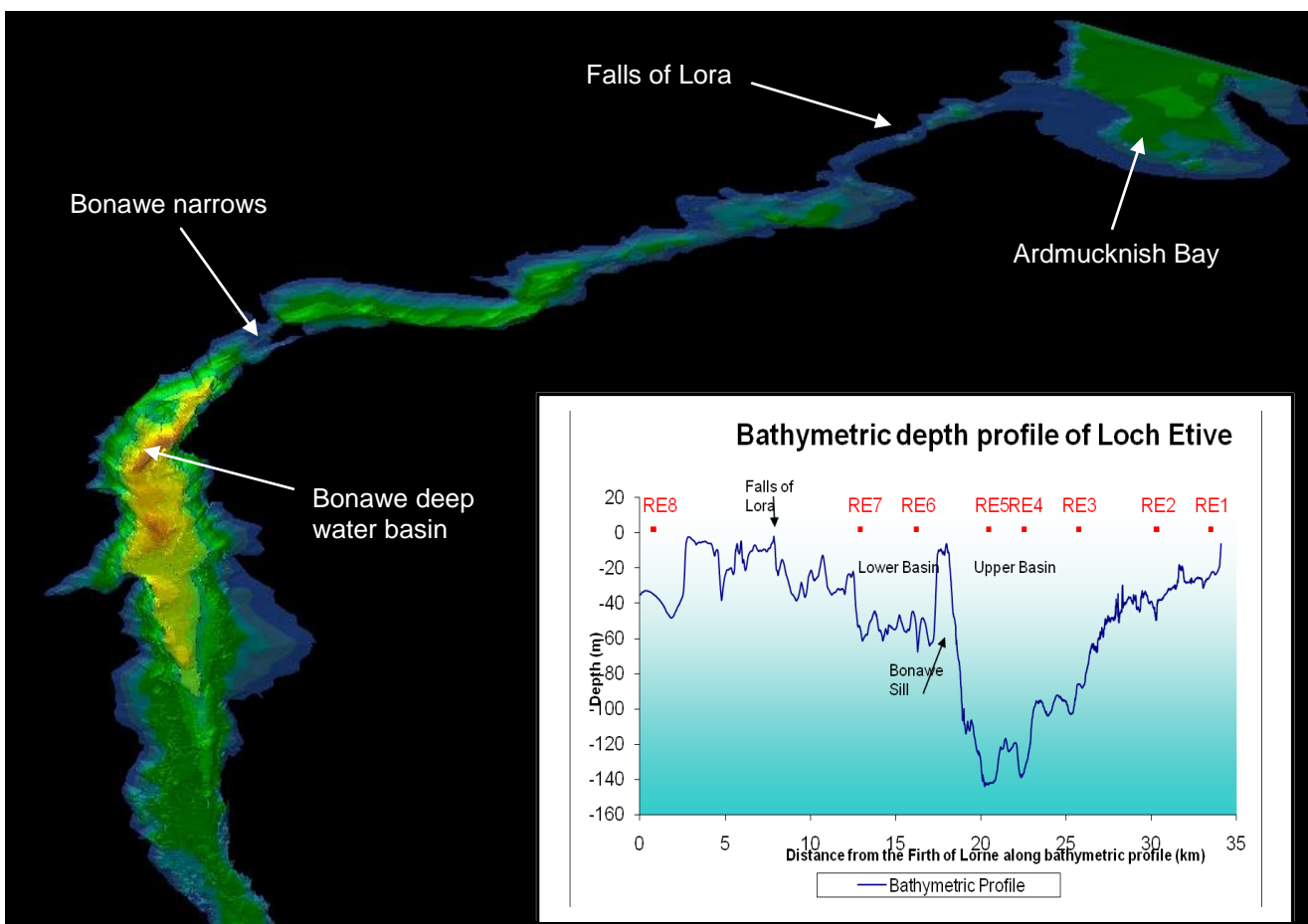
2.3 Hydrography

Loch Etive is unique amongst other sea lochs in several respects: the combination of a very shallow sill at the entrance with one of the largest catchment areas of any of the sea lochs results in it being the most brackish sea loch on the west coast of Scotland (Holt 1991). However the loch was fully saline 6,500 to 7,000 years ago when sea levels were estimated to be 9 m higher than they are today, and has become more brackish over time.

At 1350 km², the catchment provides a very high input of fresh water, primarily from the rivers Awe and Etive. This large inflow of water, together with the restrictions to water exchange with the Firth of Lorn, means that the salinity of the surface water in the loch is markedly reduced, except during very dry periods (Austin & Inall, 2002). Surface salinity can drop to 1‰ after periods of heavy rainfall and rises to more than 26‰ during dry spells (Holt 1991).

These brackish conditions influence the distribution of species and create salinity gradients where salinities decrease towards the head of the loch and increases in deeper water. The surface layers are permanently brackish with variable salinity, but in deeper water (over approximately 15 m), conditions become more stable and salinity levels are generally higher (Holt 1991).

The loch has two contrasting basins (upper and lower) defined by shallow sills. The lower basin has a maximum depth of 70 m and experiences tidal mixing and permanently oxygenated bottom waters. The upper basin (145 m maximum depth) is more stratified, has greater terrestrial influence and poor deep-water circulation, due to the basin-dividing sill (13 m depth) and input from multiple rivers (Edwards & Edelsten 1977; Gage 1972a).



Bathymetry of Loch Etive

Images courtesy of the Scottish Association for Marine Science, Scottish Marine Institute

In the upper basin, seaward-flowing surface brackish water forms a strong stratification, effectively isolating the water below. The resulting bottom-water isolation leads to seasonal low oxygen levels (hypoxia). Flushing only occurs after prolonged periods of reduced runoff, allowing spring tides to push water over the sill that is dense enough to displace bottom waters in the upper basin. Turnover occurs on average every 16 months (Edwards & Edelsten 1977), though partial flushing may occur more frequently and seasonal change in bottom-water oxygen levels is observed in all years.

The Loch Etive tide lags 1.5 hours behind the tide in the Firth of Lorn and the mean spring tidal range of 3.2 m in the Firth is reduced by one third at the Falls of Lora sill (Holt 1991). Tidal streams run in a clock-wise direction in the lower basin on the flood and ebb tide. Tidal streams can range between 1.5 and 6 knots on average (Holt 1991).

3 Guide to using the Loch Etive ICZM Plan

3.1 Plan Outline

The main parts of the Plan, following Section 2 (Site Description) are summarised below. How these parts link together with the policy framework of the plan is illustrated in Figure 3.1.

General Policies

Two general policies have been developed as an overarching policy framework for the Loch Etive ICZM Plan. These must be given due consideration by all interests to ensure the use of the area is sustainable. Policy GEN1 (Development and Activity) sets out how marine and coastal developments will be considered and Policy INNS1 (Invasive Non Native Species) ensures that the potential risk of spread of Invasive Non Native Species is considered by activities and new developments.

Cross-cutting Environmental Topics

This section describes key environmental topics that can influence, or are influenced by activities and development. These include Natural Heritage and Historic interests, Invasive Non Native Species and Climate Change, and the Plan makes recommendations that promote their understanding, consideration and protection. The environmental topics are also integrated into all parts of the Policy Framework of the Plan – General policies, Activity policy and Policy Zone Policy Guidance.

Activities

An overview of the current status of all the major activities that take place either within, or adjacent to the loch is provided. Information is presented on economics, potential impacts/conflicts, existing management measures, future development considerations and recommendations on future management use and development. Area-wide policies have been developed where required to guide sustainable use and development of these activities.

Policy Zone Section – Area Policies and Guidance

This is the main section of the Plan and provides area guidance for the future use and development of Loch Etive. It should be used by local authority planners, regulators and stakeholders to assist decision-making in relation to development proposals; help minimise conflicts of interest, and guide future use and investment.

The policy zone section looks at Loch Etive in distinct areas of coast (policy zones) and describes the characteristics, current activities and uses. Opportunities and constraints for future development and use are identified. The methodology behind the determination of opportunities and constraints, and the development of Policy Guidance, including guidance for Aquaculture is described in Appendix II.

Guidance on aquaculture has been developed as this is an activity that now requires planning consent and therefore these policies will be used by Argyll and Bute and Highland Council as non-statutory supplementary guidance, and will be a material consideration in the determination of new applications for development. The guidance aims to help guide future aquaculture development to appropriate areas by taking account of other activities and environmental sensitivities.

If policy guidance is in favour of new development or expansion of existing sites, then guidance on the location and scale of potential development is given, based on the capacity of the landscape/seascape sensitivity and other interests. Further information on the scenarios used to determine scale can be found in Appendix III.

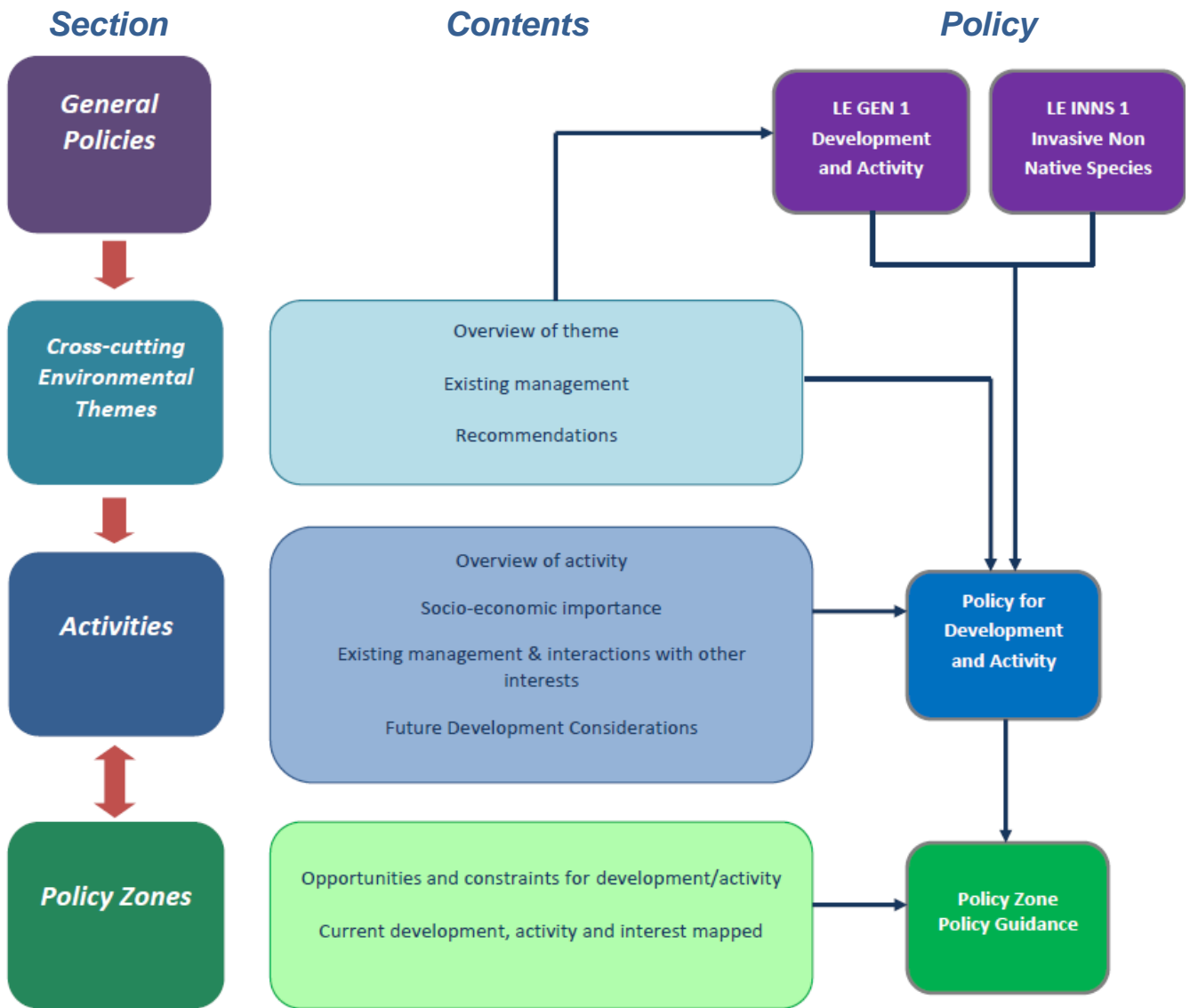


Figure 3.1 Links between plan sections and policies

3.2 How can I use the Loch Etive ICZM Plan?

The Loch Etive ICZM Plan provides guidance which aims to assist decision making for developments and activities in the marine and coastal environment of Loch Etive. It considers all activities and is therefore intended for use by all stakeholders with an interest in the area.

The following flow charts outline how the Loch Etive ICZM Plan can be used as guidance by developers, users and regulators.

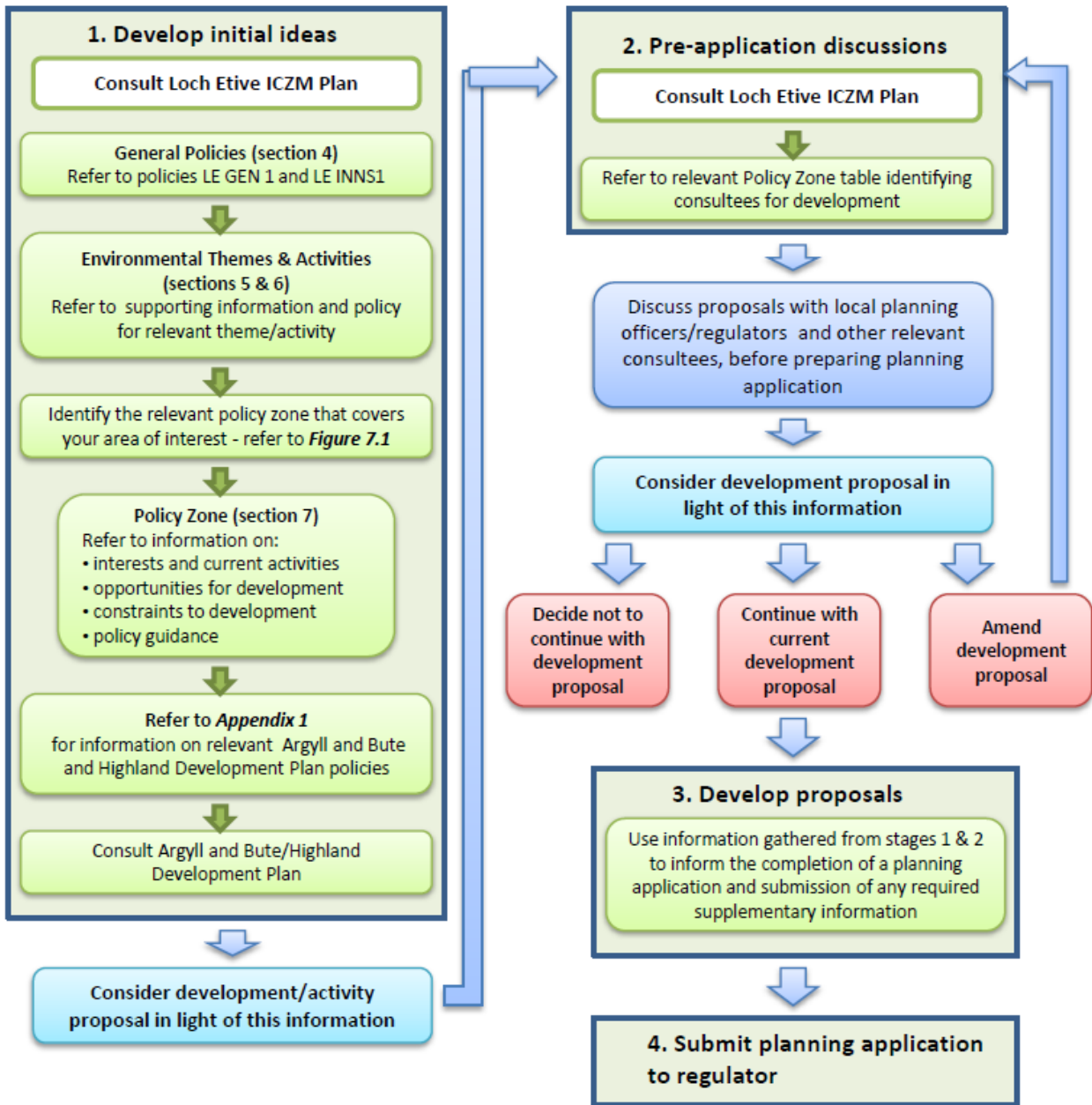


Figure 3.2 How developers and marine/coastal users can use the plan to inform and guide development and activity. Note that stages 2 and 3 apply to development proposals only.

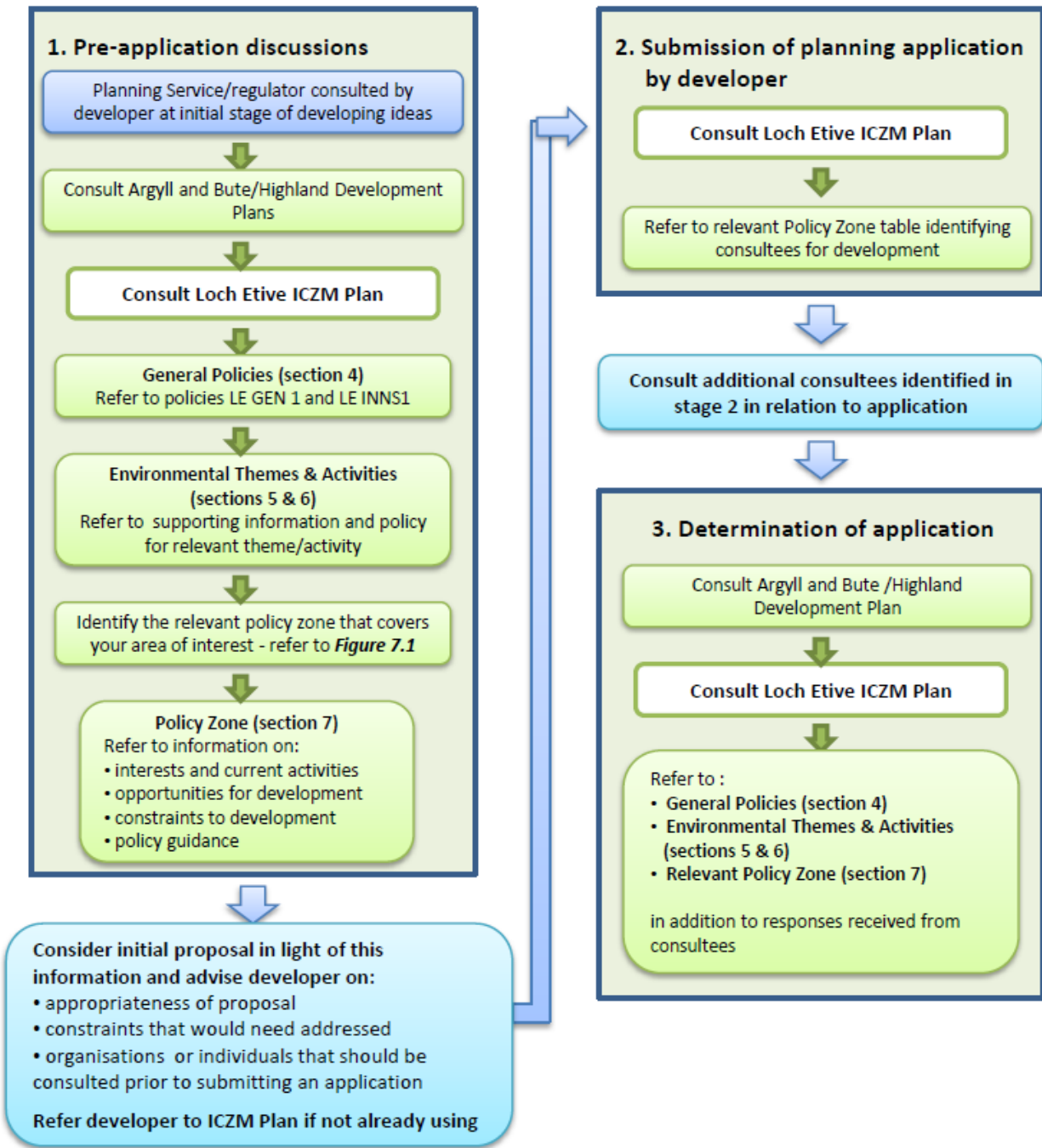


Figure 3.3 How Local Authority planners and other regulators can use the plan as supplementary planning guidance to inform initial advice and determination of development proposals or consider activities.