
Guidance on Strategic
Environmental Assessment

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GUIDANCE ON STRATEGIC ENVIRONMENTAL ASSESSMENT

This guide explains how strategic environmental assessment (SEA) should be integrated into the plan-making process, based on the Icelandic planning and building act and the EU directive on the assessment of the effects of certain plans and programmes on the environment. The guide was written for the Planning Agency of Iceland, by the consulting firms Levett-Therivel in the UK and Alta in Iceland.

Section 1 explains what SEA is and why it is needed. Section 2 discusses the SEA process: who should be involved, when, what they should do, and what the outputs should look like. Section 3 expands on techniques and tools that can be used for the different stages of the SEA process. Section 4 discusses quality assurance procedures, and Section 5 gives further information and references.

1. BACKGROUND

What is strategic environmental assessment?

SEA is the process of ensuring, at various stages of plan-making, that the plan integrates environmental and sustainability considerations as well as possible. SEA should be an integral part of the plan-making process. Figure 1.1 shows broadly how SEA links with plan-making.

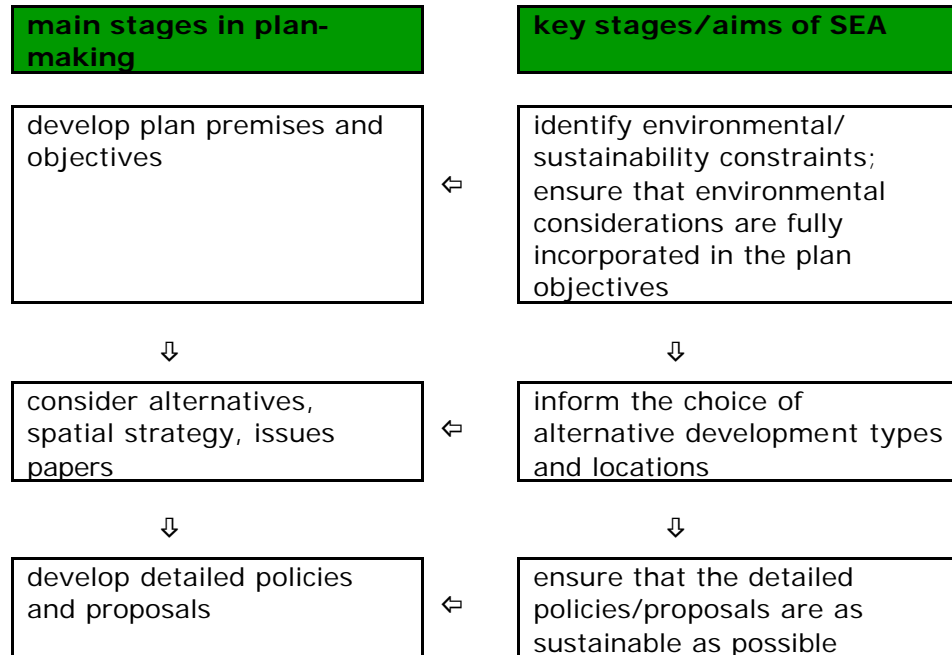


Figure 1.1. Broad links between plan-making and SEA..

Why is strategic environmental assessment needed?

SEA is required by the Planning and Building Act No. 73/1997 and Directive 2001/42/EC¹. It also helps to improve the plan.

Planning and Building Act No. 73/1997

The aims of the Planning and Building Act No. 73/1997 are:

"to ensure that the development of settlement and land use in the country as a whole will be in accordance with development plans which are based on the economic, social and cultural needs of the population, and also their health and safety;

to encourage the rational and efficient utilization of land and natural resources, to ensure the preservation of natural and cultural values and to prevent environmental damage and over-exploitation, based on the principles of sustainable development" (Article 1).

¹ The Directive is not binding, but each country has until 2004 to incorporate conditions in the

Key provisions of the act are that:

- Development plans shall contain, i.a., descriptions of the natural environment and all local conditions in the planning area at the beginning of the planning period and the premises for the policy they contain.
- When development plans are prepared, every effort shall be made to seek the viewpoints and proposals of the inhabitants and others who have interests to defend regarding the formulation of policy and the objectives of the development plan.
- Development plans shall account for the impacts of the plan, its objectives and proposed development, on the environment, natural resources and the community, including, i.a., with a comparison of the possible alternatives. (Article 9, para. 3-5).

Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment"

European Directive 2001/42/EC aims "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans... with a view to promoting sustainable development" (Article 1). It requires certain plans and programmes, including local land use plans, to be subject to SEA "of a sufficient quality to meet the requirements of [the] Directive" (Article 12.2). Box 1.1 shows the minimum requirements of an SEA. Section 4 discusses the standard of quality that the National Planning Agency will require from SEAs. The full text of the Directive can be found at http://www.europa.eu.int/comm/environment/eia/full-legal-text/0142_en.pdf.

Directive into law and regulations according to the Directive,.



Box 1.1. Requirements of Directive 2001/42/EC

Preparation of an **environmental report** in which the likely significant effects on the environment of implementing the plan, and reasonable alternatives taking into account the objectives and geographical scope of the plan, are identified, described and evaluated. The information to be given is:

- a) an outline of the contents, main objectives of the plan, and relationship with other relevant plans and programmes;
- b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan;
- c) the environmental characteristics of areas likely to be significantly affected;
- d) any existing environmental problems which are relevant to the plan including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC² and 92/43/EEC³;
- e) the environmental protection objectives, established at international, Community or national level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation;
- f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors*;
- g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan;
- h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;
- i) a description of the measures envisaged concerning monitoring in accordance with Article 10;
- j) a non-technical summary of the information provided under the above headings (Article 5 and Annex 1)

*These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative impacts

Consultation:

- of environmental authorities when deciding on the scope and level of detail of the information which must be included in the environmental report (Art. 5.4)
- environmental authorities and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan and the accompanying environmental report before the adoption of the plan (Art. 6.1, 6.2)
- of other countries where the implementation of the plan is likely to have significant effects on the environment of that country (Art. 7).

² Directive 79/409/EEC on the conservation of wild birds (the 'Birds Directive')

³ Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (the 'Habitats Directive')

The environmental report and the results of the consultations must be taken into account in decision-making (Art. 8)**Provision of information on the decision:**

When the plan is adopted, the public and any countries consulted under Art.7 are informed and the following items are made available to those so informed:

- the plan as adopted
- a statement summarising how environmental considerations have been integrated into the plan and how the environmental report of Article 5, the opinions expressed pursuant to Article 6 and the results of consultations entered into pursuant to Article 7 have been taken into account in accordance with Article 8, and the reasons for choosing the plan as adopted, in the light of the other reasonable alternatives dealt with; and
- the measures decided concerning monitoring (Art. 9)

Monitoring of the significant environmental effects of the implementation of the plan (Art. 10)

Improving plans

Besides improving a plan's sustainability, SEA also improves the plan itself. In the UK, for instance, where SEA of development plans has been carried out since 1992, questionnaires of local authority planners (e.g. Therivel 1997) suggest that SEA *regularly*:

- ensures that plans are clearly worded
- ensures that plans hold together, with clear objectives and clear links between these objectives and the plan policies
- helps planners to understand the whole of the plan better, and get a better grasp of what the other planners in their group are doing
- in doing so, makes planners more confident that their plan will stand up to public scrutiny and to inquiry
- helps planners to better understand sustainability concepts
- where non-planners are involved in the process, helps them to better understand the constraints and possibilities of the planning system

2. THE STRATEGIC ENVIRONMENTAL ASSESSMENT PROCESS

The requirements of Directive 2001/42/EC must legally be complied with⁴, although *how* this is done is left up to individual countries. The National Planning Agency recommends the process described below, which fulfils the requirements of the Directive and reflects best practice.

Who should carry out the SEA, and who should be consulted?

The planning committee, an ad hoc committee, planning consultants or planners responsible to the planning committee, should collect the relevant information and carry out consultation.

The environmental authorities and the public need to be consulted at several stages (see Figure 2.1 and Section 3).

Figure 2.1.

Environmental authorities	Public
National Planning Agency Nature Conservation Agency Food and Health Agency Culture and Heritage Agency Planning Agency Fisheries Directorate	People who live in the plan area and their representatives. Landowners, property owners, representatives from the tourism industry, environmental NGOs etc.

When should the SEA be carried out?

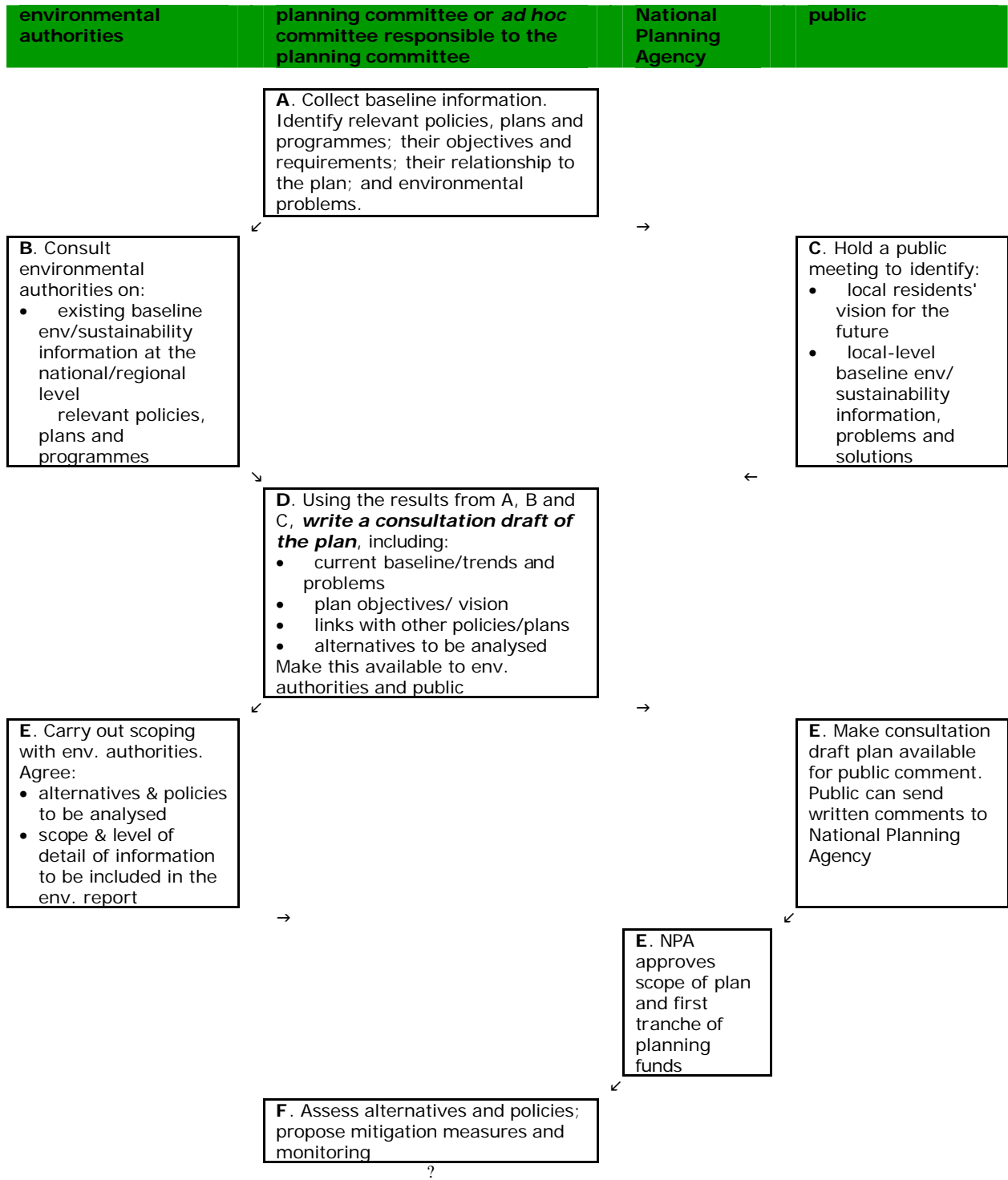
The SEA should be an integral part of the plan-making process. It should start when the premises for the plan are being developed, and continue throughout plan-making.

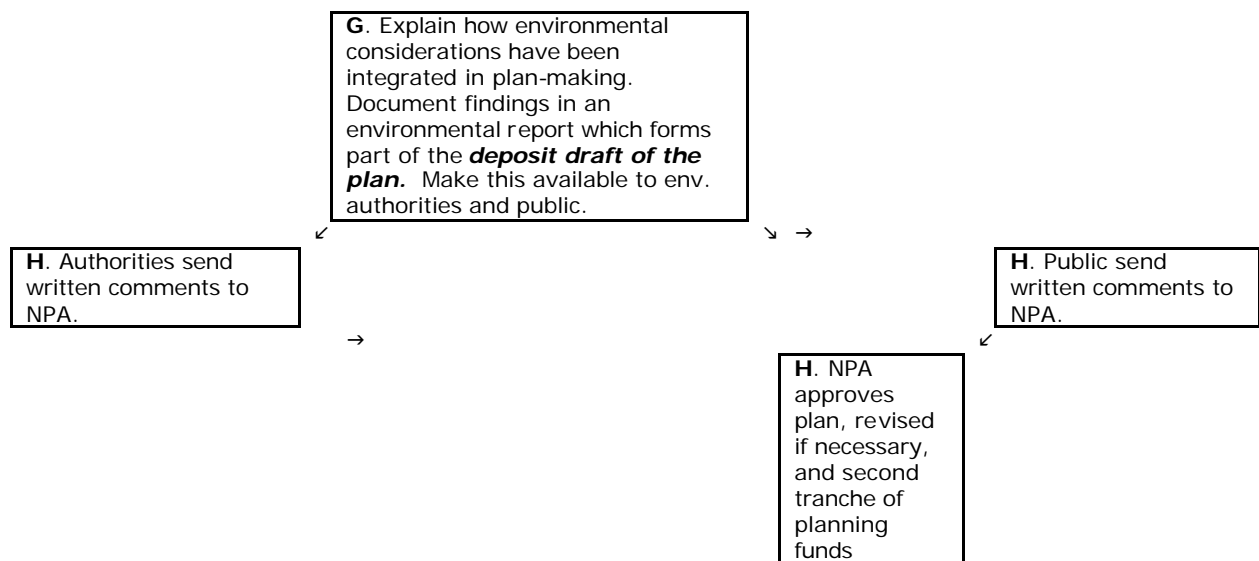
What should be done?

Figure 2.2 shows the recommended integration of SEA into the planmaking process. Further details of the stages involved are given in Section 3.

⁴ By the year 2004.

Figure 2.2. Recommended stages of SEA in the planmaking process





What should the SEA output look like?

The key output of SEA should be a better plan: one which is more sustainable, more internally coherent, and more defensible. The 'environmental report' which documents the SEA process will form an integral part of the plan. Table 2.1 shows the structure and environmental/ sustainability contents of a typical plan-cum-environmental report.

Section 4 gives a quality assurance checklist for SEA. This will be used by the National Planning Agency to check the quality of the environmental report and overall SEA process. It can also be used by those carrying out the SEA to ensure that they are carrying out the SEA well.

Table 2.1 Structure of typical plan-cum-environmental report

Structure of plan-cum-environmental report	Environmental/sustainability information to include in this stage of the plan	Directive 2001/42/EC requirements this addresses (Box 1)
Summary	<ul style="list-style-type: none"> Non-technical summary of the environmental statement 	Annex 1 (j)
Methodology used	<ul style="list-style-type: none"> Who carried out the SEA, when, who was consulted, etc. 	Articles 6-8, Article 9 (b)
Plan premises	<ul style="list-style-type: none"> Links to other policies, plans and programmes Baseline environmental/sustainability information Environmental problems 	Annex 1 (a) and (e) Annex 1 (b) and (c) Annex 1 (d)
Plan objectives	<ul style="list-style-type: none"> Plan objectives/vision How environmental/sustainability issues were considered in developing the objectives 	Annex 1 (a) Article 9 (a) and (b)
Plan policies	<ul style="list-style-type: none"> Alternatives considered Significant environmental/sustainability impacts Proposed mitigation measures How environmental/sustainability issues were considered in developing the policies 	Annex 1 (h) Annex 1 (f) Annex 1 (g) Article 9 (a) and (b)
Implementation	<ul style="list-style-type: none"> Links to project environmental impact assessment, design guidance etc. Proposed monitoring 	Article 1 (g) Article 1 (i)

The plan will have several audiences:

- The public, who will want to know why certain alternatives were chosen and how major impacts will be mitigated;
- The National Planning Agency and environmental authorities, who will want to see the same, but will also want to ensure that the assessment has been rigorous: they will look at the baseline information considered, the assessment methodology, and changes made to the plan as a result of the assessment.
- Consultants, academics, and other local authorities who will be interested in the assessment methodology.

General rules for documenting the plan and assessment findings are thus:

- *Focus on the big issues*
- *Focus on changes made to the plan as a result of the assessment.* This will show that you have carried out the assessment well, and that you have considered a range of alternatives/ideas in plan-making. Much of this information will naturally come from carrying out the stages of Section 3.
- *Explain what alternatives and mitigation measures you considered, and why you chose the alternatives that you did.* This provides an

audit trail of your decisions, and shows the role that sustainability issues played in the decisions.

- *Explain the methodology* that you used: who was involved, how long it took, etc.
- *Do not feel obliged to include every single piece of information* that you have collected or every matrix that you have filled out.
- *Look at some other environmental reports* from Section 5 to see how others have done it.

3. STAGES IN THE SEA PROCESS

This section begins with a discussion of environmental impacts and indicators, and then gives more detail on the stages outlined in Figure 2.1.

Environmental impacts and indicators

The *impacts* associated with a plan are the difference between what would happen with and without the plan. This is normally described in terms of *indicators*. For instance, if the number of houses in an authority increases from 1000 to 1200 between the years 2004 and 2008, then the number of houses is an indicator, and the increase of 200 is an impact. Indicators provide a basis for identifying impacts, comparing alternatives, testing the sustainability of the plan, and monitoring the plan's impacts.

Directive 2001/42/EC lists a range of indicators at Annex I (f), but gives no details of how to use them in land use planning. The Planning and Building Act No. 73/1997 refers to the economic, social and cultural needs of the population, health and safety, utilization of land and natural resources, preservation of natural and cultural values, and prevention of environmental damage and over-exploitation. Both aim to promote sustainable development.

Table 3.1 shows how the Planning and Building Act's and the Directive's requirements can apply to land use planning. These can be adapted to take account of each municipality's specific circumstances.

Table 3.1. Environmental/sustainability indicators

Directive Annex I (f)	environmental/sustainability components	indicators for plan-making and the environmental report	data source **
population	current population, trends in population	No. residents, age and gender	P
	homelessness	No. homeless households	P
	affordability of housing	Average cost of houses, or cost of typical 3-bedroom detached house	P*
	diversity and vitality of economy	Indication of whether local economy is heavily dependent on one sector or diverse	M
	unemployment	% unemployment in local authority or region	P

Directive Annex I (f)	environmental/sustainability components	indicators for plan-making and the environmental report	data source **
human health	safety/risk	Contaminated land and floodplain are covered elsewhere. Discussion or map of other risk factors, e.g. radiation, landslides	P, M*
	noise-sensitive development	Key noise-sensitive developments (hospitals, schools, opera houses etc.) on map	P
	noisy development	Key noisy developments on map	P
	crime and accidents	- Crimes/year - Accidents/year - General assessment of quality of cycling and pedestrian facilities (good, fair, poor) and amount that people walk and cycle (lots, some, little)*	police* M
	sense of security	General indication of whether people feel safe	M
biodiversity, flora, fauna	designated and other important sites of nature conservation, and important wildlife corridors	- Designated wildlife areas - Other areas of importance for wildlife*, including ponds, heathland, wetland* - Corridors between these sites* ...all on map	E, P, M
	important species	List of endangered and sensitive flora and fauna: local*, regional, national	E
soil	land use	Current land use on map Past changes in land use on maps*	P
	contamination	Current and past landfill sites and other contaminated land, on map	E, M
	erosion	Current trend.	E
	designated and other important geological sites	Sites of geological interest, on map	E
water	quantity/supply of drinking water	Note any constraints/problems	E
	quality of surface and ground water	Note quality of water in lakes, ponds, rivers, sea, groundwater (or particular problems with quality)	E
	flooding	Floodplain on map	E, M*
air	air quality	Note local and regional air quality (or particular problems with quality)	E
climatic factors	energy use	Note any particularly heavy users of energy (e.g. aluminium smelters)	P
	fossil fuel use	Note any particularly heavy users of fossil fuels	P
	public transport	Describe accessibility by public transport: no. bus/train movements/day (on map if appropriate)	P*
	afforestation	Forest/woodland on map	P

Directive Annex I (f)	environmental/sustainability components	indicators for plan-making and the environmental report	data source **
material assets	range and accessibility of shopping facilities	Shops and shopping areas on map. Discussion of accessibility by different transport modes (good, fair, poor), and whether they are in short supply	P
	range and accessibility of community facilities	Town halls, doctors' offices, post offices, churches, etc. on map. Discussion of accessibility by different transport modes (good, fair, poor), and whether they are in short supply	P*
	range and accessibility of recreational facilities	Key recreational facilities on map. Discussion of accessibility by different transport modes (good, fair, poor) and whether they are in short supply	P, M
	vacant buildings	No. of vacant buildings: list or show on map if appropriate	P
cultural heritage incl. architectural & archaeological heritage	designated buildings, monuments and sites	Listed and other historic buildings, ancient monuments, archaeological sites on map	E
	buildings of archaeological merit	On map	P, M*
landscape	general landscape quality & character	Description and evaluation of the general character of the area, possibly including characterisation on map	P
	designated areas, countryside, open space, parks	All on a map	P, E
	derelict land	Previously used/brownfield land (contaminated or not) on map	P, M*

* where known

** E = environmental authority
M = public meeting
P = knowledge or site survey by planners

Collect baseline information:

Identify relevant policies, plans and programmes; their objectives and requirements; their relationship to the plan; and environmental problems.

A1. Collect baseline information

Collect and start documenting existing baseline information, on maps where appropriate. This data could come from existing plans, State of the Environment reports, monitoring reports (on traffic, housing, etc.), previous Local Agenda 21 exercises, the census, GIS systems, and/or site visits. The right-hand column of Table 3.1 (marked "P") gives an indication of the type of data that could be collected at this stage.

Where relevant and feasible, historic trends should be identified as well as the current situation.

A2. Identify relevant policies, plans and programmes; their objectives and requirements; their relationship to the plan; and environmental problems.

If a plan for the area already exists, as a starting point for this stage it may be worthwhile filling out an impact matrix (see Stage F1) for the existing plan.

Start to identify policies, plans and programmes – from the international down to the local level - that could affect the plan. These *must* include relevant environmental protection objectives, but should also include those on transport, energy etc. Because they change relatively quickly, this guidance does not include a list of relevant policies, plans and programmes. Information can be found at, for instance:

- European Commission: <http://www.europa.eu.int/scadplus/leg/en/lub/l280bb.htm>
- United Nations Environment Programme: <http://www.unep.org/soe>
- European Environment Agency: <http://www.themes.eea.eu.int>

For each of these policies, plans and programmes, describe their objectives and requirements, how they affect the plan, and any environmental problems that they raise. This could be done in a matrix such as Table 3.2:

Table 3.2 Links between plan and other policies, plans and programmes

Other policy, plan or programme	Objectives and requirements	How they affect the plan	How/where the plan takes them on board
The Ramsar convention			
Municipal plans for the adjacent municipalities			
LA 21			
Changes to the plan:			

Consultation on existing baseline information:

Consult environmental authorities on existing baseline environmental/sustainability information at the national and regional level, and on relevant policies, plans and programmes

B1. Environmental/sustainability information at the national and regional level

The environmental authorities will provide data, where this is requested and already in existence, on environmental/sustainability issues at the national and regional level. This could include:

- Natural environment: designated areas for:
 - wildlife and nature conservation
 - water, air and soil quality protection
 - geological
 - landscape
 - greenbelt, countryside, open space, parks
- Built environment: designated:
 - historic buildings and ancient monuments
 - archaeological sites
 - buildings of architectural merit
- problem areas:
 - current and past sites of contamination
 - quantity/supply of drinking water
 - areas with air pollution problems
 - floodplain
 - endangered flora and fauna

B2. Relevant policies, plans and programmes

The environmental authorities should be consulted on the policies, plans and programmes identified in Stage A2, to ensure that the list is comprehensive, and that problems have been correctly identified.

Public meeting:**Hold a public meeting to identify local residents' visions for the future, and existing baseline environmental /sustainability information at the local level**

The Planning and Building Act No. 73/1997 requires the viewpoints and proposals of local residents and other stakeholders to be reflected in the plan. At this stage, their views should be sought on a future 'vision' for the area and on the local baseline environment.

C1. Vision for the future

It is easy to fall into the trap of writing a plan that focuses on solving today's problems – on revitalising currently derelict areas, say, or dealing with today's traffic jams – rather than setting a vision for tomorrow. However a key part of sustainable development is considering the long term implications of decisions, and one of the Brundtland Commission's key principles is intra-generational equity: equity between today's and future generations. The aim of a visioning exercise is to make local residents think more strategically and long-term.

In a typical visioning exercise a facilitator asks participants to close their eyes and imagine they are walking through their neighbourhood as it should be fifteen (15+?) years into the future. What do they see? What do the buildings look like? Where do people gather? How do they make decisions? What are they eating? Where are they working? How are they travelling? What is happening on the street? where is the centre of the neighbourhood? How does greenspace and water fit into the picture? What do they see when they walk around after dark? People record their visions in written or pictorial form; in diagrams, sketches, models, photographic montages, and in written briefs.

The Quality of Life Capital approach (<http://www.qualityoflifecapital.org.uk>) can also be useful for developing 'rules' for future development. The results of the visioning or QoLC exercise can be used as a basis for developing plan objectives.

C2. Identify local-level baseline environmental/sustainability information, problems and possible solutions

Many of the indicators of Table 3.1 are for quality of life: whether people are happy with their environment. In addition, local residents may know about aspects of their environment that the planning team and the environmental authorities may not know about. For these reasons it is useful to involve local residents in identifying the local baseline environment. Relevant issues to discuss at the public meeting could be:

- recreational facilities, community facilities, shopping facilities, jobs: where are they? how do people get there? are they easily accessible? are any in short supply?
- is the local economy heavily dependent on one sector or diverse?
- how good/bad are public transport, cycling facilities and pedestrian facilities?
- do people generally feel safe?
- where are current and past landfill sites, and sites of possible contamination?
- where is the floodplain?
- what is the price of typical 3-bedroom detached house? have house prices gone up or down in the last 4 years?
- where are ponds, heathland etc. (features that the planners might not know about)
- where are buildings of archaeological merit?
- what developments will be built in the community in the next 4 years?

This discussion could be done using the maps and information from Stage A as a starting point. Residents could also be asked for their ideas of solutions to some of the problems identified at this stage, as an input to Stage D4.

It may also be worthwhile considering and documenting:

- has any social group been particular winners or losers in the past (e.g. town v. rural dwellers, people with v. without cars)?
- are there any political sensitivities, traditions etc. that will affect the plan?

If potential development sites are being identified at this stage, more detailed environmental information on the sites may be collected at this stage. This should focus on *strategic* issues:

- major impacts, particularly those with a cumulative effect (e.g. multiple developments in one area of landscape) or a global effect (e.g. greenhouse gas emissions)
- identification of sites that are less environmentally sensitive or less likely to lead to environmental impacts than those under initial consideration

Note should be taken of whether environmental impact assessment may be needed for those sites, and what further information may be required at the EIA stage (see Stage D4).

Consultation draft:

Using the results from Stages A, B and C, write a consultation draft of the plan, including the current baseline/trends and problems; the plan objectives/vision; links with other policies, plans and programmes; and alternatives to be analysed.

D1. Current baseline/trends and problems

This should summarise the baseline environment (current and past trends where appropriate) as identified in Stages A1, B1 and C2. It may be useful to present some of this information as maps, for instance:

Map	Indicators covered
Current land use	<ul style="list-style-type: none"> • current land uses • landscape characterisation?
Past land use (where maps exist)	
Natural environment	<ul style="list-style-type: none"> • designated/other areas of importance for wildlife (include lakes, ponds, heathland) • forest/woodland • wildlife corridors • sites of geological interest • open space/countryside • parks • areas designated for landscape quality
Historic built environment	<ul style="list-style-type: none"> • designated and other historic buildings • ancient monuments • archaeological sites • buildings of architectural merit
Built environment	<ul style="list-style-type: none"> • shops/shopping areas • community facilities (town halls, doctors' offices, post offices, hospitals, police stations, churches, etc.) • recreational facilities • employment areas

Environmental problems should be identified, for instance where current or likely future environmental conditions may contravene regulations/standards, where local residents are unhappy with their environment, or where specific groups of people are affected by multiple environmental impacts. Maps may be a useful way of describing problems that have a locational basis, e.g.

Map	Indicators covered
risk factors	<ul style="list-style-type: none"> contaminated land floodplain noisy development other risks, e.g. landslide
other problems	<ul style="list-style-type: none"> noise-sensitive development vacant buildings areas with poor access by public transport

This section should also document and problems in collecting the baseline data, for instance if data does not exist for certain areas, or if it is outdated.

D2. Plan objective/vision

The plan objective should take account of the results of the visioning process and local residents' perceptions of Stage C1, any problems identified in Stages A and B, and the need for the objective to integrate environmental, social and economic considerations. Where appropriate, the plan should aim to redress, or at least not worsen, past inequalities and cater for the most vulnerable people in society.

D3. Links with other policies, plans or programmes

This should show any problems as identified in Stages A2 and B2. Table 3.2 may be an appropriate way to document these. If the plan is not compatible with "higher order" policies, plans and programmes (e.g. international and national regulations) then the plan needs to be changed. If it is not compatible with other plans and programmes at the same level, then any or all of the plans/programmes may need to be changed.

D4. Alternatives to be analysed

Regulations 400/1998 note that the plan must describe the options considered. Alternative ways should be considered for:

- improving any environmental problems identified in D1 and D3
- achieving the vision of D2
- any major development projects arising from the plan (e.g. road, waste disposal site).

Some of these will automatically arise, for instance in public meetings. However it would also be worthwhile brainstorming alternatives at this stage.

There are often multiple ways – alternatives -- of achieving a future vision or responding to a problem. For instance,

Providing new housing:

- cluster in one main area
- cluster in several areas
- spread evenly
- resist demand for new housing

Increasing density of new development:

- increase throughout
- increase in city centre, leave as is elsewhere
- increase near public transport nodes
- leave as is

Promoting employment in rural areas:

- encourage throughout borough/district
- encourage in specific areas (e.g. near good public transport access)
- encourage specific types of diversification (e.g. farm shops not golf courses)
- permit but only with strong safeguards

Promoting services in rural areas:

- safeguard new sites for shopping, community facilities, etc.
- allow new housing only in areas where a certain level of services exist (to encourage service provision)
- oppose conversion to housing of sites currently providing services to housing
- no action

Decisions about alternatives often follow a sequence, from need/demand, to mode/process, to location, to design:

need/demand: is it necessary?

We often assume that demand must be fulfilled: that rising demand for water, for instance, requires new reservoirs to be built; or that rising traffic requires new roads. However demand can also be reduced, which is often more sustainable. For instance water use can be reduced through metering, fiscal incentives, and appliances that use less water. So, ask...“can the demand be reduced?” or “do we need to do anything at all?”



mode/process: how should it be done?

If need/demand must be fulfilled, there are often different ways of doing this. For instance water can be provided through new reservoirs, waste treatment plans, rainwater collection systems etc. Consider what modes are most sustainable.



location: where should it go?

Some projects must be in a specific location, but in many cases a project can go in a range of different locations. Consider what locations could best cope with the project.



design: what should it look like?

Design is normally dealt with through design policies, design guides or environmental impact assessments for proposed developments.

For those aspects of the plan where it is relevant, need/demand, mode/process and possibly locational alternatives should be identified.

The alternatives should include at least the no action alternative and the alternative that is best for the environment. It may be useful to document them using Table 3.3: advantages and disadvantages can include feasibility, cost, political will and social constraints as well as environmental costs and benefits. Those alternatives that do not meet the plan objective and/or are not feasible should then be eliminated: the reasons for this elimination should be briefly documented. This should leave a range of feasible alternatives that will be analysed in more depth at Stage F.

Table 3.3 Table comparing alternatives

Alternative	Main advantages	Main disadvantages	Reason(s) for eliminating from further consideration

Based on this information, the preferred policy can be chosen, and reasons for doing so documented. Information should also be given on why alternatives are eliminated from further consideration.

Where specific projects are proposed (e.g. a road, a waste disposal site) consideration should be given to alternatives that might avoid the need for the project, different approaches to the project, and different sites for the project.

Where specific sites are proposed for development, consideration should be given to alternative uses of the sites.

These should be summarised in a table such as Table 3.3. This may require the collection of more detailed environmental baseline information and/or more detailed information about the proposed project(s).

The SEA should state what alternatives and key issues need to be covered in any future environmental impact statements for those projects; and which can be eliminated because they have been covered at the SEA stage.

Consultation draft of plan:

Make consultation draft of plan available to environment agencies and the public. Agree in writing, or ask authorities to comment to the National Planning Agency in writing, on alternatives and policies to be analysed, and scope and level of detail of the information to be included in the environmental report.

The public can send written comments to National Planning Agency. The National Planning Agency approves scope of plan and first tranche of planning funds

The Directive notes that the environmental authorities "shall be consulted when deciding on the scope and level of detail of the information which must be included in the environmental report" (Article 5.4). The aim of this 'scoping' stage is to ensure that the rest of the assessment process is focused on those impacts and issues that are most likely to be significant, so as to make best use of assessment resources. At this stage, the following issues should be decided, either by the NPA after receiving comments by the individual environmental authorities, or in discussions between the planning committee and the environmental authorities, with approval from the NPA:

- indicators to use in appraising the alternatives and policies
- alternatives to consider in more detail
- reasons for eliminating other alternatives from consideration
- plan policies to consider in more detail
- reasons for eliminating other plan policies from consideration
- methodology to use in Stage F
- level of detail and type of documentation expected in the final plan-cum-environmental-report

E1. Make plan available to environmental authorities and public

The consultation draft should be sent to the environmental authorities and made available to the public.

E2. Agree indicators, and alternatives and policies to be analysed

Table 3.1 proposes environmental/sustainability *indicators*.

D4 gives an indication the types of *alternatives* that could be considered. Discussions would focus on which alternatives to consider in more depth:

- are the proposed alternatives reasonable?
- do they cover all key alternatives?
- are the no action and most sustainable alternative included?

Discussions about policies would focus on identifying those policies that do not need to be analysed in more depth. The following questions may help to do this:

- Is this policy likely to have significant negative environmental, social or economic impacts?
 - Can the policy be much enhanced?
- If the answer to *both* questions is no, then mark the policy as green and explain why in a few words.
- Is the policy likely to have particularly significant environmental, social or economic impacts?
 - Is it politically contentious?
- If the answer to *either* question is yes, mark the policy as red.
- Are the impacts of the policy very similar to those of any other policies?
- If yes, then consider clustering the policies together for the policy assessment stage.

Green policies will not need to be appraised, although the assessment report should include a brief justifications for why they were not appraised. Red policies will need to be appraised in depth. Amber policies will need an intermediate level of appraisal.

Where the plan proposes little change, the analysis should focus on those aspects that *would* change.

The reasons for the choices should be briefly documented in the final plan.

E3. Agree appraisal methodology, level of detail, and documentation

Discuss and agree how Stage F should be carried out, particularly:

- who should be involved
- whether appraisal should be based on expert judgement, modelling etc.
- whether to carry out compatibility appraisal

... and how the final report should be structured (see Table 2.1 for a typical format).

Again, these should be briefly documented in the plan.

Assessment of alternatives, policies and proposal of mitigation measures:

Assess and compare alternatives and policies; propose mitigation measures

This stage involves:

- assessing the environmental/sustainability impact of the alternatives and policies agreed at Stage E;
- where relevant, considering who wins and who loses;
- where relevant, ensuring the compatibility of the plan alternatives/policies with the plan objectives and with each other;
- comparing alternatives; and
- proposing mitigation measures and monitoring.

Ideally this stage should be carried out by small groups (perhaps 3-4 people) of planners and others, including the planner responsible for writing the policy; an LA21 officer, sustainability expert/consultant, or someone else with a broad understanding of sustainability; and somebody else with knowledge of that topic (e.g. transport, housing). The aim is to get people with a wide range of interests and knowledge to appraise each policy.

F1. Assessing alternatives and policies: the impact matrix

Alternatives and policies are normally assessed using a matrix, with the alternatives on one axis and the indicators from Table 3.1 (adapted if appropriate) on the other, as shown at Table 3.4.

For each alternative or policy, go through the matrix indicator by indicator, each time asking “what kind of impact will this policy have on this indicator?” and putting the answer in the relevant matrix cell. Focus on the significant issues, and go more rapidly over those that are not significant.

Where there are existing standards, regulations and thresholds (e.g. for air pollution), then likely impacts should be compared to those, also keeping in mind what baseline trends would exist *without* the plan. Also consider the *cumulative* impact that the proposed alternative or policy would have with other past and proposed developments; and *indirect* effects such as changes to aquatic communities caused by changes to the hydrology upriver, or respiratory diseases that could be caused by changes in air quality.

While discussing what to put in the cell, consider:

- is the alternative/policy clearly written? what it will "look" like on the ground? does it say what it should say? if not, it should be rewritten to be clearer.
- if the alternative/policy is likely to have a negative impact, can this be minimised/mitigated? If so, it should be rewritten accordingly.
- can positive impacts of the alternative/policy be enhanced? If so, it should be rewritten accordingly.
- if the impact of the alternative/policy is unclear, what further data are needed?
- where the impacts of the policy depend on how the policy is implemented, use the symbol "I" can be used. Note what would need to be done to ensure that the implementation is done "right".
- for policies only: if the policy is likely to have a negative impact that cannot be mitigated, do its benefits override this negative impact? If so, justify the policy. If not, consider deleting the policy or giving it a major overhaul.

Table 3.4 Alternative/policy impact matrix

environmental/ sustainability indicator	Alternative/ Policy 1	Alternative/ Policy 2	Alternative/ Policy 3	...
current population, trends in population	+	0	-	
homelessness	0	-	0	
affordability of housing	+	+	-	
diversity and vitality of economy	0	-	-	
unemployment	...			
safety/risk				
noise-sensitive development				
noisy development				
crime and accidents				
sense of security				
sites of nature conservation, wildlife corridors				
important species				
land use				
contamination				

environmental/ sustainability indicator	Alternative/ Policy 1	Alternative/ Policy 2	Alternative/ Policy 3	...
designated and other important geological sites				
quantity/supply of drinking water				
quality of surface and ground water				
flooding				
air quality				
energy use				
fossil fuel use				
public transport				
afforestation				
range/accessibility of shopping facilities				
range/accessibility of community facilities				
range/accessibility of recreational facilities				
vacant buildings				
designated buildings, monuments and sites				
buildings of archaeological merit				
general landscape quality & character				
designated areas, countryside, open space, parks				
derelict land				
comments; changes to the alternative/policy				
preferred alternative/policy and why it has been chosen:				

The impact of the alternative on the indicators would be:

++	very positive	--very negative	0	neutral impact
+	positive impact	- negative	?	unknown impact
D	impact depends on implementation			

(n.b. alternatively, colours can be used: dark/light green for ++/+, dark/light red for --/-, amber for neutral etc.)

Table 3.4 shows a matrix in which the impacts are described qualitatively, using a combination of expert judgement and perhaps local residents' views. Very roughly, it should take about 20-30 minutes to appraise an alternative or a policy: longer for the first ones, and less for the later ones. The impacts can also be described more quantitatively, for instance by using:

- mathematical/statistical models
- extrapolation from similar existing examples, EIAs, monitoring data, etc.
- GIS modelling

Obviously this would require more time and resources.

Table 3.4 makes no attempt to add up the + and – symbols because the relative importance of the indicators vary from alternative to alternative, and policy to policy. Weighting and scoring techniques could be used, but are not specifically recommended here.

Many of the uncertainties associated with impact prediction will come because it is not clear how the policy will be implemented: for instance whether houses will be 2 or 3 storeys tall, made of wood or concrete, etc. One approach to this is to set up rules to ensure that the relevant issues are handled appropriately when the time comes for that decision. This could take the form of:

- guidance for particular aspects of implementation, e.g. building design, accessibility
- requirements for environmental impact assessment to be carried out for particular projects
- more detailed plans for development sites which could include details of e.g. access arrangements, plantings, recycling facilities, etc.
- additional plan policies that ensure that this issue is dealt with.

Table 3.5 gives some examples.

Table 3.5 Dealing with uncertainty related to implementation of plan				
environmental/sustainability target	Alternative / Policy 1	Alternative / Policy 2	Alternative / Policy 3
landscape	Depends on implementation	
open space		...	Depends on implementation	
accessibility of shopping facilities	...	depends on implementation	...	
...				
comments; changes to the alternative /policy/plan	Devise building design checklist which all developers of new buildings will need to adhere to. Require EIA for all developments over xm tall; over yha area; or in sensitive landscape zones	Add plan policy that ensures that new housing is located within reasonable distance of shopping and other community facilities	Add plan policy that requires all new housing developments of more than x houses must provide y m2 of publicly accessible open space	

The impact matrix should be used to improve, rather than simply compare, alternatives/policies. Where negative impacts are identified, it may be possible to change the alternative/policy to make it more sustainable: this changed alternative/policy can then be re-appraised using Table 3.4. Where specific projects or development sites are proposed in the plan, this stage may identify other sites or types of projects that might have fewer impacts. These should also be appraised using Table 3.4.

F2. Who wins? Who loses?

For each alternative/policy, it may be worthwhile considering who would win and lose if it was implemented. The aim of this exercise would be to ensure that no one social group is unfairly treated; to redress past inequalities; and to protect the most vulnerable sectors in society.

Winners and losers may differ according to the alternative/policy. They

could include:

- rural v. urban dwellers
- people with and without jobs
- young v. old people
- people with different religions or ethnic groups
- people who rent v. own their own houses
- people with and without cars
- large v. small-scale farmers
- future v. current generations
- people who currently live in the area v. people who might move in or summer dwellers

Where a particular group is particularly negatively affected, changes to the plan should be considered to remediate this. These changes should be documented.

F3. Compatibility appraisal

Some plan policies or alternatives may not be compatible with others, or with the plan objective. The aim of 'compatibility appraisal' is to ensure that the plan is internally coherent.

There are two types of compatibility appraisal:

1. *Compatibility of alternatives/policies with the plan objectives.* This is done by using Table 3.6. Where the alternative/policy is not compatible with the objective, the alternative/policy needs to change. Once all of the policies have been appraised, scan down vertically: has each objective been implemented by at least one policy? If not (as for Objective C in Table 3.5), or if implementation is half-hearted, it may be worthwhile either changing the objective or adding/changing policies so that it is better implemented. This should be recorded in the last row.

Table 3.6 Compatibility of alternatives/policies with the plan objectives

alternative/ policy:	objective			
	A	B	C	...
1	+	+		
2		-		
3	-	+		
...				
changes to alternatives/policies:				

- + implements the objective
- incompatible with the implementation of the objective
- blank no links

2. *Compatibility of alternatives/policies with each other.* This involves filling out Table 3.7, each time asking “do these two alternatives/policies pull in the same direction, or do they contradict each other?”. Where they are incompatible, one or both should be changed to make them compatible. This should be recorded in the last row.

Table 3.7 *Compatibility of alternatives/policies with each other*

	Alt/pol. 1	Alt/pol. 2	Alt/pol. 3	...
Alt/pol. 1				
Alt/pol. 2	-			
Alt/pol. 3		+		
...				
changes to alternatives/policies:				

+ compatible
 - incompatible (explain why)
 (blank) no links between them

F4. Comparing alternatives

Regulations 400/1998 note that the plan must describe the alternatives considered, and that the assessment of the environmental impact of different alternatives should be used to select the preferred alternatives.

Tables 3.4 and 3.5 provide the basis for comparing alternatives. Some alternatives/policies will probably be less sustainable than others and can be eliminated from further analysis, and some policies will clearly be more sustainable than others and can be promoted. Based on the example shown at Tables 3.4 and 3.5, for instance, Alternative 1 seems to perform better than the other alternatives. In the end, however, the choice of alternatives is a political decision and the environmental assessment can only inform, not make, this decision.

The reasons for the final decisions should be recorded.

F5. Proposing mitigation measures

Stages F1-F4 (and particularly the last 1-2 rows of Tables 3.4-3.7) will have raised many ways of improving the plan. These could include:

- changes to the wording of the alternative/policy;
- the removal of policies that are not sustainable or do not promote the plan objectives;
- the addition of new policies, for instance on design or energy efficiency; and
- requirements to carry out environmental impact assessment of specific developments.

As these become incorporated into the plan, they become 'changes to plan and/or policy', i.e. mitigation measures. So, if authorities follow the

previous stages of the guidance, they will only need to summarise the results of the tables to fulfil the Directive's requirements for 1. proposing mitigation measures and 2. documenting how environmental considerations have been integrated in the plan-making process.

In response to Regulations 400/1998, the plan must identify projects that will require environmental impact assessment. EIA is already required for a specified list of projects under act nr. 106/2000: authorities will need to ensure that any projects potentially requiring an EIA are listed in the SEA. Tables 3.4-3.7, and particularly Table 3.5, will help to identify further cases where EIA would be useful.

F6. Monitoring

One useful mitigation measure is a monitoring programme that ensures that any problems are identified early and dealt with efficiently. The Directive requires "significant environmental effects of the implementation of [the plan]" to be monitored.

Using the results of Stage F1 to identify the effects of the implementation of the plan, a monitoring programme can be proposed as at Table 3.8.

Table 3.8 Possible format for monitoring programme.

what to monitor (indicators from Table 3.1)	who should monitor	how often	at what point does something become a problem?	what should be done if a problem is identified?
crime and accidents	police	every 6 months	current crime levels increase by 10%	as appropriate: increased patrolling, more enforcement of traffic regulations, CCTV cameras installed in high-crime areas
	planners	every 4 years	people feel more unsafe than they do currently	more lighting installed in high crime areas, ...
air quality	environmental agency	annual	exceed regulatory thresholds	Air Quality Management Area designation put in place; restrictions on car use, industrial emissions, etc.
...				

Overview of integration of environmental/sustainability considerations:

Explain how environmental/sustainability considerations have been integrated in plan-making. Document findings in an environmental report which forms part of the deposit draft of the plan. Make this available to environmental authorities and public.

The SEA process of Stages A-F focuses on ensuring that environmental/sustainability considerations are thoroughly integrated in the plan-making process. The aim of Stage G is to explain and document this as part of the deposit draft of the plan.

Section 2 explained the information that should be included in a typical plan-cum-environmental-report. Table 3.9 suggests how the environmental/ sustainability information from Stages A-F could be included in the plan-cum-environmental-report.

An early section of the environmental report should be a discussion of how the SEA was carried out: who was involved, what are their competences, what meetings were held when and with whom, etc. This should have been agreed at Stage E3. This documentation helps to show that the SEA was carried out well, and properly integrated in the plan-making process.

The environmental report needs to include a non-technical summary which includes the main SEA findings and how decisions have been changed by the SEA.

Section 4 contains a quality assurance checklist. All environmental reports are expected to contain the information required in this checklist.

Table 3.9 Inclusion of environmental/sustainability information in a typical plan-cum-environmental report

Structure of plan-cum-environmental report	Environmental/sustainability information to include in this stage of the plan	Stage where that information comes from
Summary	<ul style="list-style-type: none"> Non-technical summary of the environmental statement 	
Methodology used	<ul style="list-style-type: none"> Who carried out the SEA, when, who was consulted, etc. Technical, procedural and other difficulties encountered (e.g. technical deficiencies, lack of know-how) 	E
Plan premises	<ul style="list-style-type: none"> Links to other policies, plans and programmes Baseline environmental/sustainability information Environmental problems 	D, revised to take account of any comments by the National Planning Agency, public, environmental authorities, etc.
Plan objectives	<ul style="list-style-type: none"> Plan objectives/vision How environmental/sustainability issues were considered in developing the objectives 	
Plan policies	<ul style="list-style-type: none"> Alternatives considered Significant environmental/sustainability impacts Proposed mitigation measures; how environmental/sustainability issues were considered in developing the policies 	<ul style="list-style-type: none"> E2 F1, F2 F1, F4, F5
Implementation	<ul style="list-style-type: none"> Links to project environmental impact assessment, design guidance etc. Proposed monitoring 	F5 F6

The plan-cum-environmental report should be sent to the National Planning Agency, environmental authorities and the public.

Comments from Environmental Authorities and Public:

Environmental authorities and public send written comments to NPA. NPA approves plan and second tranche of planning funds, revised if necessary

The NPA will review the environmental report in light of the quality assurance checklist given in Section 4.

4. QUALITY ASSURANCE PROCEDURES

The quality assurance checklist below helps to:

- test whether the minimum legal requirements of the SEA Directive are fulfilled;
- test whether best practice guidance and advice has been followed;
- identify the environmental report's key strengths and weaknesses;
- determine whether the environmental report effectively integrates environmental considerations into the strategic action.

It has been developed with reference to the Directive and numerous other review checklists and best practice guidance. It can be used by Government officials, independent authorities/experts, organisations carrying out environmental assessment, and interested or affected members of the public.

Quality assurance procedures

The reviewer should:

1. familiarise themselves with the content of the environmental report, how it is organised and where key information is contained.
2. identify whether the quality assurance questions are relevant to the specific plan under review.
3. carry out the review using the grades described in the table below.
4. identify:
 - a. major omissions: The shortcomings of the environmental report are so serious that they require immediate remedy in the form of a supplement to the report or a new SEA being undertaken.
 - b. significant omissions: The shortcomings can be rectified fairly easily by means of explanations and conditions attached to the decision.
 - c. secondary omissions: The shortcomings cannot be remedied immediately because that would require too much time and effort.
5. determine remedial options if the report fails to meet the standards required.

Quality assurance grades

A - well performed, no important tasks left incomplete.
B - satisfactory and complete, only minor omissions and inadequacies.
C - just satisfactory despite omissions and/or inadequacies.
D - parts well attempted but must, on the whole be considered just unsatisfactory because of omissions and/or inadequacies.
E - unsatisfactory, significant omissions or inadequacies.
F - very unsatisfactory, important task(s) poorly done or not attempted
N/A - not applicable, the review topic is not applicable in the context of the plan or programme.

Quality assurance checklist	relevant section	mark (A-F)
The plan and alternatives		
<p>Objectives</p> <ul style="list-style-type: none"> The plan's purpose, area covered, timescale and strategic objectives are given. The plan's objectives are clearly linked to established targets and indicators. Environmental/sustainability issues and constraints are adequately considered in developing the objectives/targets. Links with related higher and lower tier plans, programmes and policies are identified and explained. Inconsistencies between the plan and 1. environmental/sustainability targets, and 2. other plans, programmes and policies are identified and explained. 	D2 D2 D2 D3 D1, D3	
<p>Scoping</p> <ul style="list-style-type: none"> Environmental/sustainability issues that could be affected by the plan are identified using a clear methodology. Appropriate environmental authorities are consulted when deciding on the scope and level of the information which must be included in the environmental report Reasons for eliminating issues from further consideration are documented. 	D	
<p>Alternatives</p> <ul style="list-style-type: none"> Realistic alternatives are considered, including the 'no action' alternative and the alternative that is considered best for the environment. The costs and benefits of each alternative are identified and compared. Reasons for eliminating unfeasible alternatives are documented. 	D4	

Quality assurance checklist	relevant section	mark (A-F)
Identifying and evaluating the plan's impacts		
<p>Baseline information</p> <ul style="list-style-type: none"> • Relevant aspects of the current state of the environment and their likely evolution without the plan are described • Environmental characteristics of areas likely to be significantly affected are described • Environmental problems affecting the plan are described and taken into consideration in the formulation of the plan. • The methods used to investigate the affected environment are appropriate to the size and complexity of the assessment task. • Local, regional and national agencies holding information on baseline environmental conditions are approached. The public is consulted where relevant. 	<p>D1 D4 D2 B1, C2</p>	
<p>Identification and evaluation of key impacts</p> <ul style="list-style-type: none"> • The likely significant effects on the environment including issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage, landscape and their inter-relationships are identified and evaluated. • Impact evaluation is carried out in relation to relevant, accepted standards, regulations, and thresholds where appropriate. • The methods used to evaluate the impacts are described. • Likely indirect, cumulative and secondary impacts are identified. 	<p>Tab . 3.1, F1</p>	
<p>Quality of information</p> <ul style="list-style-type: none"> • Environmental authorities and the public are given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan and the accompanying environmental report before adoption of the plan. • The assessment focuses on the important significant issues and disregards other less significant information. • All technical, procedural and other difficulties encountered (such as technical deficiencies or lack of know-how) are discussed; assumptions and uncertainties are made explicit. 	<p>C2, F1 F1, G</p>	

Quality assurance checklist	relevant section	mark (A-F)
Mitigation, monitoring and decision-making		
<p>Mitigation and monitoring of impacts</p> <ul style="list-style-type: none"> • The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan are indicated. • The anticipated effectiveness of the mitigation measures is described. • Links to project environmental impact are made explicit . • Measures for monitoring of impacts are made explicit (in accordance with Article 10), ideally in a management plan. 	<p>F5</p> <p>F5</p> <p>F6</p>	
<p>Consultation and decision-making</p> <ul style="list-style-type: none"> • The environmental assessment is conducted as an integral part of the plan-making process (starting when the plan premises were being developed and continuing throughout plan-making). • An appropriate range of 'public' and 'environmental authorities' are consulted. • The draft plan and 'environmental report' are made available for comment to the public and all relevant bodies/countries consulted*. • The public's and relevant bodies/countries' views are summarised and responded to*. • An explanation is given of how environmental considerations are integrated into the plan, and the reasons for choosing the plan as adopted, in the light of other reasonable alternatives dealt with*. 	<p>G</p> <p>E1</p>	

Quality assurance checklist	relevant section	mark (A-F)
The environmental report		
<ul style="list-style-type: none"> • ...identifies the competent authority and organisation(s) responsible for preparing the environmental report, and their competences. • ...is clear and concise in its layout and presentation, is presented as an integrated whole, and uses maps and other illustrations where appropriate. • ...uses simple, clear language and avoids technical jargon. • ...describes the methodology used in the environmental assessment, including who was consulted and how. • ...acknowledges external sources of information, including expert judgement and matters of opinion. • ...contains a non-technical summary which includes a summary and explanation of the overall approach to assessment; the objectives of the plan/programme; the main alternatives considered, and how the strategic action was changed by the assessment. • ...is written without bias in an impartial and open manner. 	<p>E5</p> <p>E3</p> <p>G</p>	
Major omissions:		
Significant omissions:		
Secondary omissions:		

* cannot be reviewed based only on the environmental report

5. FURTHER INFORMATION AND REFERENCES

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