

# Developing and Assessing Alternatives in Strategic Environmental Assessment



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## ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

### The work of the EPA can be divided into three main areas:

**Regulation:** *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

**Knowledge:** *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

**Advocacy:** *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

### Our Responsibilities

#### Licensing

We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities (*e.g. landfills, incinerators, waste transfer stations*);
- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
- sources of ionising radiation (*e.g. x-ray and radiotherapy equipment, industrial sources*);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

#### National Environmental Enforcement

- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by co-ordinating a national enforcement network, targeting offenders and overseeing remediation.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE), Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Prosecuting those who flout environmental law and damage the environment.

#### Water Management

- Monitoring and reporting on the quality of rivers, lakes, transitional and coastal waters of Ireland and groundwaters; measuring water levels and river flows.
- National coordination and oversight of the Water Framework Directive.
- Monitoring and reporting on Bathing Water Quality.

### Monitoring, Analysing and Reporting on the Environment

- Monitoring air quality and implementing the EU Clean Air for Europe (CAFE) Directive.
- Independent reporting to inform decision making by national and local government (*e.g. periodic reporting on the State of Ireland's Environment and Indicator Reports*).

### Regulating Ireland's Greenhouse Gas Emissions

- Preparing Ireland's greenhouse gas inventories and projections.
- Implementing the Emissions Trading Directive, for over 100 of the largest producers of carbon dioxide in Ireland.

### Environmental Research and Development

- Funding environmental research to identify pressures, inform policy and provide solutions in the areas of climate, water and sustainability.

### Strategic Environmental Assessment

- Assessing the impact of proposed plans and programmes on the Irish environment (*e.g. major development plans*).

### Radiological Protection

- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

### Guidance, Accessible Information and Education

- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making (*e.g. My Local Environment, Radon Maps*).
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

### Awareness Raising and Behavioural Change

- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

### Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Climate, Licensing and Resource Use
- Office of Environmental Enforcement
- Office of Environmental Assessment
- Office of Radiological Protection
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

**EPA Research Programme 2014–2020**

# **Developing and assessing alternatives in Strategic Environmental Assessment**

**(2013-SL-DS-1)**

## **EPA Research Report**

Prepared for the Environmental Protection Agency

by

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The EPA Research Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in relation to environmental protection. These reports are intended as contributions to the necessary debate on the protection of the environment.

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# Executive summary

Alternatives are fundamental to Strategic Environmental Assessment (SEA) and are required under the SEA Directive (Directive 2001/42/EC).<sup>1</sup> Consideration of alternatives in SEA provides the opportunity to identify and explore different ways to deliver a plan's or programme's objectives while addressing environmental issues. In order to improve this aspect of the SEA process, the Environmental Protection Agency (EPA) commissioned research to review current practice, both nationally and internationally, to make recommendations for good practice and to set out a Toolkit or methodology for the development and consideration of SEA alternatives. This guidance delivers on that project.

## Current practice issues

At the time of writing, European case law and SEA effectiveness reviews across the EU have highlighted a number of shortcomings in relation to current practice regarding SEA alternatives. Similar shortcomings were also identified during the preparation of this guidance, specifically during a review of the international literature and guidance, and consultation with national and European stakeholders. These shortcomings can be summarised as follows:

- Alternatives are often limited by constraints set by higher and lower plans/programmes, particularly in land use planning.
- Most SEAs consider limited alternatives; in certain cases these are unrealistic or retrofitted and influenced by a preferred alternative selected in advance.
- Alternatives are often eliminated from further assessment early on without the reasons for exclusion being reported.
- Stakeholder and public involvement in the identification, development, assessment and selection of alternatives is minimal.

- The documentation of SEA alternatives and their assessment in Environmental Reports [i.e. how reasonable alternatives were identified, the impacts of the preferred alternative and other reasonable alternatives and, in particular, why the preferred alternative(s) was/were selected] needs to be improved.

## Recommendations

This guidance provides a good practice approach in the form of a Toolkit for plan-/programme-makers and SEA practitioners on the alternatives stage of SEA in three clear steps: identification and development; assessment and comparison; and selection and reporting of alternatives. It provides recommendations, as well as good practice examples, resulting from a review of current practice, for improving the development and consideration of alternatives in SEA. Some of these recommendations are supported by a Toolkit and some address specific sectoral plans/programmes (e.g. land use) or legislative requirements (e.g. the Habitats Directive). The **key recommendations** are as follows:

- Develop alternatives early in the assessment process (e.g. when initiating the drafting of a new sectoral plan or immediately after initial statutory consultation during a land use plan review). Where possible, incorporate alternatives in the SEA Scoping Report.
- Collaborate with the plan's/programme's proponent closely and continuously to ensure that key SEA concerns are consistently fed into the development and assessment of alternatives and incorporated into the overall development of the plan/programme.
- Develop alternatives that are realistic (i.e. able to achieve the plan's/programme's objectives), reasonable (i.e. based on socio-economic and environmental evidence), viable (technically and financially feasible) and implementable (realisable within the plan's/programme's timeframe and resources).
- Consult with all relevant stakeholders extensively. Adopt a participatory approach to the development and assessment of alternatives, with statutory consultees, stakeholders and, ideally, the public.

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<sup>1</sup> Directive 2001/42/EC, of 27 June, on the assessment of the effects of certain plans and programmes on the environment. Commission of the European Communities. *Official Journal of the European Union*, L 197/30, 21.7.2001. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:197:0030:0037:EN:PDF>

Provide them with an opportunity to suggest alternatives and give their views on the possible impacts of alternatives before selecting the preferred alternative, for example by convening a multi-disciplinary stakeholder workshop at an early stage in the SEA process.

- “Tell the story” of how alternatives were considered in the SEA (in the alternatives section of the Environmental Report, the Non-technical Summary and the SEA Statement). Include a clear, focused and concise account of (a) how the alternatives were developed and any significant constraints to generating alternatives; (b) any alternatives that were eliminated early on and why these were excluded from further consideration; (c) an outline of the proposed alternatives; (d) how they were

assessed and the assessment outcomes; (e) why the preferred alternative(s) was/were selected; and (f) any data gaps and technical limitations/deficiencies affecting the development and assessment of alternatives and a description of the associated uncertainties affecting the assessment outcomes.

The **Toolkit** (see diagram) supports the recommendations and consists of a set of diagrams and tables to guide the framing, development and assessment of alternatives. These diagrams and tables are complemented by the SEA Alternatives Checklist at the end of section 4, Appendices 1 and 2, and the SEA Spatial Information Sources Inventory, which can be downloaded from the EPA's website.<sup>2</sup>

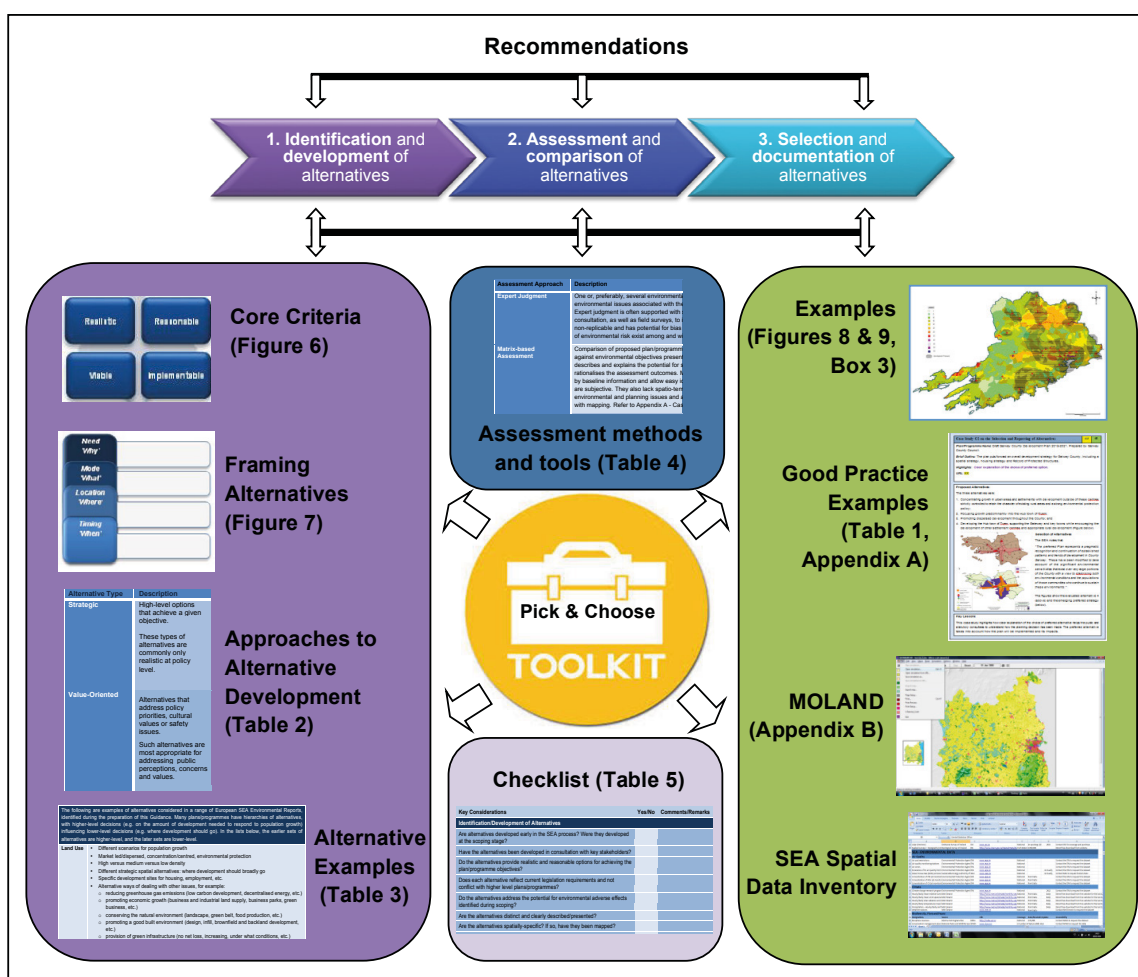


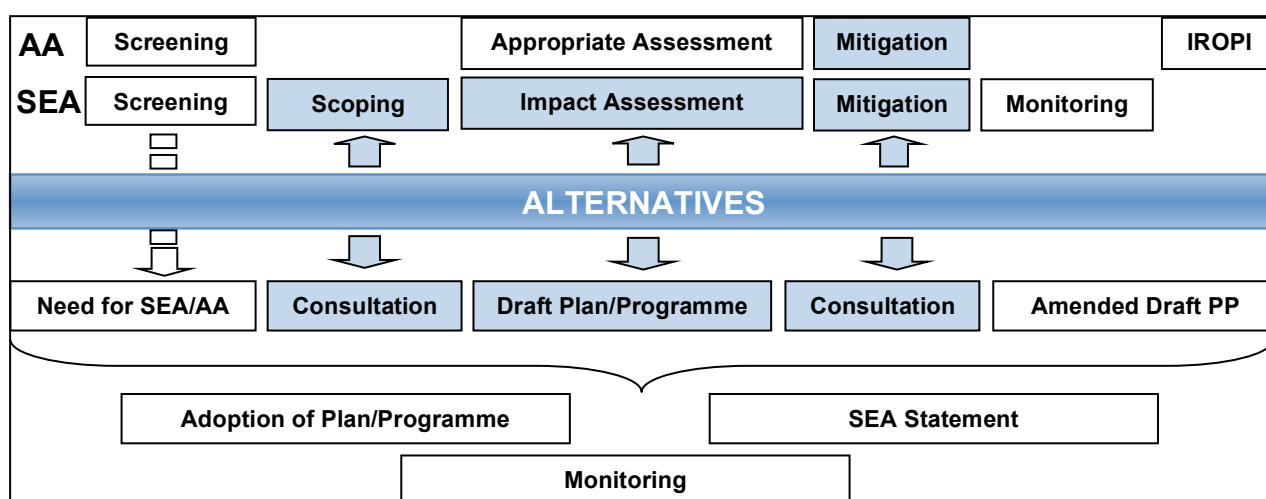
Diagram illustrating the contents of the Toolkit and its relationship with the recommendations for the various SEA alternatives sub-stages (i.e. the purple tool set relates to identification and development of alternatives, the blue tool set relates to their assessment and comparison, and the green and purple tool sets relate to all the SEA alternative sub-stages).

<sup>2</sup> <http://www.epa.ie/pubs/advice/ea/seaspatialinformationsourcesmay2015.html#.VZVhok0cTIU>. The exact URL may change if the Spatial Information Sources inventory is updated.

# 1 Context and purpose of the guidance

Alternatives are fundamental to Strategic Environmental Assessment (SEA) and are required under the SEA Directive (Directive 2001/42/EC).<sup>3</sup> The timely consideration of alternatives in SEA and the planning process provides an opportunity to identify and explore ways of accommodating the future development needs of an area or sector, taking into account the intrinsic environmental conditions (Figure 1.1). An effective SEA process should include early consideration of realistic, reasonable, viable and implementable alternatives that promote environmental benefits while fulfilling the plan's/programme's objectives.

This guidance sets out a good practice approach to SEA alternatives for practitioners. The recommendations and Toolkit provided are based on approaches that have been found to be effective and useful in practice. However, these are not intended as a prescriptive set of rules, and other approaches may also be useful.



**Figure 1.1. Simplified illustration of the key steps in SEA, Appropriate Assessment (AA) and the plan process. The steps highlighted in blue indicate consideration of alternatives.**

For the purpose of this guidance, **alternatives are defined as different ways to deliver a plan's or programme's objectives while addressing environmental issues identified during scoping**. The SEA alternatives stage can be divided into three stages: (1) identification and development; (2) assessment and comparison; and (3) selection and reporting of alternatives (Figure 1.2).



**Figure 1.2. Structure of the report (or SEA alternative sub-stages).**

<sup>3</sup> Directive 2001/42/EC, of 27 June, on the assessment of the effects of certain plans and programmes on the environment. Commission of the European Communities. Official Journal of the European Union, L 197/30, 21.7.2001. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:197:0030:0037:EN:PDF>

While this guidance focuses on SEA alternatives, where appropriate, reference is also made to the Habitats Directive (EC, 1992)<sup>4</sup> requirement to consider “alternative solutions”. This is relevant where Stage 2 Appropriate Assessment (AA) – Natura Impact Report – has identified the potential for significant impact on the integrity of Natura 2000 sites (i.e. Special Areas of Conservation, SACs, or Special Protection Areas, SPAs) in the assessed option.

This guidance should be used in conjunction with the other Irish guidance on SEA and AA, including:

- Implementation of SEA Directive 2001/42/EC: Assessment of the Effects of Certain Plans and Programmes on the Environment – Guidelines for Regional Authorities and Planning Authorities (DEHLG, 2004);<sup>5</sup>
- Synthesis report: Development of Strategic Environmental Assessment Methodologies for Plans and Programmes in Ireland (EPA, 2003);<sup>6</sup>
- SEA Process Checklist (EPA, 2008);<sup>7</sup>
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG, 2009);<sup>8</sup>
- Integrated Biodiversity Impact Assessment: Streamlining AA, SEA and EIA Processes – Practitioner’s Manual (EPA, 2013);<sup>9</sup> and
- Geographic Information Systems for Strategic Environmental Assessment Manual (EPA, 2014).<sup>10</sup>

During the preparation of this guidance, an inventory of spatial datasets on SEA-related topics was compiled. The inventory was developed to facilitate data identification and gathering for the preparation of baseline environmental maps, and thereby it also acts as a support tool for the identification and assessment of alternatives in SEA. The SEA Spatial Information Sources inventory can be found on the EPA’s website.

The report is structured into three main parts: section 2 establishes the legislative framework for developing and assessing alternatives in SEA; section 3 provides a review of current Irish practice and European good practice; and section 4 provides recommendations and a Toolkit for improving the consideration of alternatives in SEA.

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4 Directive 92/43/EEC, of 21 May, on the conservation of natural habitats and of wild fauna and flora. Commission of the European Communities. Official Journal of the European Union, L 206, 22.7.1992.

5 [https://www.epa.ie/pubs/advice/ea/EPA\\_development\\_methodology\\_SEA\\_synthesis\\_report.pdf](https://www.epa.ie/pubs/advice/ea/EPA_development_methodology_SEA_synthesis_report.pdf)

6 <http://www.epa.ie/downloads/advice/ea/name,13547,en.html>

7 <http://www.epa.ie/downloads/advice/ea/SEA%20Process%20Checklist.pdf>

8 [http://www.npws.ie/publications/archive/NPWS\\_2009\\_AA\\_Guidance.pdf](http://www.npws.ie/publications/archive/NPWS_2009_AA_Guidance.pdf)

9 <http://www.epa.ie/pubs/reports/research/biodiversity/Integrated%20Biodiversity%20Impact%20Assessment%20-%20Streamlining%20AA,%20SEA%20and%20EIA%20Processes%20-%20Practitioner's%20Manual.pdf>

10 To be published. Refer to the consultation document: <http://testweb.epa.ie/pubs/consultation/name,47502,en.html>

## 2 Legislative framework

This section discusses the legal requirements of the SEA Directive, regarding alternatives at the European and Irish national levels, and summarises the legal precedents regarding alternatives. For clarity, the following should be noted.

The “do-nothing” alternative, also known as the “null variant” or “business as usual”, is required under the SEA Directive and the Irish Regulations (see below). Although applicable to sectoral plans (e.g. forestry, waste management, tourism, etc.), the do-nothing alternative is ruled out as a reasonable/realistic alternative in Irish land use planning, as there is a legal obligation to prepare a plan or to review an existing plan. As a result, the do-nothing scenario is used as the baseline in land use planning. Nevertheless, where the land use plan is an internal planning authority decision rather than a mandatory requirement, the do-nothing alternative presents a valid alternative. Similarly, the do-nothing alternative may be the preferred option where a proposed variation to a plan is likely to have significant impact [e.g. a proposed variation relating to proposed residential land zoning in flood risk areas (Zones A and B)].

### 2.1 SEA Directive

The **SEA Directive** gives considerable weight to the consideration of alternatives. It requires, for applicable plans and programmes, that:

an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, *and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*, are identified, described and evaluated (Article 5.1).

It also requires the environmental report to include:

an outline of the reasons for selecting the alternatives dealt with (Annex I(h)).

In addition, as part of the baseline description, it requires a description of:

the relevant aspects of the current state of the environment and *the likely evolution thereof without implementation of the plan or programme* (Annex I(b)).

The latter is essentially the “business as usual” alternative. Finally, the Directive requires the preparation of a post-adoption “SEA Statement” which must include:

a statement summarising [...] the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with (Article 9.1(b)).

The **European Commission guide on implementing the SEA Directive**<sup>11</sup> provides further information on how alternatives should be considered in SEA. The full text is shown in Box 2.1, but the main points are:

- Alternatives are different ways of achieving a plan’s objectives. As such, alternatives will generally be *within* the context of a plan rather than a substitute *to* or *for* a plan (e.g. different use of areas within a land use plan).

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<sup>11</sup> European Commission, 2003. Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment. [http://ec.europa.eu/environment/archives/eia/pdf/030923\\_sea\\_guidance.pdf](http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf)

- Alternatives should be realistic and genuine, and should be, for instance, within the legal competence of the plan-making authority.
- Part of the reason for considering alternatives is to reduce the potential for environmental impacts associated with the draft plan.
- The impacts of the draft plan and reasonable alternatives must be assessed in a comparable way.

**Box 2.1. Advice on alternatives from the European Commission guide to implementing the SEA Directive**

About Article 5.1 of the Directive, the guidance notes:

5.11. The obligation to identify, describe and evaluate reasonable alternatives must be read in the context of the objective of the Directive, which is to ensure that the effects of implementing plans and programmes are taken into account during their preparation and before their adoption.

5.12. In requiring the likely significant environmental effects of reasonable alternatives to be identified, described and evaluated, the Directive makes no distinction between the assessment requirements for the drafted plan or programme and for the alternatives. The essential thing is that the likely significant effects of the plan or programme and the alternatives are identified, described and evaluated in a comparable way. The requirements in Article 5(2) concerning scope and level of detail for the information in the report apply to the assessment of alternatives as well. It is essential that the authority or parliament responsible for the adoption of the plan or programme, as well as the authorities and the public consulted, are presented with an accurate picture of what reasonable alternatives there are and why they not are considered to be the best option. The information referred to in Annex I should thus be provided for the alternatives chosen. This includes for example the information for Annex I (b) on the likely evolution of the current state of the environment without the implementation of the alternative. That evolution could be another one than that related to the plan or programme in cases when it concerns different areas or aspects.

5.13. The text of the Directive does not say what is meant by a reasonable alternative to a plan or programme. The first consideration in deciding on possible reasonable alternatives should be to take into account the objectives and the geographical scope of the plan or programme. The text does not specify whether alternative plans or programmes are meant, or different alternatives within a plan or programme. In practice, different alternatives within a plan will usually be assessed (e.g. different means of waste disposal within a waste management plan, or different ways of developing an area within a land use plan). An alternative can thus be a different way of fulfilling the objectives of the plan or programme. For land use plans, or town and country planning plans, obvious alternatives are different uses of areas designated for specific activities or purposes, and alternative areas for such activities. For plans or programmes covering long time frames, especially those covering the very distant future, alternative scenario development is a way of exploring alternatives and their effects. As an example, the Regional Development Plans for the county of Stockholm have for a long time been elaborated on such a scenario model.

5.14. The alternatives chosen should be realistic. Part of the reason for studying alternatives, is to find ways of reducing or avoiding the significant adverse environmental effects of the proposed plan or programme. Ideally, though the Directive does not require that, the final draft plan or programme would be the one which best contributes to the objectives set out in Article 1. A deliberate selection of alternatives for assessment, which had much more adverse effects, in order to promote the draft plan or programme, would not be appropriate for the fulfillment of the purpose of this paragraph. To be genuine, alternatives must also fall within the legal and geographical competence of the authority concerned. An outline of the reasons for selecting the alternatives dealt with is required by Annex I (h).



### Box 2.1. Continued

About Annex I (h) of the Directive, the guidance notes:

5.28. Information on the selection of alternatives is essential to understand why certain alternatives were assessed and their relation to the draft plan or programme.

## 2.2 Irish regulations

In Ireland, the SEA Directive has been implemented through two Statutory Instruments (SIs): SI No. 435 of the 2004 European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, as amended by SI No. 200 of the 2011 European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations. SI No. 436 of the 2004 Planning and Development (Strategic Environmental Assessment) Regulations, as amended by SI No. 201 of the 2011 Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations, set out the procedural details for SEA in planning matters by inserting a series of articles into the 2001 Planning and Development Regulations (SI No. 600 of 2001).

SI No. 436 is based on legal procedures established initially in the Planning and Development Act 2000<sup>12</sup> and amends the Planning and Development Regulations to make SEA mandatory for City and County Development Plans (CDPs), Town Development Plans and Local Area Plans (LAPs), where the population or target population is greater than 5000 persons,<sup>13</sup> Regional Planning Guidelines (RPGs) and planning schemes for Strategic Development Zones (SDZs). The Regulations also establish that Town Development Plans, LAPs where the population or target population falls below the threshold (i.e. 5000 under SI 2001 No. 201), and Variations of Development Plans are to be screened on a case-by-case basis and should be subject to SEA in cases in which a significant environmental effect has been determined. Screening is commonly undertaken before drafting the plan. In the context of the potential for significant environmental effects, the Regulations imply that it is necessary to re-screen when the plan is drafted in cases in which a decision has been made in advance that an SEA will not be necessary. This is done by applying screening thresholds and criteria to the drafted plan in order to ascertain that the plan does not require SEA, or to establish the need for SEA when the potential for significant environmental effects is anticipated from the draft plan.

SI No. 435 sets out the requirements of the SEA Directive in respect of the environmental assessment of plans other than the land use plans (i.e. agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications and tourism). In addition to the types of plans established in the Directive, SEA is also required in respect of any plan that could have a significant impact on a European site (also known as Natura 2000 site).

Both Regulations require, in line with the SEA Directive, that the Environmental Report shall:

identify, describe and evaluate the likely significant effects on the environment of implementing the plan/programme/amended plan/regional planning guidelines/planning scheme, and *reasonable alternatives taking account of the objectives and the geographical scope of the plan/programme/amended plan or programme* (Articles 13E, 13N, 14D, 15D and 179C inserted by SI No. 436 and Article 12 (1) of SI No. 435 – Note that the wording of each article refers to plan, programme, variation or modification of the plan or programme).

<sup>12</sup> <http://www.irishstatutebook.ie/2000/en/act/pub/0030/>

<sup>13</sup> As amended in SI No. 201 of the Planning and Development (Strategic Environmental Assessment) Regulations 2011. <http://www.irishstatutebook.ie/pdf/2011/en.si.2011.0201.pdf>

Schedule 2B(h) of SI No. 436 and Schedule 2(h) of SI No. 435 specify the information to be included in the Environmental Report, including:

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.

An SEA Statement must also be available and is required to include a summary of how the preferred alternative was chosen in the light of all reasonable alternatives considered:

the reasons for choosing the plan/programme/modification to a plan or programme/variation/guidelines/scheme, as adopted, in the light of the other reasonable alternatives dealt with (Articles 13I (1c), 13Q (1c), 14I (1c), 15G (1c) and 179G (1c) of SI No. 436 and Article 16 (1b iii) of SI No. 435 – Note that the wording of each article refers to plan, programme, variation, modification, guidelines or scheme).

Irish governmental guidance<sup>14</sup> on land use planning notes that SEA involves a systematic and explicit appraisal of alternatives. Detailed recommendations included in the guidance are provided in Box 2.2, but in summary they include:

- Alternatives must be realistic and capable of implementation and should represent a range of different approaches within the statutory and operational requirements of the particular plan.
- Although the guidance recommends the inclusion of a “do-nothing” scenario, this is subsequently ruled out as a reasonable/realistic alternative in Irish land use planning, as there is a legal obligation to prepare a plan (or to review an existing plan – e.g. every 6 years for CDPs) and, instead, the “do-nothing” scenario is used as the baseline scenario.
- The Environmental Report should describe the assessment of alternatives and give the reasons for selecting the preferred alternative.

#### **Box 2.2. Recommendation on alternatives from the Irish Guidelines for Regional Authorities and Planning Authorities on Implementing the SEA Directive**

Plan-making involves consideration of alternative strategies for achieving the plan's objectives. Therefore, a number of reasonable alternatives should be identified that are capable of fulfilling the plan's objectives.

The higher the level of the plan (e.g. RPGs), the more strategic the options available. Conversely, lower-tier plans, such as LAPs, are likely to be framed in a policy context set by the level(s) above them (i.e. must outline how they are consistent with the objectives as outlined in their associated higher-tier CDP and RPG), and strategic options may be limited.

Formulation of alternatives should entail at minimum a comparison between the “do-nothing” and the proposed plan/programme, in order to address the evolution of relevant environmental aspects without implementing the proposed plan/programme. This provides a baseline against which the environmental effects of the plan can be measured. However, in the context of Irish land use planning, this is not one of the “reasonable alternatives” required to be considered under the SEA Directive, as periodic land use plan review is a mandatory requirement.

<sup>14</sup> Department of the Environment, Heritage and Local Government, Government of Ireland, Dublin, 2004. Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment: Guidelines for Regional Authorities and Planning Authorities. <http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownload,1616,en.pdf>

#### Box 2.2. Continued

Alternatives should be evaluated against the chosen planning and environmental policy objectives with a view to establishing the most sustainable one.

A detailed environmental assessment of the preferred alternative should be carried out.

The preferred alternative may combine elements from the various alternatives considered.

The Environmental Report should describe the reasons for selecting the alternatives dealt with, how they were assessed, why the preferred alternative(s) was selected, and how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.

### 2.3 Legal precedent in Ireland and the UK

Given the existing similarities in planning systems and the transferability of SEA practice across jurisdictions, this section focuses on Irish and UK case law. To date, there have been four SEA-related legal challenges in Ireland, although none of these related to alternatives. These were *Kavanagh v. Ireland* (2007) IEHC 296, *Nurendale Ltd (trading as Panda Waste) v. Dublin City Council* (2009) IEHC 588, *Farrell and Forde v. Limerick County Council* (2009) IEHC 274, and *Ballinasloe Chamber of Commerce Ltd v. Ballinasloe Town Council* (2012) IEHC 273. In contrast, several SEA alternatives-related legal challenges have been successful in the UK. In 2007, a judge in Northern Ireland found two plan SEAs (i.e. the Northern and Magherafelt Area Plans) not to be in substantial compliance with the requirements of the SEA Directive, in part because the Environmental Reports set out the alternatives considered but did not provide an outline of the reasons for selecting the preferred alternatives.<sup>15</sup>

In 2009, an English judge found that, where the impact of alternatives had been assessed earlier in an SEA process for revision to the regional spatial strategy for the East of England, they did not need to be re-examined later. However, the impact of new alternatives brought in late in the planning process to comply with a planning inspector's findings did need to be examined and that had not been done.<sup>16</sup>

The "Save Historic Newmarket" case of 2011<sup>17</sup> was the start of a number of subsequent legal challenges, both successful and unsuccessful, affecting the effectiveness of SEA in the English planning system. In the Newmarket case, the policy context had changed significantly during a drawn-out planning process, requiring the planning authority to provide many more homes. The planning authority had continued to propose one site as the preferred alternative for locating most of the homes for the duration of the planning process, but increased the number of homes from 400 to 1200 over time without reappraising whether the site was still the best alternative given this increase. The judge concluded that the Environmental Report must present the public and statutory consultees with an accurate picture of available reasonable alternatives and why they were not considered to be the best option, and that the environmental assessment and the draft plan must operate together so that consultees could consider each in the light of the other. He also concluded that alternatives can be ruled out during an iterative planning process, but "subject to the important proviso that reasons have been given for the rejection of the alternatives, that those reasons are still valid if there has been any change in the proposals in the draft plan or any other material change of circumstances and that the consultees are able [...] to know from the assessment accompanying the draft plan what those reasons are". He concluded that this had not been done for the plan in question.

15 [2007] NIQB 62. <http://www.bailii.org/nie/cases/NIHC/QB/2007/62.html>

16 [2009] EWHC 1280 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2009/1280.html>

17 [2011] EWHC 606 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2011/606.html>

In the *Heard v. Broadland DC* case of 2012,<sup>18</sup> the local authority had considered a range of alternatives for providing new homes, all within one area, without clearly explaining in the SEA why there were no options outside this area. The judge concluded that, without this missing explanation, readers could not easily understand whether the choice of alternatives involved was adequate. He also concluded that, although a case could be made for examining the impact of the preferred alternative in greater detail than other alternatives, the SEA Directive's requirements are best interpreted as requiring an equal examination of the alternatives.

Most recently, one of the seven points that contributed to a successful legal challenge to the proposed high-speed rail line between London and northern England (HS2)<sup>19</sup> involved the consideration of alternatives. In May 2010, the Government affirmed its commitment to this project and, following a period of consultation during 2011, in January 2012 it set out the steps by which HS2 was to be realised in a command paper entitled "Decisions and Next Steps" (referred to in the judgments as the "DNS"). An "Appraisal of Sustainability" had formed part of the consultation documents in 2011. The DNS did not incorporate any SEA and a number of parties challenged it by means of a judicial review action, on the grounds *inter alia* that it constituted a plan or programme that set the framework for development consent and, therefore, should have been subject to SEA. The Government proposed that the building of the new rail line would be authorised by a hybrid Act of Parliament. In the course of his judgment in the High Court, the judge considered whether, as advanced by the Secretary of State for Transport (the "SST"), the Appraisal of Sustainability coincidentally complied with the requirements of SEA and therefore the DNS was in "substantial compliance" with the Directive. The Court examined whether or not this appraisal and other documentation amounted to an Environmental Report. Although the documents discussed several alternative routes and lower-speed designs as alternatives, they did not assess different ways of linking the main high-speed rail route with Heathrow Airport, they did not formally assess and compare the alternatives, and they rejected some of the alternatives only on economic and business grounds. The judge concluded that an Environmental Report should have included reasons for the selection of the reasonable alternatives chosen for assessment and should have assessed different ways of linking to Heathrow. This reasoning was not challenged in the subsequent appeals. However, he also concluded that the DNS did not constitute a plan or programme within the meaning of the SEA Directive, essentially because it would not have a sufficiently potent effect on the decision-maker (Parliament), which would be free to agree or disagree with it as it saw fit.<sup>20</sup> This decision was appealed to the Court of Appeal without success. However, in a dissenting judgment, it was held that an SEA was required, as it could not accept the SST's contention that, where the framework for development consent had not been set by an SEA, the gap could be filled by a more extensive environmental statement under the Environmental Impact Assessment (EIA) Directive. In coming to this conclusion, he contrasted the information on alternatives required under the two directives.<sup>21</sup> The Supreme Court gave the final judgment in relation to HS2 in January 2014.<sup>22</sup> A court consisting of seven law lords unanimously held that (1) the DNS was outside the scope of the SEA Directive and (2) the procedure for passage of the hybrid Act of Parliament, which would incorporate making appropriate environmental information available to the legislature, would achieve the objectives of the EIA Directive.

Other recent legal challenges related to SEA alternatives that were found in favour of the defendant but which still provide useful information include:

- *Cogent Land LLP v. Rochford DC*.<sup>23</sup> An inspector required further Sustainability Appraisal (SA)/SEA work on alternatives to be carried out during a public inquiry. This was found not to go against the SEA Directive's

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18 [2012] EWHC 344 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2012/344.html>

19 [2013] EWHC 481 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2013/481.html>

20 [2013] EWHC 481 (Admin) *Buckinghamshire County Council and Ors v. Secretary of State for Transport*. <https://www.judiciary.gov.uk/judgments/r-oao-bucks-cc-v-sec-state-transport/>

21 [2013] EWCA Civ 920 at paragraphs 156 to 159, *HS2 Alliance Ltd and others v. Secretary of State for Transport*. <http://www.bailii.org/uk/cases/UKSC/2014/3.html>

22 [2014] UKSC 3, *R (Buckinghamshire County Council and others) v. Secretary of State for Transport*. [http://supremecourt.uk/decided-cases/docs/UKSC\\_2013\\_0172\\_Judgment.pdf](http://supremecourt.uk/decided-cases/docs/UKSC_2013_0172_Judgment.pdf)

23 [2012] EWHC 2542 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2012/2542.html>

requirements that an Environmental Report should be prepared during plan preparation and before plan adoption.

- *Chalfont St Peter Parish Council v. Chiltern District Council*.<sup>24</sup> An inspector was found to have considered an adequate range of alternatives, but not to have clearly explained why a site was unsound and so not a reasonable alternative.
- *DB Schenker Rail (UK) Ltd v. Leeds City Council*.<sup>25</sup> Alternatives that do not fulfil a plan's objectives – in this case consideration of a site for housing as part of a waste plan – were found not to require assessment, as are alternatives that have already been considered in another SA/SEA report if that report is referred to in the SA/SEA in question.

Overall, these cases suggest that:

- **The Environmental Report must clearly explain to the public and statutory consultees (a) how reasonable alternatives were identified; (b) what the potential environmental impacts of the preferred alternative and other reasonable alternatives are; and (c) why the preferred alternative(s) was/were chosen.**
- **“Ghost alternatives” that have been eliminated early on as being unreasonable should be documented, with an explanation of why they are not being taken further.**
- **Where plans are developed in an iterative way, alternatives previously assessed do not need to be re-assessed, providing that circumstances do not substantially change. However, new alternatives do need to be assessed.**
- **The aims of the SEA Directive are best served by assessing the alternatives considered to the same level of detail as the preferred alternative.**

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24 [2013] EWHC 1877 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2013/1877.html>

25 [2013] EWHC 2865 (Admin). <http://www.bailii.org/ew/cases/EWHC/Admin/2013/2865.html>

## 3 Current practice

This section summarises the findings of the Irish SEA Effectiveness Review, a review of international literature and guidance, and consultation with national and European stakeholders. At the European level, this review focuses on UK guidance and case studies, given the similarities between the UK and Irish planning systems and the transferability of lessons and recommendations. Appendix 1 of this report provides a range of sectoral good practice examples that were identified during the review and consultation processes.

### 3.1 Current practice issues in Ireland

#### 3.1.1 *SEA Effectiveness Review*<sup>26</sup>

The Irish SEA Effectiveness Review highlighted a number of weaknesses of SEA alternatives in current practice:

- Generation of reasonable alternatives is one of the biggest challenges in SEA.
- Higher-level plans can constrain the alternatives available for consideration in lower-level plans, particularly if the higher-level plans have not yet been subject to SEA, for example National Development Plans. Alternatives can be particularly limited for land use plans.
- Alternatives for higher-level plans may be theoretical and academic because of the level of detail available.
- The “do-nothing” alternative is not always administratively acceptable (e.g. land use planning).
- Some alternatives being considered are purposely unrealistic and are put forward only to satisfy the requirements of the SEA Directive.
- Alternatives are often developed retrospectively.
- Political requirements and directions can limit the scope for developing alternatives.
- There may be a lack of co-operation between the SEA team and the plan team in generating alternatives.
- There may be a failure to address alternatives in the AA in parallel with the SEA.

The SEA Action Plan<sup>27</sup> includes a set of actions to implement the key recommendations of the SEA Effectiveness Review and improve overall SEA effectiveness in Ireland. The preparation of this guidance on the development and assessment of alternatives represents one such action.

#### 3.1.2 *Stakeholders’ perceptions and SEA reviews*

National and international consultation carried out with SEA experts and practitioners in 2013 as part of the preparation of this guidance highlighted the following issues relating to current practice:

- Most SEAs include only limited, plan-level alternatives (i.e. within the scope of the plan rather than alternatives to the plan), often with a preferred alternative chosen in advance.
- The SEA discussion of alternatives is often retrofitted. However, the issues considered in SEAs are often the same as those considered by land use plans, so this is perhaps not a major cause for concern.
- The public is involved minimally, if at all, in the definition, assessment or choice of alternatives.
- The documentation of SEA alternatives – and particularly the selection of preferred alternatives – needs to be improved.

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26 EPA, 2012. Review of effectiveness of SEA in Ireland. Environmental Protection Agency, Johnstown Castle, Wexford, Ireland. <http://www.epa.ie/pubs/advice/ea/SEA%20EFFECTIVENESS%20REVIEW%20MAIN%20REPORT%202012.pdf>

27 EPA, 2012. SEA effectiveness review in Ireland: Action Plan 2012–2016. Environmental Protection Agency, Johnstown Castle, Wexford, Ireland. <https://www.agriculture.gov.ie/media/migration/ruralenvironment/environment/seainformation/SeaActionPlan20122016.pdf>

A review of selected Irish SEAs, undertaken during the preparation of this guidance, also reveals that:

- Alternatives are often generated to fulfil the minimum requirements of the SEA Directive rather than to consider comprehensively a number of reasonable and pragmatic ways of achieving the overall strategic goals.
- There is a lack of consistent approaches to their development and assessment.

### **3.2 Lessons from good European practice**

This section considers the lessons that can be learned from a range of European reviews and guidance documents that can be applied to Irish SEA practice.

#### **3.2.1 European Commission SEA review (2009)<sup>28</sup>**

A 5-year review by the European Commission of the implementation of the SEA Directive found that alternatives were one of the issues that had given rise to problems. Member States reported that alternatives should play a dominant role in SEA because SEA is about assessing different options in achieving planning objectives. Although some Member States had developed SEA guidance that included information about the consideration of alternatives, most Member States did not provide a distinct definition of “reasonable alternatives”, nor did they specify the number of alternatives that should be considered. All Member States reported that the “do-nothing” alternative had to be considered in the Environmental Report. Member States did not have a consistent approach to the types or number of alternatives assessed, as this depended on factors such as the nature and scope of the plan, the geographical area, and the area’s socio-economic needs.

#### **3.2.2 UK SEA guidance (2005)<sup>29</sup>**

The UK practical guide to the SEA Directive includes a six-page appendix on developing and assessing alternatives. This distinguishes between discrete alternatives that involve a choice between one alternative and another and alternatives that can be combined in various ways. It also presents a “hierarchy of alternatives” and suggests that alternatives that are higher in the hierarchy (e.g. based on need/demand) are likely to be more sustainable (Figure 3.1).

#### **3.2.3 English guidance on options in local development plans (2008)<sup>30</sup>**

Guidance to assist English planners in developing and appraising options for local development plans provides four useful tests for reasonable alternatives. They must:

- contribute to the plan’s objectives, be expressed in sufficient detail and be genuinely implementable in practice;
- be politically acceptable;
- be developed with stakeholders through a process of continuous engagement; and
- be subject to sustainability appraisal and the appraisal findings taken into account.

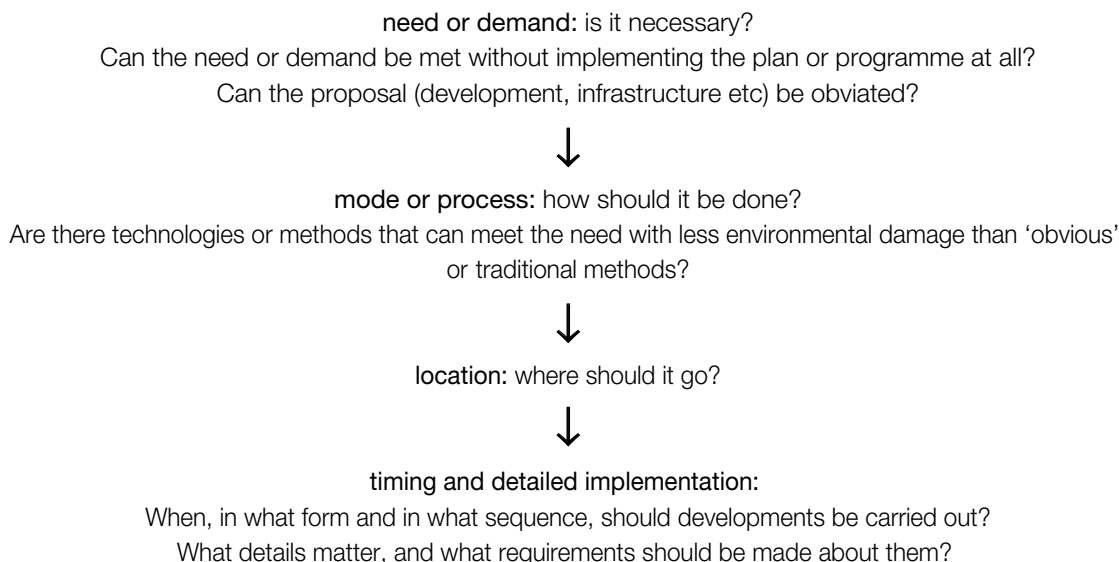
This suggests that the test of political acceptability and “reasonableness” should not form part of the main SEA process but rather be an external and preliminary sieving factor before the SEA process is initiated, with the SEA considering only alternatives that are reasonable and politically acceptable.

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28 European Commission DG ENV, 2009. Study concerning the report on the application and effectiveness of the SEA Directive (2001/42/EC): final report. <http://ec.europa.eu/environment/eia/pdf/study0309.pdf>

29 Office of the Deputy Prime Minister, Scottish Executive, Welsh Assembly Government, Department of Environment Northern Ireland, 2005. A Practical Guide to the Strategic Environmental Assessment Directive. [http://www.doeni.gov.uk/niea/txt/water/bm\\_sea\\_practicalguide.pdf](http://www.doeni.gov.uk/niea/txt/water/bm_sea_practicalguide.pdf)

30 Planning Advisory Service and Scott Wilson, 2008. Local Development Frameworks: Options Generation and Appraisal. <http://www.wiltshire.gov.uk/corestrategydocument?directory=National+Planning+Policy&fileref=23>



**Figure 3.1. The UK's "alternatives hierarchy".**

### **3.2.4 English guidance on generating and developing SEA alternatives<sup>31</sup>**

A two-page leaflet, prepared by six English environmental consultancies in 2006 and widely used by practitioners, lists a series of useful pointers for developing alternatives (Figure 3.2).

### **3.2.5 English SEA review (2009)<sup>32</sup>**



A government review of SEA and sustainability appraisal (SEA/SA) practice in England found that the consideration of alternatives is one of the most useful aspects of SEA/SA, and that it can encourage creative thinking among plan-makers. The generation of alternatives was generally felt to be the most difficult part of these processes, with poorly drawn or too many alternatives resulting in a waste of time and resources. Issues identified included:

- planning authorities feeling that there are no alternatives, as key decisions are taken at higher levels and thereby involve higher-tier policies, leading to "forced" or "bogus" alternatives;
- difficulty in generating a discrete set of alternatives for appraisal;
- lack of clarity about whether the SEA/SA process should help to generate alternatives or assess only those alternatives generated by the plan-makers;
- uncertainty about whether alternatives should be "visionary" (i.e. aspirational) or "deliverable" (non-deliverable alternatives could still help to clarify the benefits and shortfalls of other alternatives), and whether "deliverable" should be limited to being consistent with national policy;
- development of alternatives too late in the planning process to be meaningful;
- an over-rapid focus by planners on one preferred alternative;
- uncertainty about when and how to involve the public and statutory consultees; and
- difficulty in maintaining an audit trail of how alternatives were identified and how preferred alternatives were chosen.

31 Collingwood Environmental Planning, Land Use Consultants, Levett-Therivel Sustainability Consultants, Scott Wilson, Treweek Environmental Consultants and C4S, 2006. Do's and Don'ts Guide to Generating and Developing Alternatives. <http://www.levett-therivel.co.uk/options.pdf>

32 Department of Communities and Local Government, 2010. Towards a More Efficient and Effective Use of Strategic Environmental Assessment and Sustainability Appraisal in Spatial Planning: Final Report. <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/planningandbuilding/pdf/1513010.pdf>



 DO	 DON'T
<p><b>DO</b> identify and document the essential strategic choices that need to be made as part of your plan-making process, and discuss alternative approaches to dealing with these early on (i.e. identify the essential strategic choices that need to be made).</p>	<p><b>DON'T</b> make up alternatives just to satisfy SEA requirements.</p>
<p><b>DO</b> propose alternative ways to (a) deliver the plan/programme's objectives and / or (b) deal with further issues / problems identified during the scoping stage.</p>	<p><b>DON'T</b> define plan/programme objectives so narrowly as to preclude reasonable alternatives.</p>
<p><b>DO</b> include whatever details are available on the likely range of alternatives that will be considered when consulting on the scope of the assessment, so that consultees can comment on them.</p>	<p><b>DON'T</b> leave the identification and assessment of alternatives too late in the assessment process.</p>
<p><b>DO</b> recognise that there are alternatives <i>within</i> the plan or programme (e.g. alternatives for housing, employment, transport etc).</p>	<p><b>DON'T</b> suggest only one high level plan/programme wide alternative (e.g. the plan/programme is either socially or environmentally or economically orientated).</p>
<p><b>DO</b> consider, where appropriate, different tiers of alternatives:</p> <ul style="list-style-type: none"> <li>• broad alternatives (which provide the underlying strategy for the plan/programme);</li> <li>• topic alternatives; and</li> <li>• alternative sites.</li> </ul> <p>When considering detailed alternatives focus on those that are consistent with the underlying strategy (e.g. sites which are consistent with the broad alternatives).</p>	<p><b>DON'T</b> unnecessarily produce alternatives for every minor issue or every permutation of every option.</p>
<p><b>DO</b> consider the alternatives hierarchy, by asking:</p> <ol style="list-style-type: none"> <li>Is development necessary? If so,</li> <li>How should it be done? Then,</li> <li>Where should it go? And finally,</li> <li>Timing and detail of implementation</li> </ol> <p>For high level strategic plans/programmes, 'need' may be more important than for lower level plans/programmes where alternatives for 'type, location or implementation' may be addressed in more detail.</p>	<p><b>DON'T</b> confuse mutually exclusive alternatives (e.g. build X v. don't build X) with mix-and-match alternatives (e.g. build X, build Y next door). The sustainability of the former needs to be compared and a preferred option selected; the latter need to be individually tested and potentially combined as a preferred option. If using both approaches for different topics make this clear to consultees. Each alternative should be reasonably distinct.</p>
<p><b>DO</b> use alternatives to illustrate issues and tensions which should be addressed as the preferred options are refined (e.g. use an environmentally focused alternative to highlight economic implications and an economically focused alternative to highlight environmental implications). Use these to help prepare a preferred alternative for the plan or programme that combines the best sustainability outcomes.</p>	<p><b>DON'T</b> present extreme or unrealistic alternatives in order to support a preferred middle alternative (e.g. avoid alternatives for targets for affordable housing simply based on (a) market driven levels, (b) 35% of housing (preferred option), or (c) 100% of housing).</p>
<p><b>DO</b> consider alternatives that may be politically controversial or that contradict higher-level policies if you can show that doing so would clearly lead to a more sustainable solution. Sustainable development involves pursuing new and innovative approaches to future development.</p>	<p><b>DON'T</b> suggest alternatives that are clearly unrealistic or infeasible (e.g. technically, financially). Stakeholders should be presented with genuine alternatives.</p>
<p><b>DO</b> document how the alternatives have been developed and identify constraints to generating alternatives... but...</p>	<p><b>DON'T</b> ... just accept constraints on alternatives as a given. Query how much room for manoeuvre there may be.</p>
<p><b>DO</b> proactively engage with the community and stakeholders (including those from neighbouring authorities) in generating and developing alternatives and be willing to consider new alternatives as they emerge through the plan/programme-making process.</p>	<p><b>DON'T</b> treat consultation as a public vote on which of the alternatives should be taken forward. The community is relying on decision makers to make informed decisions, taking into account community views as well as the full range of sustainability considerations.</p>
<p><b>DO</b> inform decision makers, including elected members, of the requirement to appraise the alternatives considered.</p>	<p><b>DON'T</b> just assume decision makers know or understand what is meant by alternatives or alternatives.</p>

**Figure 3.2. The dos and don'ts of alternatives.**

The English review concluded that the SEA/SA process should be used to assess the alternatives proposed by plan-makers, rather than help shape the alternatives from the outset, to ensure "ownership" of the process by the planning team. It recommended that draft alternatives could be included in the Scoping Report sent to statutory consultees for comment about the scope and level of detail of the Environmental Report, and that public consultation responses, the Scoping Report, Geographic Information System (GIS) maps and higher-level policies could all

feed into the generation of alternatives. It recommended that planners should generate fewer but better-articulated options and give more consideration to the deliverability of those alternatives.

### **3.2.6 *Scottish SEA review (2011)*<sup>33</sup>**

A review of SEA practice in Scotland by the Scottish Environment Protection Agency found that SEA provides a significant opportunity to drive the development (as opposed to just evaluation) of environmentally sustainable alternatives, and that it is leading to more effective evaluation of alternatives. Practitioners find the process of assessing alternatives relatively straightforward, but they struggle to identify alternatives, to narrow the assessment down to a reasonable number of alternatives, and to determine the level of detail at which alternatives should be assessed. In some cases, legislation is so prescriptive about plan objectives and contents that few reasonable alternatives exist.

Although previous Scottish guidance stated that it is not the purpose of SEA to choose a preferred alternative but rather to provide information on the relative performance of alternatives, the review recommends that SEA should better steer the identification of alternatives and help to stimulate further and earlier thinking by plan-makers on more environmentally sustainable alternatives. It sets the following questions to help planning authorities determine whether alternatives are reasonable:

- Will the alternative fulfil the plan or programme objectives?
- Is the alternative within the legal or geographical competence of the planning authority?
- Is the alternative sufficiently detailed to allow meaningful engagement?
- Is the alternative constrained by objectives/limitations set by higher-level policies or plans?
- Will the necessary time and resources be available to implement the alternative?
- Is there an unacceptable risk that the alternative will not be fully implemented?
- Is the alternative genuine or just included for the sake of comparison?

The review notes that if alternatives are considered too late they will be precluded from further consideration. It recommends that the assessment of alternatives should be carried out early in plan-making, and that stakeholders could be involved in identifying alternatives.

### **3.2.7 *Scottish SEA guidance (2013)*<sup>34</sup>**

Following from the SEA Review, the Scottish Government published SEA guidance in 2013. The guidance recommends that plan-makers and assessors should work together closely from an early stage to document and consider alternatives early in plan-making. It notes that alternatives must be realistic and are likely to emerge from the plan-making process. Reasonable alternatives are an opportunity to minimise environmental problems and enhance a plan's environmental benefits. The SEA can encourage further thinking about alternatives and highlight where environmentally preferable alternatives exist.

When the various components of a plan have been identified, a practitioner or plan-maker can consider whether there are reasonable alternatives for each element of the plan. Artificial alternatives should not be generated if there are genuinely no reasonable alternatives, and unrealistic alternatives should not be generated just to make the preferred alternative look good. In considering whether or not an alternative is reasonable, planners should consider potential restrictions to their implementation, for example relevant legislation and policy commitments.

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33 Scottish Environment Protection Agency, Historic Scotland and Scottish Natural Heritage, 2011. The Scottish Strategic Environmental Assessment Review. <http://www.snh.gov.uk/docs/B890813.pdf>

34 Scottish Government, 2013. Strategic Environmental Assessment Guidance. <http://www.scotland.gov.uk/Resource/0043/00432344.pdf>

Each layer of planning can potentially set restrictions that govern the next level, narrowing what may constitute a reasonable alternative.

The guidance recommends that all reasonable alternatives should be assessed to the same level of detail as the preferred alternative. It clarifies that the SEA should inform decision-making but does not make the decision. However, where alternatives with negative environmental effects are selected for other reasons (e.g. cost, policy drivers or public need), the SEA has an important role in identifying mitigation measures to avoid or reduce these effects.

### 3.2.8 *Austrian SEA Handbook (2009)*<sup>35</sup>

The Austrian SEA Handbook of 2009, published by the Austrian Academy of Sciences, notes that alternatives can be composed of individual measures or a cluster of measures that aim to achieve defined objectives. It notes that the description of the likely future baseline without the plan or programme is equivalent to the “trend alternative” or “null variant” (i.e. the “do-nothing” approach), and that this alternative helps to clarify whether a plan (or specific measures) is necessary in the first place. The “null variant” can also be used as a base against which the impacts of other alternatives can be compared (better than the null variant, worse than the null variant).

The handbook recommends a multi-stage process of assessing and comparing alternatives:

- a first round of environmental assessment, with a clear focus on only environmental aspects, in which alternatives are compared with the “null variant” and take into account legal thresholds, decisions already made (e.g. permitted projects) and Habitats Directive requirements;
- consideration of mitigation measures for each alternative based on the findings of the first round; and
- a second round of environmental, as well as social and economic, assessment, in which individual or “bundled” mitigated alternatives are assessed and compared in terms of their environmental impacts.

Once an environmentally, socially and economically optimal alternative has been identified, this should be recommended to plan-makers as the preferred alternative or combination of alternatives. Ideally there should be consensus between the SEA and planning teams on what is the preferred alternative, but, if that is not the case, then this should be clearly documented.

### 3.2.9 *Dutch SEA quality review*

In the Netherlands a two-tier system of SEA is practised, comprising a “plan EIA” and an Environmental Test (E-Test), which examines draft legislation under Cabinet Order 1995. The E-Test is a rapid form of appraisal that aims to identify key potential environmental and other impacts of existing and proposed legislation. Plan EIA is required for a range of sectoral and spatial plans and programmes under the Environmental Management Act and the EIA Decree, which in turn implement the SEA Directive. The Netherlands is unique in the very proactive and influential role of its Commission for Environmental Assessment, its long history of SEA practice and its high-level E-Test.

The Dutch Commission for Environmental Assessment undertakes an independent quality review of SEA reports. On several occasions, the Commission has concluded that a reasonable alternative was not explored in the SEA, and that the SEA was, therefore, not sufficient. Usually this has led to additional SEA/planning effort.

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<sup>35</sup> Österreichische Akademie der Wissenschaft, 2009. Handbuch Strategische Umweltprüfung, Vienna. [Austrian Academy of Sciences, 2009. Handbook on Strategic Environmental Assessment, Vienna.]

### 3.2.10 Portuguese SEA guidance (2012)<sup>36</sup>

Recent guidance from the Portuguese Environment Agency defines alternatives (“strategic options”) as pathways that “help us to move from where we are to where we want to get”, namely to long-term planning visions, priorities and objectives (Figure 3.3). It recommends that options should be “limited and realistic”, to help focus the SEA. The guidance looks beyond the requirements of the SEA Directive and presents a broader approach that encompasses policies.

The guidance explains that the assessment of strategic options should happen at “key decision windows” in plan-making, and the outcomes of this assessment should include strategic arguments for opportunities and risks for each key planning decision. Stakeholders’ perspectives and expectations should always be taken into account.

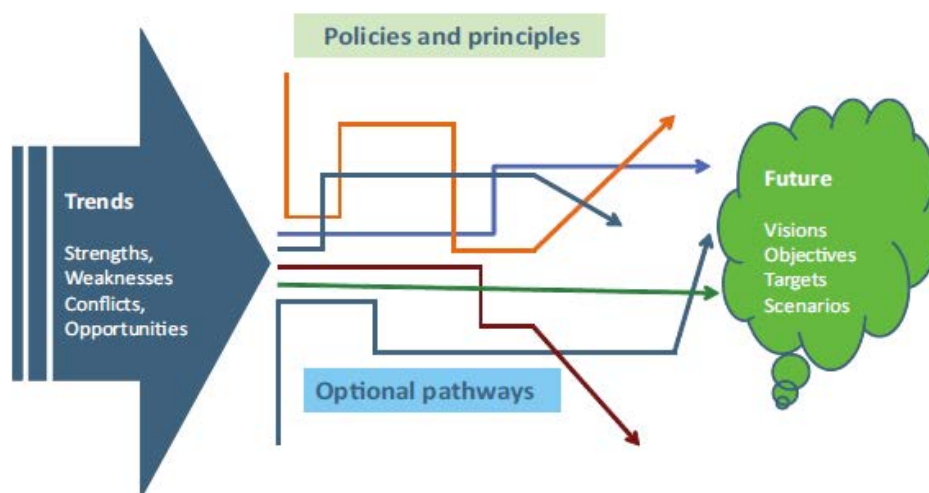


Figure 3.3. Strategic options: different ways of getting from the current situation (left) to long-term planning objectives (right).

### 3.2.11 Key European good practice lessons

Although the administrative systems in which SEA is carried out throughout Europe vary, a number of useful lessons can be extracted based on these reviews and consultation. These include:

- The aim of considering alternatives is to identify more environmentally friendly and sustainable ways of achieving the objectives of the proposal.
- Assessment of alternatives should happen at “key decision windows” (e.g. when drafting the plan) and early in plan-making, and the outcomes of this assessment should include arguments about opportunities and risks for each key planning decision.
- Alternatives should always include a “do-nothing”, “business as usual” or “null variant” approach. This is the description of the future baseline without the plan/programme, and it tests whether the plan/programme is needed at all (in the Irish planning system, this applies only to sectoral plans/programmes – “do-nothing” is not a reasonable alternative in land use planning for mandatory plans/programmes or their revision, in which cases it is commonly used as the baseline).
- A “hierarchy of alternatives” can help to identify more sustainable alternatives.

36 Partidário, M.R., 2012. Strategic Environmental Assessment Better Practice Guide: Methodological Guidance for Strategic Thinking in SEA. Portuguese Environment Agency and Redes Energéticas Nacionais, Amadora, Portugal. [http://ec.europa.eu/environment/eia/pdf/2012%20SEA\\_Guidance\\_Portugal.pdf](http://ec.europa.eu/environment/eia/pdf/2012%20SEA_Guidance_Portugal.pdf)

- **“Reasonable” alternatives should be genuinely implementable, sufficiently detailed and consistent with legal requirements including those of the Habitats Directive (alternatives that are not politically acceptable are not necessarily unreasonable, as they may be acceptable to a different future administration).**
- **There should be a sensible number of alternatives.**
- **The planning and SEA teams (if these are different), statutory consultees and, ideally, stakeholders should be, at a minimum, consulted and, ideally, involved in the development of alternatives.**
- **A two-stage assessment of alternatives would involve a first round that compares alternatives with the “null variant” and tests for consistency with other legislation, and a second round that compares the alternatives once mitigation measures have been considered.**
- **The Environmental Report should document the “storyline” of alternatives, that is, when and why they have come in and been removed and the reason for the choice of final alternative(s).**

## 4 Recommendations and Toolkit

This section presents a set of recommendations, supported by a Toolkit, for improving the consideration of alternatives in SEA. It sets out a step-by-step approach to the systematic and transparent consideration of alternatives in SEA. Its structure reflects the three main stages outlined in section 1: (1) identification and development of alternatives; (2) assessment and comparison of alternatives; and (3) selection and documentation of alternatives. Some of the recommendations address specific sectoral plans/programmes (e.g. land use) or legislative requirements (e.g. Habitats Directive).

The Toolkit supports the recommended approach and consists of a set of diagrams and tables to guide users through the sub-stages for the framing, development and assessment of alternatives (Figure 4.1). These are complemented with the SEA Alternatives Checklist at the end of section 4, Appendices 1 and 2, and the SEA Spatial Data Inventory, which can be downloaded from the EPA's website.<sup>37</sup>

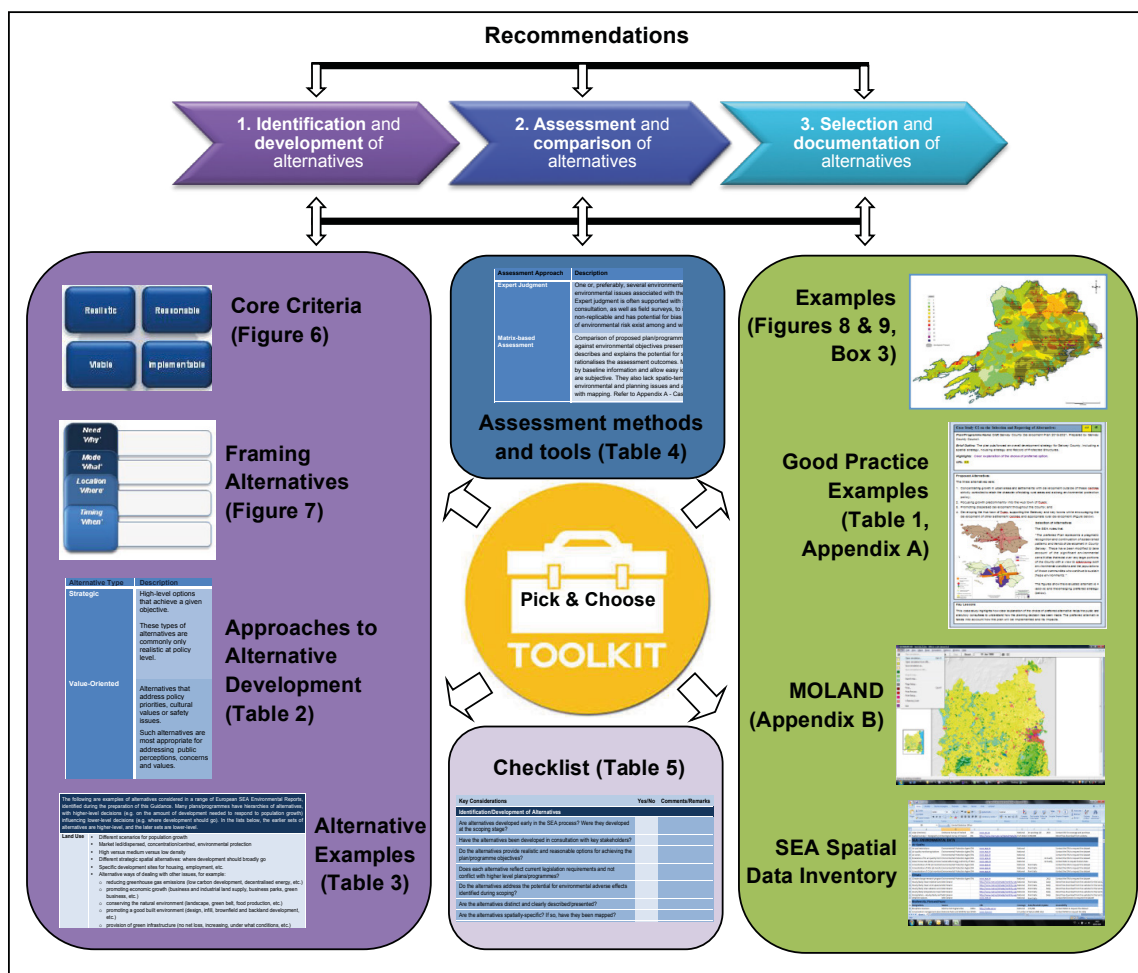


Figure 4.1. Diagram illustrating the contents of the Toolkit and its relationship to the recommendations for the various SEA alternatives sub-stages (i.e. the purple tool set relates to alternative identification and development, the blue to their assessment and comparison, and the green and purple sets relate to all SEA alternatives sub-stages).

37 <http://www.epa.ie/pubs/advice/ea/seaspatialinformationsourcesdecember2014.html#.VUJdV00cTIU>

Appendix 1 provides good practice examples, as summarised in Table 4.1. Appendix 2 summarises the MOLAND land use change model and its application in SEA alternative development and assessment. For further information, see also [www.epa.ie](http://www.epa.ie) on MOLAND.<sup>38</sup>

**Table 4.1. Good practice case studies included in this guidance (Appendix 1)**

Plan/programme	Good practice highlight
<i>Identification and development of alternatives (stage 1)</i>	
Kildare Town Local Area Plan 2012–2018 (Ireland)	Clear explanation of what “reasonable” and “not reasonable” alternatives are with a mapped representation
Leicester Local Development Framework (UK)	The SEA included alternatives proposed by the public during consultation; some of these were included in the final plan
South Dublin County Development Plan 2010–2016 (Ireland)	Alternatives formulation involved cross-departmental consultation within the county council and with the EPA, supported by evidence-based overlay mapping
Lisbon Municipality General Plan (Portugal)	Alternatives developed systematically on the basis of previously defined critical decision factors
Regional Planning Guidelines for the Greater Dublin Area 2010–2022 (Ireland)	Use of scenario modelling to spatially simulate alternatives and project the impact (using indicators) of alternative selection
<i>Assessment and comparison of alternatives (stage 2)</i>	
Draft Offshore Renewable Energy Development Plan 2010–2030 (Ireland)	Assessment of alternative development scenarios, including their cumulative effects, linked well to the baseline
Draft Strategic Integrated Framework Plan for the Shannon Estuary 2013–2020 (Ireland)	Detailed assessment of potentially suitable development sites, linked well to the baseline, and clear reporting on how SEA findings have influenced the plan
Greater Dublin Area Draft Transport Strategy 2011–2030 (Ireland)	A preliminary environmental assessment fed into detailed proposals for alternatives, and the results were published in the Draft Potential Measures Strategy Report
Ulster Canal (Upper Lough Erne to Clones) Restoration Plan (Ireland)	Assessment of alternatives against detailed criteria checklists, clearly factoring in the range of effects
Kilkenny County Development Plan 2008–2014 (Ireland)	Spatial assessment of multiple environmental criteria against the mapped alternatives, and quantification of potential land use conflicts
Viennese Waste Management Plan 2013–2018 (Austria)	Assessment criteria clearly stated and quantification of impacts where possible
<i>Selection and documentation of alternatives (stage 3)</i>	
Draft Planning Scheme for North Lotts/Grand Canal Dock Strategic Development Zone (Ireland)	Tiered approach to alternative selection; each alternative conforming to the plan's aims and assessed in the context of achieving such aims/goals
Galway County Development Plan 2009–2015 (Ireland)	Clear explanation of the choice of preferred option
Structure Vision Amsterdam 2040 (Netherlands)	Extensive public involvement and collaboration to devise and select a better alternative
Shepway Core Strategy (UK)	Clear documentation of how alternatives were identified and reasons for choosing the preferred alternatives

## 4.1 Overarching recommendations

The aim of considering alternatives is to identify more environmentally friendly and more sustainable ways of achieving the objectives of the plan (which should themselves include sustainability). Overarching recommendations are to:

- **Collaborate with the plan/programme proponent** closely and iteratively to ensure that **SEA concerns** are consistently integrated and inform the development and assessment of alternatives and are incorporated into the plan/programme development.

<sup>38</sup> <http://erc.epa.ie/safer/iso19115/displayISO19115.jsp?isoID=285>



- **Consult all relevant stakeholders** extensively. Adopt a participative approach to the development and assessment of alternatives, providing statutory consultees, stakeholders and, ideally, the public, with the opportunity to state their views on the alternatives being considered and, where appropriate, suggest additional reasonable alternatives before a decision on the preferred alternative is made. The plan-/programme-making processes and the various SEA stages present opportunities for such consultation (e.g. scoping). Convening a multi-disciplinary stakeholder workshop at an early stage in the SEA process can be of significant benefit.

## 4.2 Recommendations for identification and development of alternatives (stage 1)



1. **Identify and develop alternatives early** in the assessment process (e.g. when drafting a new sectoral plan or immediately after initial statutory consultation during a land use plan review). Where possible, incorporate an outline description of the alternatives in the SEA Scoping Report. Convene a stakeholder scoping workshop to encourage participatory identification of alternatives.
2. Use alternatives to present different ways of dealing with significant environmental issues/problems identified during scoping or ways of achieving a specific plan/programme objective or scenario (i.e. an image of the future). When based on scoping issues, use available good-quality and up-to-date baseline data, taking into account current knowledge. When based on objectives or scenarios, back-casting (i.e. setting a limited number of relevant, long-term objectives and working backwards to identify plan/programme measures that work towards such objectives) may be useful before identifying alternatives.
3. Develop alternatives through close **collaboration between the planning and SEA teams**, where these are different. Interlink plan-making and SEA processes. In land use planning, acknowledge the role of planners in developing SEA alternatives. The SEA team may identify policies and objectives of a plan/programme that are not reasonable or compatible with environmental legislation and may suggest alternatives in addition to those developed by the planning team.
4. Ensure that alternatives **reflect the objectives and geographical scale of the plan/programme**. This is commonly determined by the administrative or spatial boundary of the proposed plan/programme. At higher planning tiers (e.g. RPGs), SEA alternatives should consider strategic policy objectives. At lower tiers (e.g. LAPs), alternatives commonly consider zoning and route options, where relevant. The objectives and actions of neighbouring authorities' plans/programmes must also be taken into account. In all cases, cross-checking each alternative against the strategic policy objectives can provide an initial sieving and thereby determine whether the considered alternatives are realistic and reasonable.
5. Ensure that **alternatives** reflect current legislation requirements and **do not conflict with higher-level plan/programme objectives**. Ideally, draft plan objectives should not be so limited that they preclude the potential for alternative solutions or scenarios. However, some plan objectives may be directly restricted by higher planning tiers; in such cases, consider alternatives to such defined higher-tier planning objectives before formulating the final definitive objectives at the lower planning tier.
6. Develop alternatives that are realistic, reasonable, viable and implementable (Figure 4.2).

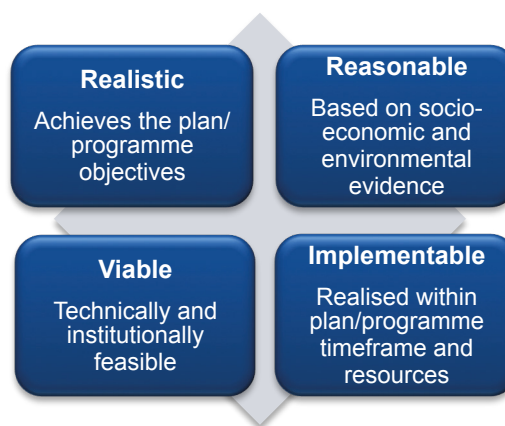
**Realistic:** For all alternatives considered, their capacity to achieve the plan/programme objectives, as well as those of higher-level plans/programmes (e.g. renewable energy technology options to achieve renewable electricity targets within the county in the light of renewable energy policy), should be demonstrated.



**Reasonable:** Alternatives considered should reflect environmental and socio-economic baseline and trends, as well as legal requirements, including those of the Habitats Directive (e.g. residential zoning areas that accommodate predicted population targets while protecting sensitive land uses such as floodplains, deciduous forests of significant ecological value or Natura 2000 sites). All alternatives should be robust, climate proof (meaning that they are robust and achievable under the various climate scenarios) and as environmentally proofed as possible (i.e. not in conflict with other environmental protection objectives such as those established under the Water Framework or Flood Risk Directives).

**Viable:** They should be technically possible and institutionally feasible (e.g. best available techniques not entailing excessive cost for waste water treatment). However, alternatives that are politically difficult or objectionable are not necessarily unreasonable (especially in a rapidly changing climatic scenario where future climatic conditions may result in the reconsideration of certain options for adaptation/mitigation).

**Implementable:** They should be capable of being put into action or operation within the plan/programme period with the available resources (e.g. provision of waste water infrastructure within the plan period given a determined budget).



**Figure 4.2. Core criteria for the development of alternatives.**

7. Use the **baseline data to identify potential issues** during scoping and take these into account when developing alternatives. Spatial datasets that can inform the description of the baseline environment can be found in the SEA Spatial Information Sources on the EPA's website.<sup>39</sup>
8. **Include a “do-nothing” alternative** for sectoral plans/programmes or their components, to assess the future baseline without implementation of the plan/programme, and to test whether the plan/programme is needed at all. An exception applies for land use plans in which periodic statutory review is mandatory.
9. Use a **structured and transparent approach** for alternative development. For instance, alternatives can be framed around their need, mode, location and timing (Figure 4.3).
10. Alternatives can also be **framed around different themes** (e.g. strategic, values oriented, sectoral, etc.) Table 4.2 gives a range of examples. The themes are not mutually exclusive; for example, strategic alternatives can be broken down into sub-themes (e.g. a set of plan/programme alternatives could be strategic and sectoral, or strategic and spatial). This table can also be used to refine alternatives in an iterative process.

<sup>39</sup> <http://www.epa.ie/pubs/advice/ea/seaspatialinformationsourcesmay2015.html#.VUJdV00cTIU>. The exact URL may change if the Spatial Information Sources inventory is updated.

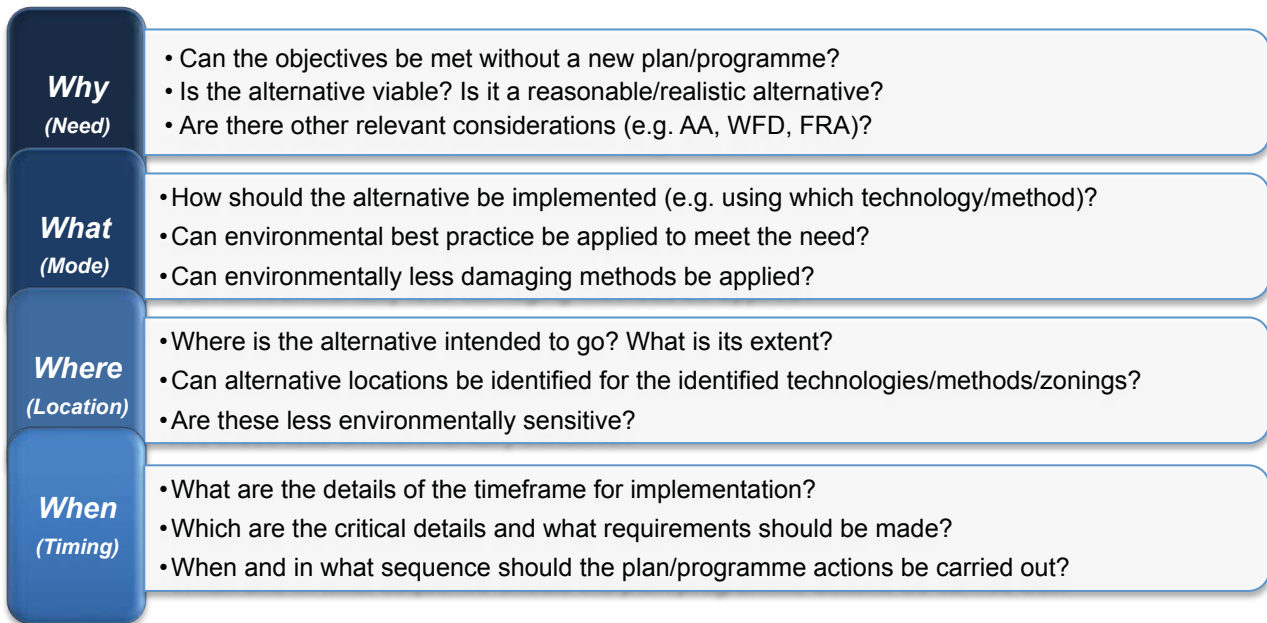


Figure 4.3. Framing the development of alternatives.

Table 4.2. Potential approaches to the development of alternatives

Alternative type	Description	Example
<b>Strategic</b>	High-level options that achieve a given objective These types are commonly realistic only at policy level	For energy plans/programmes, an alternative to the renewable energy plan would be a non-renewable plan (e.g. nuclear power). In the case of waste management, strategic options would look at land fill versus incineration. Refer to Appendix 1 – Case study B6 – for an example For land use plans, high-level options may relate to settlement patterns and population (e.g. consideration of different settlement patterns to accommodate projected population change)
<b>Value-oriented</b>	Alternatives that address policy priorities, cultural values or safety issues Such alternatives are most appropriate for addressing public perceptions, concerns and values	For river basin management, alternatives can focus on reducing public risk (e.g. flooding) or enhancing environmental quality (e.g. water) or both. For a master plan, alternatives could look into maintaining public safety (e.g. distance from Seveso sites) or increasing economic viability (e.g. promoting one industry type versus another in the area). For land use plans, these may include whether to use development to upgrade existing areas of deprivation (proactive) or to follow a market-led approach (based on demand) Any plan can consider alternatives that address environmental, public safety, social wellbeing, cultural or economic values
<b>Effects-oriented</b>	Alternatives that address issues identified during scoping Such alternatives are effective at mitigating potential significant effects and particularly useful in avoiding impacts on Natura 2000 sites (thus addressing AA requirements)	For energy plans, effects-oriented alternatives might be different ways of minimising greenhouse gas emissions or avoiding impacts on coastal SPAs and SACs. For local land use plans where flooding is a problem, alternatives could include different ways of avoiding further flooding or dealing with flood events

Table 4.2. Continued

Alternative type	Description	Example
<b>Sectoral prioritisation</b>	<p>Alternatives that look at sectoral feasibility and needs</p> <p>At the strategic level, policies can be formulated to promote one sector versus another. At the local level, one sector can be prioritised on a given land use zoning</p>	<p>At county or regional level, sectoral alternatives would consider, for example, investment priorities for tourism versus industry (in order to assess interactions and conflicts for various policy goals). For local land use zoning, they would look at housing versus industry versus recreation for a given site. In the renewable energy sector, alternatives are often based on technology/ cost/infrastructure considerations (i.e. the mode as per Figure 4.1)</p> <p>Sectoral alternatives are often driven by policy and development priorities for a given region/area. Such priorities should be taken into consideration if the considered alternatives are to be realistic and reasonable</p>
<b>Spatial</b>	<p>Alternative locations for the implementation of planning objectives</p> <p>This type of alternative is particularly relevant at the local level</p>	<p>Spatial approaches have been adopted for exploring the optimum location for afforestation, wind energy or water infrastructure developments. Similarly, assessing the suitability of existing brownfields for different land uses would represent a feasible approach to a master plan</p> <p>Spatial alternatives are commonly used in land use planning, in which various locations for residential, industrial and amenity development are explored. Similarly, rural versus urban location of alternatives is plausible for certain plans/programmes. Refer to Appendix 1 – Case studies A3 and C3 – for examples</p>
<b>Modal</b>	Different technical/mode alternatives to achieve the same objective	For waste plans, alternatives could include promoting recycling and efficient use of materials, as well as choices between incineration and landfill. For site plans, they could consider using best available energy efficiency technologies versus optimising solar gain. For energy plans/programmes, they could consider renewable energy versus nuclear power versus fossil fuels
<b>Temporal</b>	<p>Alternatives for the timing of implementation of plan/programme measures</p> <p>These are most suitable at the local level for addressing infrastructure development</p>	<p>For waste management plans, alternatives would consider different phasing of waste reduction measures or future waste generation scenarios</p> <p>Temporal alternatives are useful to ensure that infrastructure is provided before development (e.g. waste treatment plants, waste recycling facilities, roads, etc.) and that development sequencing matches local service capacities and needs (e.g. public service provision and housing demand)</p>

AA, Appropriate Assessment; SAC, Special Area of Conservation; SPA, Special Protection Area.

11. Where applicable, undertake a **consistency check between SEA and AA alternatives** to ensure that they are compatible. This is required where a Stage 2 AA (Natura Impact Report) has identified potential significant impacts on the integrity of Natura 2000 sites, in response to which “alternative solutions” would need to be explored and, in an iterative manner, incorporated into the SEA.
12. Develop a **practical number of alternatives**. Generally, it is recommended that a minimum of three or four are identified for each relevant plan/programme issue, including the “do-nothing” option, where applicable (see Table 4.3 for sector-specific examples). These should reflect the nature and spatial extent of the plan/programme being considered.
13. **Describe alternatives** in a clear and concise manner, providing sufficient **descriptive detail** to allow them to be meaningfully assessed. Document how and why they have been identified and developed, as well as any constraints to their further development at this early stage.
14. **Represent alternatives spatially** (i.e. mapped) where possible to facilitate their **geographic interpretation** and spatial assessment (see Appendix 1 – Case studies A1 and A3). Use hard copy maps or GIS when sketching out alternatives during scoping workshops, stakeholder consultation or SEA/AA/planning team meetings.

**Table 4.3. Examples of alternatives considered for various types of sectoral plans/programmes**

The following are examples of alternatives considered in a range of European SEA Environmental Reports, reviewed during the preparation of this guidance. Many plans/programmes have hierarchies of alternatives, with higher-level decisions (e.g. on the amount of development needed to respond to population growth) influencing lower-level decisions (e.g. where development should go). In the lists below, the earlier sets of alternatives are higher level and the later sets are lower level	
Land use	<ul style="list-style-type: none"> <li>• Different scenarios for population growth</li> <li>• Market led/dispersed, concentration/centred, environmental protection</li> <li>• High versus medium versus low density</li> <li>• Different strategic spatial alternatives: broad, level, quantum and distribution of growth</li> <li>• Specific development sites for housing, employment, etc.</li> <li>• Alternative ways of dealing with other issues, for example:               <ul style="list-style-type: none"> <li>- promoting economic growth (business and industrial land supply, business parks, green business, etc.)</li> <li>- reducing greenhouse gas emissions (low-carbon development, decentralised energy, etc.)</li> <li>- conserving the natural environment (landscape, green belt, food production, etc.)</li> <li>- promoting a good built environment (design, infill, brownfield and backland development, etc.)</li> <li>- provision of green infrastructure (no net loss, increasing, under what conditions, etc.)</li> </ul> </li> </ul>
Waste	<ul style="list-style-type: none"> <li>• Different scenarios for waste generation and management</li> <li>• Approaches to waste prevention: education, charging regimes, etc.</li> <li>• Approaches to waste collection, recycling, composting: central, door to door, weekly, fortnightly, etc.</li> <li>• Approaches to dealing with residual waste: incineration, heat and power, autoclaving, etc.</li> <li>• Volumes of waste going to different sites, need for new sites, transfer between sites</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Different scenarios for water demand</li> <li>• Different climate change scenarios affecting supply (e.g. temperature extremes)</li> <li>• Ways of reducing water demand: metering, water efficiency, leakage reduction, etc.</li> <li>• Combinations of abstraction from existing sources, development of new sources including desalination, piping between sources and user, temporary storage, etc.</li> </ul>
Waste water	<ul style="list-style-type: none"> <li>• Different scenarios for waste water generation</li> <li>• Treating the waste water at different existing sites, developing new sites, piping waste water between sites</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• Theoretical possibilities for different renewable energies (wind, solar, wave, tidal) in different onshore and offshore areas</li> <li>• Combinations of existing and new power stations</li> <li>• Combinations of transmission grid projects</li> </ul>
Transport	<ul style="list-style-type: none"> <li>• Broad approaches to transport planning: environmentally versus socially versus economically led</li> <li>• Ways of reducing demand for transport: road charging, parking constraints, education, etc.</li> <li>• Combinations of projects: road, public transport, pedestrianisation, etc.</li> </ul>

15. Use relevant **modelling** tools, where easily available and applicable, to **explore future land use, population, energy, climate**, etc. **scenarios** and thereby inform alternative development. Refer to Appendix 1 – Case study A5 – for an example of a modelling approach and to Appendix 2 for more detail on MOLAND land use change modelling.
16. **Describe the proposed alternatives in the Scoping Report** to elicit early feedback from stakeholders and environmental authorities. Where detailed descriptions are not available at such an early stage in the SEA process, provide an outline of the alternatives that have been considered. Include **specific focused questions in the Scoping Report inviting commentary** and observations on the described alternatives, as well as, where appropriate, other reasonable, realistic, viable and implementable alternatives.
17. As the assessment progresses, adopt an **iterative approach to further defining the alternatives** or identifying new ones that better address potential impacts and stakeholders' concerns (consider Table 4.2).

### 4.3 Recommendations for assessment and comparison of alternatives (stage 2)



The outcome of the assessment and comparison stage should be a statement on the significant impacts identified for each alternative, and the associated opportunities and risks for each key planning decision:

1. Ensure that the **assessment** occurs **early** in the plan-making process and that the assessment outcomes are used to inform plan-making by including clear strategic arguments for opportunities and risks for each planning decision.
2. Use the **relevant baseline data** (and future predictive data where they are modelled and available) **to support the assessment** of alternatives. Identify and report any data gaps and technical deficiencies/limitations that may affect the full assessment of alternatives and describe any associated uncertainties.
3. Use a **two-tier approach to assess the alternatives**. Initially, undertake a general comparison of all alternatives considered. Include comparison against the “do-nothing” scenario at this point, where appropriate, and take account of relevant regulatory thresholds (e.g. residential densities, renewable energy targets, etc.), decisions already made within the plan area (e.g. permitted projects) and Habitats Directive requirements. Use this **first environmental assessment** as a **filtering process to select a limited number of options for detailed examination**, entailing a more **comprehensive comparative analysis of a few selected alternatives**; at this point take into account any mitigation measures developed.
4. Ensure **comparability of assessment** of all the alternatives considered; **assess** each alternative **to the same level of detail** as the emerging preferred alternative(s).
5. Adopt a **systematic and transparent approach to the assessment**. Table 4.4 shows the most widely applied methods and tools for impact assessment. Additional techniques, such as statistical or cost–benefit analysis and ecological footprint, can also be applied as being complementary to the assessment.

**Table 4.4. Methods and tools for the assessment of alternatives. These methods are not mutually exclusive (i.e. matrix-based assessments can be complemented with expert judgement and GIS mapping)**

Assessment approach	Description
<b>Expert judgement</b>	One or, preferably, several environmental and planning experts examine environmental issues associated with the proposed alternatives and rank them. Expert judgement is often supported with stakeholder and environmental authority consultation, as well as field surveys, to increase the objectivity of judgements. It is non-replicable and has potential for bias, as there are different opinions and interpretations of environmental risk among and within disciplines
<b>Matrix-based assessment</b>	Comparison of proposed plan/programme alternatives or associated objectives against environmental objectives presented in a matrix form. A supporting text describes and explains the potential for significant impacts, and thereby rationalises the assessment outcomes. Matrix-based assessments are supported by baseline information and allow easy identification of conflicts and trade-offs but are subjective. They also lack spatio-temporal dimensions common to environmental and planning issues and are, therefore, increasingly complemented with mapping. Refer to Appendix 1 – Case study B1 – for an example
<b>Multi-criteria assessment</b>	This technique produces a ranking of proposed alternatives using a set of weighted environmental criteria. It entails defining relevant assessment criteria (i.e. potential impacts/environmental sensitivities) and assigning them a weight (i.e. relative value of importance), which enables the incorporation of stakeholder values and perceptions. Proposed alternatives are scored against each weighted criterion, and the scores and weights are then added up to obtain an ‘overall’ value for each alternative. It allows transparent comparison of alternatives and can be used with quantifiable and unquantifiable data, but it can lead to very different results depending on who establishes the weights. Refer to Appendix 1 – Case study B2 – for an example

**Table 4.4. Continued**

Assessment approach	Description
<b>Environmental resource mapping</b>	Preparing maps using GIS to illustrate the location and extent of key environmental resources provides a spatial baseline (see the GIS for SEA and AA Manual). This can be overlaid with the proposed alternatives to identify land use conflict and, in this way, determine the potential for significant impacts. Spatial data are not available for certain environmental factors (e.g. landscape sensitivity, soil productivity) and, as they cannot be mapped, they are excluded from the GIS-based assessment affecting the applicability of this method. In such cases, maps can be complemented with expert judgements or matrix-based assessments. Refer to Appendix 1 – Case study B1 – for an example
<b>Environmental sensitivity mapping</b>	Combining multi-criteria assessment and GIS allows weights to be assigned to each mapped environmental aspect. Spatially overlaying and adding up all the relevant weighted environmental layers results in a map with varying degrees of environmental sensitivity – see GIS for SEA and AA Manual. This spatial addition of environmental factors also helps to identify cumulative effects. As with the GIS mapping technique above, alternatives can be overlaid with the sensitivity areas to identify cumulative effects, but this may not be fully effective where relevant spatial datasets have not been gathered or are not available. The spatial representation of environmental resources/sensitivities and development pressures within the plan/programme area can significantly inform and enhance the explicitness of assessments. It also enables quantification of areas under various degrees of environmental sensitivity, computing the amount of such areas affected by development. Refer to Appendix 1 – Case study B5 – for an example
<b>Modelling</b>	Modelling can predict likely future environmental conditions. Although no single model can cover the full range of spatial and temporal scales and processes involved in environmental assessment, models can be usefully applied to simulate future land use or population scenarios and environmental changes such as climatic conditions or flood risk. Alternatives can then be evaluated against these simulations to establish their long-term environmental resilience and feasibility. Refer to Appendix 1 – Case study A5 – for an example

**AA, Appropriate Assessment; GIS, Geographical Information System; SEA, Strategic Environmental Assessment.**

6. Assess all the alternatives in terms of their **environmental** and, where appropriate, socio-economic **benefits and limitations**. Use alternative assessment to evaluate likely negative impacts but also to identify and enhance potential long-term positive effects and synergies. Quantify these where possible. Figure 4.4 shows two examples.
7. Where maps are used to compare the alternatives, contrast spatially specific areas of zoning or policy with the previously prepared baseline environmental or environmental sensitivity maps (refer to the EPA website for the SEA Spatial Information Sources inventory to aid the preparation of baseline environmental maps) and modelling results and to rapidly and clearly detect potential land use conflicts (e.g. areas under urban/industrial/infrastructure development pressure). Identify and quantify the areas zoned for development that overly environmentally sensitive areas. This information can be used to develop mitigation measures. Figure 4.5 shows two examples.
8. Take account of the alternatives' proximity to, and potential impacts on, any Natura 2000 sites. Refer to the AA where relevant for this.
9. Impact significance can be viewed as a combination of the area's intrinsic environmental sensitivity and the scale and magnitude of impact of the alternative. The expected number of planning applications for various project types (e.g. based on trends in the number of planning applications for rural housing or the number of quarrying permits in a sensitive landscape area) can act as an indicator of the alternative's impact. The greater the number of planning applications likely to arise from an alternative, the higher the development pressure and the more potential there is for impacts.
10. Where plans are developed in an iterative way, previously assessed alternatives do not need to be re-assessed, unless circumstances change substantially (e.g. new Natura 2000 designations being introduced half-way through the planning process). However, the previous alternatives considered/assessed should be listed, and any new alternatives developed at later stages in the SEA process should be assessed, as well as any significant alterations to the initially considered alternatives.



## Second National Hazardous Waste Management Plan 2008–2012 SEA

Total	2004 Baseline	2016 with Plan with preferred strategy	Difference
Hazardous waste generation (tonnes)	419,683	503,864	+84,181
Unreported hazardous waste (tonnes)	77,477	23,300	-54,177
Hazardous waste export (% of total collected)	56%	26%	-23%
Hazardous waste export (tonnes)	200,214	125,862	-74,352
Greenhouse gas emissions from solvent export (tonnes)	701,207	350,603	-350,604

## Greater Dublin Area Transport Strategy 2011–2030 SEA

SEA Objective	Assessment Against SEA Objectives and Assessment Scores			Summary of Relative Performance
	Economic package (ECON)	Social package (SOC)	Environment package (ENV)	
<b>Biodiversity</b>				
1. To avoid impacts on the integrity of European Conservation Sites (SACs and SPAs) and nationally designated sites (NHAs).	-3	-3	-1	GIS analysis was undertaken to identify the number of permanent and direct Natura 2000 site impacts arising from each package. ECON has approximately 18 direct Natura impacts (30.3% of the Natura sites in the GDA). SOC has 14 (22%) direct impacts and ENV has 4 (6.7%). Note that a -3 rating implies potentially significant impacts on the GDA's Natura network and will require mitigation to be developed to avoid these direct impacts. The -1 rating for ENV is a reflection of the significantly lower level of impacts on the Natura 2000 network (compared to the other two Alternatives), rather than a direct assessment of the direct impacts of ENV. Should these elements of all three packages be taken forward in the Preferred Strategy, appropriate mitigation measures will need to be developed.
2. To support the overall goal of the National Biodiversity Plan (NBP).	-2	-2	-1	All three packages will have the potential to give rise to permanent adverse impacts on the overall NBP goal through new infrastructure and associated landtake. A greater impact can be expected for ECON and SOC, due to the much greater level of infrastructural development. While new infrastructure introduces a potential for adverse impacts through landtake, it is recognised that there may also be some opportunities for enhancement too by creating biodiversity linkages, for example, along road and rail corridors. Overall, for assessment purposes, the overall impact is taken to be adverse.

Figure 4.4. Quantification in the assessment of alternatives.

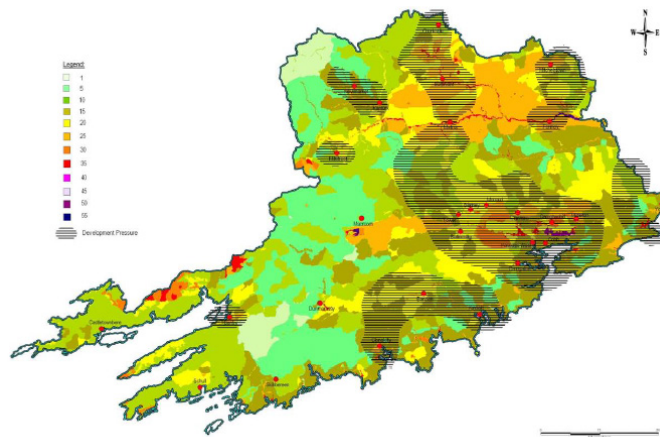
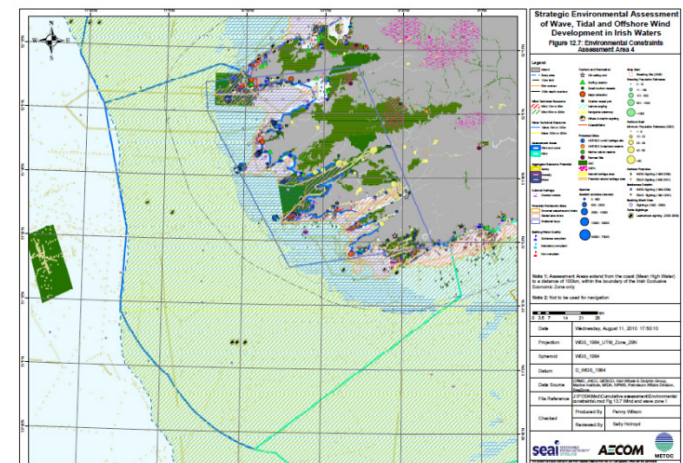


Figure 4.5. Mapping environmental sensitivities against proposed alternatives (top) and composite environmental factors (bottom).

#### 4.4 Recommendations for selection and documentation of alternatives (stage 3)



11. **Focus on** alternatives that provide **environmental benefits** rather than solely complying with statutory requirements (even if this is politically difficult or contentious). The selected alternative(s) should be environmentally viable. Alternatives that are not immediately implementable are still worth considering for future action.
12. Select **robust and resilient** alternatives that can **cope with a range of future environmental/planning scenarios and environmental shocks**. This could be supported, for example, by giving due consideration to future climatic and/or population scenarios (e.g. the selected alternatives should be climate proof, promoting proactive adaptation rather than reactive mitigation).
13. As noted under section 4.2, consider **including the proposed alternatives in the Scoping Report** sent to statutory consultees for their comment (through the inclusion of specific focused questions inviting commentary on the proposed alternatives and, where appropriate, other reasonable alternatives).
14. The preferred alternative(s) adopted in the plan/programme do not always have to be those shown by the SEA to be the most sustainable or environmentally friendly or robust. However, if they are not, then **clearly justify the selection made** in the Environmental Report. In all cases, describe in the Environmental Report how environmental considerations have been integrated into the selected alternative(s).
15. **“Tell the story” in the Environmental Report**, in the **Non-technical Summary** and in the SEA Statement, of how **alternatives** were considered in the SEA. Include a clear, focused and concise account of:
  - (a) how the alternatives were developed and any constraints to generating them;
  - (b) why they were proposed, including (where appropriate) why any “ghost alternatives” were excluded from further consideration (see example in Box 4.1);
  - (c) the range of proposed alternatives considered;
  - (d) how they were assessed;
  - (e) the assessment outcomes (i.e. the potential impacts of the preferred alternative and other reasonable alternatives considered);
  - (f) what the preferred alternative(s) is/are and why it/they was/were selected (Box 4.1); and
  - (g) any data gaps and technical deficiencies/limitations affecting the development and assessment of alternatives and the associated uncertainties.
16. Present the **alternatives assessment outcomes in a way that is suitable for the target audience**. This could include summary matrices on all the relevant environmental effects or environmental sensitivity mapping. Include the alternative assessment maps in the Environmental Report, if prepared and used, to support the clear description of potential issues associated with each alternative and, particularly, the “preferred” option.
17. Include a **brief summary of the “storyline” of alternatives** in the associated **plan/programme** to enhance SEA and plan/programme integration.
18. Provide **links to the outcomes of the AA** where relevant.
19. Use the SEA alternatives checklist (section 4.5) as a self-check.



#### Box 4.1. Description of the development and selection of alternatives

Hart District Council Core Strategy, UK

A key aim of the plan was to determine how much housing would be provided in the district over the period to 2029 and where the housing should go. Housing alternatives were:

- housing numbers: 166, 236, 444 or 840 units per year;
- whether or not some housing could be built on existing employment land;
- alternative general areas for development on greenfield land: extend Fleet only; extend four settlements; extend six settlements; extend all settlements broadly reflecting their current scale; or develop a new settlement;
- seven strategic sites on greenfield land – shown on the map (sites 2, 3 and 5).

Early choices between alternatives (e.g. housing numbers) shaped the range of subsequent lower level alternatives (e.g. strategic sites). The Environmental Report examined and discussed the advantages and disadvantages of each option and explained why the preferred alternative(s) was chosen. For instance, for the general areas of development it concluded that:

Option 5 is likely to be particularly problematic in terms of service provision as the amount of development which would be allocated to Winchfield [...] is likely to be insufficient to improve the existing service provision to a standard required for a new settlement [...]. Options 1, 2, 3 and 4 are all considered to be appropriate options [...]. The Council selected option 4 as the most appropriate option for greenfield development as it is thought that this will make the best use of existing infrastructure capacity. This will allow significant resources to be targeted at delivering the larger strategic allocations where maximum community gain and infrastructure improvements can be secured.

#### Tralee–Killarney Hub Functional Areas Local Area Plan 2013–2019

In selecting reasonable alternatives that could be implemented, it was considered that the scenarios of “no further development” and “unconstrained development” are unreasonable, as they are unlikely to be delivered and would not reflect the statutory and operational requirements of the plan. The alternatives proposed were:

Alternative 1 – Low urban and high rural growth. A significant proportion of growth is allocated to the lower-order settlements and rural areas, with limited future growth allocated to the larger settlements.

Alternative 2 – Balanced urban and rural growth. The population growth is balanced between the larger settlements and smaller, lower-order settlements/rural areas.

Alternative 3 – High urban and low rural growth. Most of the population growth is targeted to the larger settlements with very low growth allocated to the lower-order settlements and rural areas.

Based on the environmental assessment of the alternative policy scenarios, it was found that alternative 2 was the preferred one. The preferred strategy, nonetheless, was identified as having potentially conflicting interactions with a number of environmental protection objectives. Accordingly, mitigation measures were recommended to reduce/eliminate potentially negative impacts and incorporate additional environmental objectives.

## 4.5 SEA alternatives checklist

Key considerations	Yes/No	Comments/Remarks
<i>Identification/Development of alternatives</i>		
Were alternatives developed early in the SEA process (e.g. at the scoping stage)?		
Were the alternatives developed in consultation with key stakeholders?		
Do the alternatives take into account the geographical scope, hierarchy and objectives of the plan/programme (= realistic)?		
Are the alternatives based on socio-economic and environmental evidence (= reasonable)?		
Can the alternatives be realised within the plan/programme timeframe and resources (= implementable)?		
Are the alternatives technically and institutionally feasible (= viable)?		
Do the alternatives address the potential for environmental adverse effects identified during scoping?		
Are the alternatives distinct and clearly described/presented?		
(If appropriate) Are the alternatives spatially specific? If so, have they been mapped?		
<i>Assessment of alternatives</i>		
Are all the alternatives adequately/effectively assessed?		
Are all the alternatives assessed against the same criteria?		
Does the assessment of alternatives refer to the environmental baseline and policy analysis?		
Are significant adverse (cumulative) effects of alternatives adequately identified and described? Similarly, are AA-related effects adequately identified?		
Are the potential effects of each considered alternative quantified in a meaningful way, where appropriate?		
Where the alternatives are assessed as having different effects in different (spatial) areas, have these been identified?		
Where the effects of the alternatives are unclear or ambiguous, has any further analysis been proposed? Where this is the case, would this analysis occur at a time when any significant strategic impacts could still be mitigated?		
Are measures proposed to prevent, reduce or offset significant adverse environmental effects for specific alternatives possible?		
<i>Comparison of alternatives</i>		
Are beneficial and/or significant adverse (cumulative) environmental effects of different alternatives compared?		
Are environmental criteria (e.g. vulnerability of Natura 2000 sites) used to establish whether an alternative is reasonable?		
<i>Selection of alternatives</i>		
Is the selection of alternatives clearly informed by the SEA findings?		
Does the selected alternative avoid or reduce significant environmental effects of implementing the plan/programme?		
Has the alternative been selected in consultation with key stakeholders?		

Key considerations	Yes/No	Comments/Remarks
Documenting alternatives		
Does the SEA Scoping Report outline the range of alternatives to be considered in the assessment?		
Does the SEA Environmental Report document how the alternatives have been developed, and by whom?		
Are all modifications to the alternatives appropriately documented? If appropriate, by whom and for what reasons?		
Does it provide a clear outline of the reasons for selecting the alternatives dealt with?		
Does it report on “ghost alternatives” that have been excluded from further consideration?		
Does it justify the selection of the preferred alternative: does it provide reasons for choosing the plan or programme as adopted, in the light of the reasonable alternatives dealt with?		
Is a clear summary of the alternatives considered and their assessment incorporated into the SEA Non-technical Summary?		
SEA Statement		
Does the SEA Statement describe the reasons for selecting the alternative in the light of the other reasonable alternatives dealt with?		

## Acronyms and abbreviations

<b>AA</b>	Appropriate Assessment
<b>CDP</b>	County Development Plan
<b>DECLG</b>	Department of the Environment, Community and Local Government
<b>EPA</b>	Environmental Protection Agency
<b>EU</b>	European Union
<b>FRA</b>	Flood Risk Assessment
<b>GIS</b>	Geographic Information System
<b>LAP</b>	Local Area Plan
<b>NTS</b>	Non-technical Summary
<b>RPGs</b>	Regional Planning Guidelines
<b>SA</b>	Sustainability Appraisal
<b>SAC</b>	Special Area of Conservation
<b>SDZ</b>	Strategic Development Zone
<b>SEA</b>	Strategic Environmental Assessment
<b>SPA</b>	Special Protection Area

# Glossary

<b>Alternatives (SEA)</b>	In the context of this guidance, and unless otherwise specified, ways of delivering a plan's or programme's objectives while addressing identified environmental issues.
<b>Alternatives (AA)</b>	Ecological solutions developed to mitigate the identified risk of impact on the integrity of Natura 2000 sites.
<b>Appropriate Assessment (AA)</b>	Assessment of the potential significant effects of a plan, programme or project on a European site in view of its conservation objectives. The assessment is underpinned by the precautionary principle, whereby a proposal cannot be granted permission, unless there are imperative reasons of over-riding public interest and no alternatives, if adverse effects on the integrity of the site are expected or cannot be ruled out.
<b>Back-casting</b>	In the context of this guidance, setting a limited number of relevant, long-term objectives and working backwards to identify plan/programme measures that work towards such objectives.
<b>Cumulative effects</b>	Incremental effects resulting from a combination of two or more individual effects (e.g. two or more individual plans or projects) – or from an interaction between individual effects – which may lead to a synergistic effect (i.e. greater than the sum of individual effects), or any progressive effect likely to emerge over time.
<b>Effect</b>	Changes arising from the plan/programme being assessed. In the context of this guidance, and unless otherwise specified, the terms “effect” and “impact” are interchangeably used.
<b>Geographic Information System</b>	An array of technological tools for the management, analysis and display of spatial data that can provide evidence-based information to support biodiversity impact assessment and natural resource management.
<b>“Ghost” alternative</b>	In the context of this guidance, and unless otherwise specified, the term “ghost alternative” is used to refer to those alternatives considered in the informal plan-/programme-making stage that precedes the formal SEA process, which are subsequently excluded from further consideration in the assessment.
<b>Impact</b>	Actions on the environment resulting from a plan/programme. In the context of this guidance, and unless otherwise specified, the terms “effect” and “impact” are interchangeably used.
<b>Implementable</b>	In the context of this guidance, and unless otherwise specified, an implementable alternative is capable of being put into action or operation within the plan/programme period with the available resources.
<b>Mitigation measures</b>	Measures designed to prevent, reduce and, as fully as possible, offset any significant adverse environmental impact of implementing a plan/programme.
<b>Monitoring</b>	The periodic or continuous observation of environmental indicators and of other parameters that may affect the environment for any changes that may occur over time, in order to confirm/test predictions made with respect to likely effects and identify adverse changes that may require remedial action.
<b>Natura 2000 site</b>	Designated sites forming an EU-wide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It includes Special Areas of Conservation and Special Protection Areas.

<b>Plan</b>	In the context of spatial planning, the framework for land use or sectoral actions in a particular area (e.g. region, county, city, town or local area).
<b>Programme</b>	In the context of spatial planning, the planned group of projects or actions.
<b>Realistic</b>	In the context of this guidance, and unless otherwise specified, a realistic alternative is capable of achieving the plan/programme objectives.
<b>Reasonable</b>	In the context of this guidance, and unless otherwise specified, a reasonable alternative takes account of the environmental and socio-economic baseline and trends, as well as legal requirements, including those of the Habitats Directive. Despite the emphasis on environmental considerations of SEA, socio-economic aspects are taken into consideration in the context of sustainable development.
<b>Scenario</b>	In the context of this guidance, and unless otherwise specified, the term “scenario” refers to a vision or image of the future.
<b>Screening</b>	Determination of the need for an environmental assessment (under the SEA and Environmental Impact Assessment Directives) or AA (under the Habitats Directive).
<b>Scoping</b>	The process of determining relevant issues to be addressed and setting out a methodology by which to address them in a structured manner appropriate to the plan/programme.
<b>Spatial data</b>	Field observations/measurements linked to a location, also known as geographic information or geospatial data.
<b>Strategic Environmental Assessment (SEA)</b>	Assessment of the effects of certain plans and programmes (and, in some jurisdictions, policies) on the environment. It presents a structured and participative process containing a set of tools to assist in the integration of environmental considerations and promote informed decision making at plan/programme level.
<b>Uncertainty</b>	Lack of assurance in the assessment outcomes resulting from data gaps and technical difficulties, as well as from a limited knowledge of possible future scenarios.
<b>Viable</b>	In the context of this guidance, and unless otherwise specified, a viable alternative is technically possible and institutionally feasible.

# Appendix 1 Good practice case studies

The following good practice case studies are representative of the SEA alternatives stage only. They should be treated as discretionary examples of good practice in one or several components of the SEA alternatives process (i.e. identification, development, assessment, comparison, selection and documentation).

The fact that they have been selected as good practice examples for the purpose of this guidance does not endorse their associated plan/programme; the full SEA process and an Environmental Report represent overall good practice.

The case studies illustrate varying European practices, planning hierarchies and sectors and these are coded as follows:

Geographical location			
<b>IE</b>	Ireland	<b>EU</b>	Europe
Sector			
<b>LU</b>	Land use	<b>E</b>	Energy
<b>T</b>	Transport	<b>WS</b>	Waste

The case studies are grouped into:

- A. identification and development of alternatives;
- B. assessment and comparison of alternatives; and
- C. selection and documentation of alternatives.

Permissions have been obtained from the relevant local authorities, governmental departments and private consultancies to publish the case studies and figures/graphics included in this appendix. The figures included in each case study are copyright of the acknowledged sources and they cannot be reproduced without permission from the original source.

## Case study A1: Identification and development of alternatives

LU IE

**Plan/programme name:** Kildare Town Local Area Plan 2012–2018. Prepared by Kildare County Council.

**Brief outline:** The plan aims to determine how to provide for a 35% increase in population in a self-sufficient and sustainable manner.

**Highlights:** Clear explanation of what are “reasonable” and “not reasonable” alternatives and their mapped representation.

**URL:**

<http://kildare.ie/CountyCouncil/Planning/DevelopmentPlans/LocalAreaPlans/KildareLAP2012-2018/>

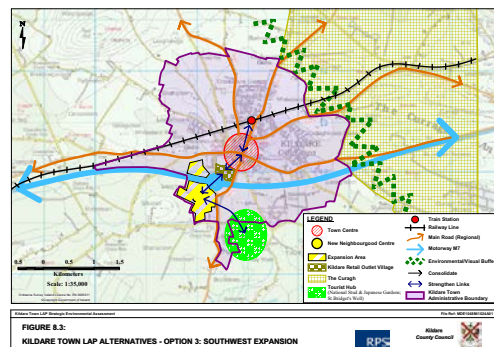
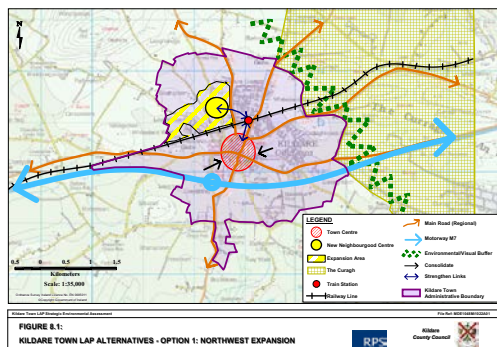
### Description of the process for developing alternatives

The SEA eliminated the “no development” and “unconstrained development” options early on, explaining that they were not realistic. It identified the objectives of the plan – which any alternative must achieve – as being moderate sustainable growth, a 35% increase in population, 25 hectares of zoned land, self-sufficient growth and provision of strong infrastructure.

### Proposed alternatives

The SEA identified and assessed five strategic spatial alternatives to achieve the plan objectives:

1. north-west expansion of development within the town boundaries (see left-hand image);
2. brownfield consolidation;
3. south-west expansion with tourist hub (in green in the right-hand image);
4. north-east expansion; and
5. market-led growth.



### Key lessons

The SEA Directive specifies that “reasonable” alternatives are those that take into account the objectives and geographical scope of the plan. This case study is a good example of how to clearly state the objectives of the plan, and subsequently what alternatives are not ‘reasonable’ and why. Moreover, maps of alternatives allow their spatial comparison.

The SEA report concludes that alternative 2 is preferred because the AA shows it having the least impact on Natura 2000 sites. SEA should be informed by the AA and Flood Risk Assessment (FRA); therefore, these assessments should precede the SEA.



**Case study A2: Identification and development of alternatives****LU****EU**

**Plan/programme name:** Leicester Local Development Framework. Prepared by Leicester City Council, UK.

**Brief outline:** The plan sets out the vision, objectives and spatial planning strategy for development in Leicester until 2026, including the provision of 29,500 new homes.

**Highlights:** The SEA included alternatives proposed by the public during consultation, and some of these were included in the final plan.

**URL:** <http://www.leicester.gov.uk/your-council/policies-plans-and-strategies/planning-and-development/local-development-framework>

**Description of the process for developing alternatives**

Following the production of an SEA Scoping Report, council officers produced an “Issues and Options” leaflet for public consultation. This included an initial appraisal of options (i.e. alternatives) considered by the planning team, and open-ended questions asking whether any other options should be considered. The range of options was then expanded to include additional options proposed by consultees. Some “converse options” were also considered, which represented the opposite of proposed options (not just “do-nothing” or “business as usual”). The Environmental Report showed, in different coloured text, how options were “brought in” and, in different shading, how they were eliminated from further

Black text		Options that were originally set out in the Issues and Options leaflet.
Blue text		Converse options added to the original options set of options in the Issues and Options leaflet
Green text		Additional options that were identified through responses received during the consultation period.
No shading		Identifies options rejected after the initial appraisal
		Identifies the options that were discounted after the full appraisals.
		Identifies the options that have been selected to take forward as preferred options.

AMEND	3	Continue to encourage a mix of uses on inner city regeneration sites but make sure that the housing is built early on.
DISCOUNTED (After full appraisal)	4	Encourage single uses (e.g. housing or offices) on inner city regeneration sites.

RETAIN	5	Maximise the use of vacant land (Brownfield) and buildings
REJECTED (After initial appraisal)	5a	Reduce the vacancy rate of existing Council housing stock

**Key lessons**

This is an example of how good SEA can trigger the consideration of new alternatives as a result of public consultation. This highlights the importance of both stakeholder involvement and open-minded planners.

### Case study A3: Identification and development of alternatives

LU

EU

**Plan/programme name:** South Dublin County Development Plan 2010–2016. Prepared by South Dublin County Council.

**Brief outline:** The plan sets out future planning in South Dublin for the period 2010–2016. Knowledge-based employment and enterprise is centred on population and transport nodes.

**Highlights:** *Alternatives formulation involved cross-departmental consultation within the County Council and with the EPA and they were supported by evidence-based mapping.*

**URL:** <http://www.sdcc.ie/sites/default/files/publications/Env%20Report%20Section%201-10%20and%20Appendices%20I-IV%20Sept%2009%20WEB.pdf>

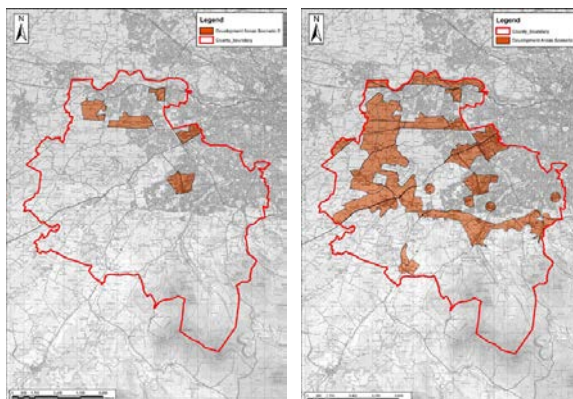
#### Alternatives

Pre-determined national and regional policy shaped the scope of alternative development. Alternatives were developed in close consultation between county council departments and the EPA. The “do-nothing” alternative was not considered, as statutory obligations require CDP review every 6 years.

#### Proposed alternatives

The four alternatives developed were mapped using GIS and described as follows:

1. Environmental preservation: cautious and restrained approach, protecting all areas and limiting development of potential key areas, with negative social and economic implications.
2. Sustainable selective concentrations: with trade-off between environmental protection and urban development (through a mapped analysis of potential development areas against environmental sensitivity areas) and mitigation measures ameliorating negative impacts.
3. Market-led: sprawl and a mismatch between place of residence and work represent predominant patterns of this approach, which maximises growth and high-density development, rendering environmental protection a secondary concern.
4. Reactionary: characterised by a reactionary and negative planning approach to development within the existing built-up areas, which, combined with the market-led planning approach, would encourage sub-urban sprawl, underutilisation of existing infrastructure and undermining of existing economies of scale.



#### Key lessons

The assessment concluded that alternative 2 is the only feasible one, with the strategic quantum of growth pre-determined at regional level and the future distribution of growth directed to transport and population nodes. Determination of the best locations for future growth was framed by overlay mapping and a monitoring system that determines the acceptability of proposed developments within these areas.

**Case study A4: Identification and development of alternatives****LU****EU**

**Plan/programme name:** Lisbon Municipality General Plan (Plano Director Municipal de Lisboa). Prepared by Instituto Superior Publico de Lisboa and Direcção Geral de Ordenamento do Território e Desenvolvimento Urbano.

**Brief outline:** The plan establishes the spatial organisation model and the development strategy of the municipality, including the rules and parameters for land use and transformation.

**Highlights:** SEA alternatives developed on the basis of critical decision factors.

**URL:** <http://fenix.tecnico.ulisboa.pt/downloadFile/3779577375999/AAE%20PDM%20Lisboa%20Marco%202011.pdf>

**Description of the process for developing alternatives**

The development of alternatives followed a systematic process of identifying (1) the policy framework (i.e. policies, plans and programmes with sustainability goals that influence the plan); (2) the critical decision factors (in this case, housing and urban experience, environmental and cultural resources, mobility, energy and climate change, economic vitality and governance model) against which the various alternatives were developed; and (3) the assessment criteria (based on the decision factors) against which the alternatives were assessed.

**Proposed alternatives**

Sistemas estruturantes (implícitos no PDM)	Estratégias
A. Estrutura Ecológica Municipal	A1. Valorizar e salvaguardar os sistemas naturais fundamentais, em articulação com a rede ecológica definida à escala metropolitana
	A2. Promover a continuidade e complementaridade dos sistemas naturais em território urbano, em articulação com os espaços verdes e públicos
	A3. Assegurar as áreas permeáveis, nomeadamente em zonas a consolidar e logradouros
B. Mobilidade	B1. Estruturar áreas fragmentadas
	B2. Controlar o tráfego de atravessamento dos bairros
	B3. Criar uma Rede de Mobilidade Suave (ciclável e pedonal)
	B4. Favorecer a utilização de TC
	B5. Definir o modelo de hierarquização e sua articulação com as novas acessibilidades
C. Identidade e Património	C1. Qualificar e preservar as áreas e eixos históricos
	C2. Preservar e valorizar o Sistemas de Vistas
	C3. Recuperar a relação entre a cidade e o rio
	C4. Valorizar e integrar no espaço urbano a estrutura patrimonial municipal
	C5. Consolidar a rede de mobilidade suave nas zonas de atractividade turística
D. Programação e participação	D1. Definir publicamente o modelo e mecanismos de execução da urbanização, com reforço dos mecanismos de intervenção pública
	D2. Promover uma efectiva participação pública no processo de construção e alteração da cidade
E. Qualidade ambiental	E1. Gerir e adequar os níveis de ruído
	E2. Promover a descontaminação de solos em áreas com actividades poluentes pré-

The proposed alternatives were framed by the sustainability policy goals and the decision factors – these were defined in consultation with stakeholders during scoping.

Strategic alternatives were developed for each of the critical decision factors, so they represent different pathways for sustainability, taking into account development opportunities and risks.

**Key lessons**

This case study is a good example of a systematic approach to the development and assessment of “within plan” alternatives. The identification of critical decision factors defines the scope of the alternatives developed as well as that of assessment (focusing data-gathering and analysis efforts).

## Case study A5: Identification and development of alternatives

LU IE

**Plan/programme name:** Regional Planning Guidelines for the Greater Dublin Area 2010–2022. Prepared by the Dublin Regional Authority.

**Brief outline:** The plan sets out future planning in the Greater Dublin Area for the period 2010–2022. Population distribution, housing, transport, and water and waste infrastructure are key issues.

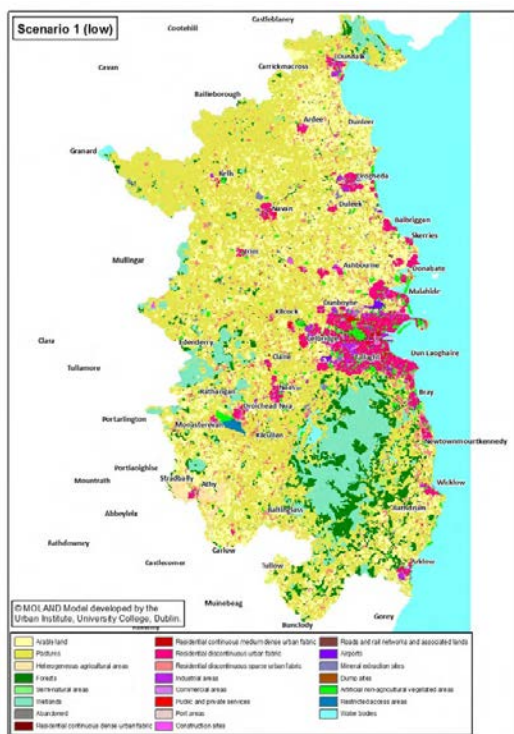
**Highlights:** The use of scenario modelling to predict the impact of alternative selection.

**URL:** <http://www.rpg.ie/documents/RPG2010-VolumellEnglishWeb.pdf>

### Description of the process for developing alternatives

Scenarios were developed as hypothetical end points of different policy directions shaping development patterns. Ongoing consultation between the planning, SEA and AA teams, as well as the EPA, was maintained during the development of alternatives. In addition, the scenarios were presented to the elected members for comment, which resulted in adjustments to the alternatives considered.

### Proposed alternatives



The proposed alternatives included (1) baseline/continued trends approach; (2) finger expansion of the metropolitan area; (3) consolidation of key towns and the city; or (4) consolidation and sustainability and some expansion at nodes on transport corridors. These alternatives were modelled using MOLAND to simulate likely future land use patterns under each alternative.

Scenario 1 would result in continued isolation of residents from points of economic activity. Although scenario 2 adhered to the compact city region model and would concentrate persons at transport nodes, it would more negatively impact on Natura 2000 areas, and the equitable dispersal of population to designated growth centres might be compromised. Scenario 3 allowed for consolidation in the metropolitan area and key towns with more minimal impact on areas of conservation. Scenario 4 was similar but with more balanced population growth across the seven local authorities of the Greater Dublin Area.

### Key lessons

The use of the land use model provided a spatial simulation of alternatives and thereby an indication of how proposed planning objectives may be reflected in practice.

Iterations of spatial output permitted early-stage modification of alternatives based on feedback from key stakeholders.

**Case study B1: Assessment and comparison of alternatives****LU****IE**

**Plan/programme name:** Offshore Renewable Energy Development Plan (OREDPA) 2010–2030. Prepared by the Sustainable Energy Authority of Ireland.

**Brief outline:** The OREDPA sets out scenarios for offshore renewable energy development in Irish waters up to 2030 and a longer-term vision for the growth of the offshore renewable energy sector.

**Highlights:** Assessment of alternative development scenarios well linked to the baseline.

**URL:** [http://www.dcenr.gov.ie/NR/rdonlyres/4300BCC6-8A45-403A-AF57-47DC2171470C/0/20140206ApplIOREDPA\\_SEA\\_ER\\_FINALincl2013updates.pdf](http://www.dcenr.gov.ie/NR/rdonlyres/4300BCC6-8A45-403A-AF57-47DC2171470C/0/20140206ApplIOREDPA_SEA_ER_FINALincl2013updates.pdf)

**Proposed alternatives**

Rather than identify a preferred alternative for developing renewable offshore energy for Ireland, the SEA aimed to identify the maximum amount of renewable energy development of different types – fixed wind, wave, tidal and floating wind – that could be accommodated in six assessment areas without significant adverse environmental impacts.



Assessment areas

**Assessment and comparison of alternatives**

Operating parameters were first set for each technology (e.g. necessary water depth for tidal energy or wind speed for wind turbines). Possible technologies were identified for each assessment area, taking these operating parameters into account; not every area could accommodate every technology.

Key environmental receptors and sensitivities in each area were identified and mapped (e.g. shellfisheries, seascape, protected sites). Potential effects of the relevant technologies were then examined, based on these sensitivities and assumptions about technologies. Cumulative impact assessments were carried out, identifying the potential amount of development that could be accommodated without significant adverse environmental impacts, as illustrated in the example below:

SEA Topic		Assessment Area 1: Fixed wind– Potential Cumulative Effects WITH Mitigation Number of Commercial Fixed Wind Developments			Comments
		2 (600 MW)	4 (1200 MW)	6 (1800 MW)	
	Birds	Unknown / Negative	Unknown / Negative	Unknown / Significant Adverse	The adjacent coastline contains protected seabird populations and breeding colonies. Birds from these sites may therefore be present feeding or loafing in the offshore resource area. Likely negative and significant adverse effects include marine noise, physical disturbance, and habitat exclusion and collision risk. The significance of the effect would increase for multiple arrays due to the increased habitat area affected, and increasing risk of barrier effects. These effects will increase in significance as development increases.
	Marine Mammals	Unknown / Negligible	Unknown / Negligible	Unknown / Significant Adverse	Significant adverse effects on marine mammals from noise during installation of piled foundations. Noise from the construction of multiple arrays could act as a barrier to mammal movements adjacent to the coast and along migration routes, although these effects are not well understood.
	Marine Reptiles	Unknown / Neutral	Unknown / Neutral	Unknown / Neutral	Assessment Area 1 has had comparably few turtle sightings when compared with the other areas. Potential impacts include entanglement with mooring chains, collision, pollution, noise and barrier effects, although transit routes around Ireland are not known. Exclusion from jellyfish feeding hotspots during construction could be significant in this area, but operating arrays could provide new jellyfish habitat, actually increasing turtle food resources.

**Key lessons**

The strength of this case study is the consideration of cumulative impacts in the assessment of alternatives. It brought together baseline data about the sensitivities of each area and information about the impacts of each renewable technology – a classic example of significance = magnitude of impact × sensitivity of the receiving environment.



## Case study B2: Assessment and comparison of alternatives

LU IE

**Plan/programme name:** Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary 2013–2020. Prepared by Clare, Kerry and Limerick County Councils, Shannon Development and the Shannon Foynes Port Company.

**Brief outline:** The SIFP is a land- and marine-based framework plan to guide the future development and management of the Shannon Estuary.

**Highlights:** Detailed assessment of potentially suitable development sites linked well to the baseline, and clear reporting on how SEA findings have influenced the SIFP.

**URL:** [http://shannonestuarysifp.ie/sites/default/files/sifp/Volume\\_3/SEA\\_Report\\_2013.pdf](http://shannonestuarysifp.ie/sites/default/files/sifp/Volume_3/SEA_Report_2013.pdf)

### Proposed alternatives

Rather than identify alternatives for developing the Shannon Estuary, the SEA aimed to identify robust onshore and offshore strategic sites. Approximately 100 sites were considered, which was reduced to 21 strategic sites as a result of SEA.

### Assessment and comparison of alternatives

The potential for impact from different development types and sensitivities (e.g. bird sites, dolphin sightings, etc.) were identified for each of the strategic sites.

Preferred development types were then identified for each site in consultation with local stakeholders. These development types were assessed against the sensitivities of the receiving environment, using mapping and a multi-criteria assessment and scoring approach, as illustrated below. Impact significance and the need for mitigation for each of the environmental receptors in each site were accordingly identified, supported by scientific commentary. Cumulative effects across the estuary from the various development types at various locations were also examined.



Location of strategic sites for marine-related industry, tidal energy and aquaculture in the inner estuary.



Greenish Island/Poularone, with a preferred option of aquaculture for this strategic site.

Multi-Criteria Analysis (MCA) Results				
MCA Scores				
Technical (including Economic) (±25 to 25) = 25%	Social (±25 to 25) = 25%	Environmental (±25 to 25) = 25%	Planning (±25 to 25) = 25%	Overall (±100 to 100)
3.80	1.04	-0.36	4.01	9

SEA Objectives	Impact	Significance	Mitigation
Biodiversity Flora and Fauna (BFF)	-	X	Yes
Population and Human Health (PHH)	-	X	Yes
Soils (S)	-	X	Yes
Water (W)	-	X	Yes
Air Quality (AQ)	neutral	-	No
Archaeology and Cultural Heritage (ACH)	-	X	Yes
Landscape (L)	Neutral	-	No
Marine Assets (MA)	-	X	Yes

**Biodiversity, Flora and Fauna (BFF)**  
This site is located within an SAC and SPA. Potential for indirect impact to birds is possible. The site (Poularone Creek) is located within two sub-sites which have been given a moderate potential impact rate. It is within both the SPA and pSPA boundary therefore depending on the scale of the project potential direct or indirect impacts may occur. The entire estuary is a continuum as used by the birds. It should be noted that the ranking system is to be used as a guide at a strategic level only and that a full Appropriate Assessment screening exercise, taking account of the whole SPA, will be required at the project level to ensure there are no significant effects to the Natura 2000 site in the context of the site's conservation objectives.

### Key lessons

This is a good example of multi-criteria assessment of strategic locations and preferred development types, based on detailed baseline information, which provides a systematic and transparent assessment framework.

**Case study B3: Assessment and comparison of alternatives****T****IE**

**Plan/programme name:** Greater Dublin Area Draft Transport Strategy 2011–2030. Prepared by the National Transport Authority (NTA).

**Brief outline:** The strategy's role is to establish policies and transport measures that will support the Greater Dublin Area in meeting its potential as a competitive and sustainable city region for all.

**Highlights:** A preliminary environmental assessment fed into detailed proposals for alternatives, and the results were published in the *Draft Potential Measures Strategy Report*.

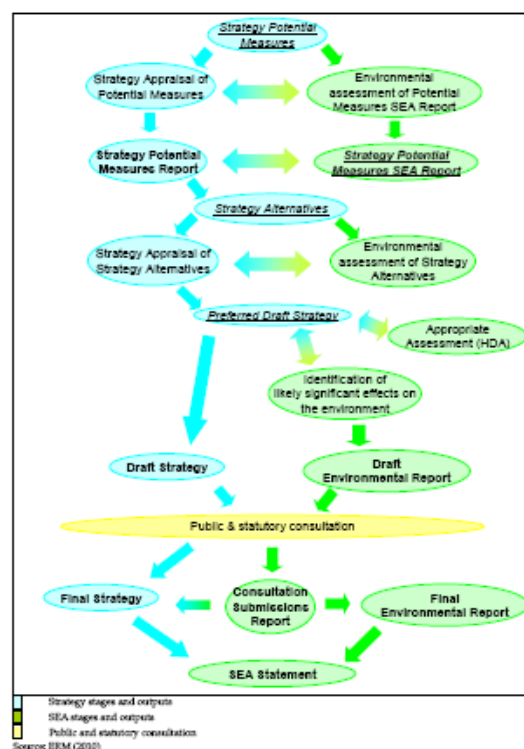
**URL:** <https://www.nationaltransport.ie/wp-content/uploads/2011/12/Volume-2-SEA-Main-Report-for-Minister.pdf>

**Proposed alternatives**

SEA potential measures assessment results were combined with a set of detailed transport proposals and policies to prepare three alternatives: (1) economic – improving competitiveness; (2) social – improving connections between communities; and (3) environmental – protecting and enhancing the built environment. Several major infrastructure schemes were assumed in all three scenarios (e.g. Metro North).

**Assessment and comparison of alternatives**

The assessment included a two-stage appraisal: potential measures assessment and SEA/AA. Each alternative was compared against the “do-minimum” scenario. Subsequently, the performance of the proposed alternatives was measured against the objectives of the strategy and against strategic environmental objectives. The assessment included modelling outputs, GIS and qualitative analysis, and addressed relevant aspects such as population and human health. The NTA ensured that consultations were fully reflected in the final Environmental Report.

**Key lessons**

The strength of this case study is the use of three core elements (i.e. social, economic and environmental) of sustainable development in considering and assessing alternatives and comparing them against a do-minimum approach. The two-stage assessment enabled a preliminary assessment of alternatives and their modification before the SEA was carried out.

## Case study B4: Assessment and comparison of alternatives

T

EU

**Plan/programme name:** Ulster Canal (Upper Lough Erne to Clones) Restoration Plan. Prepared by Waterways Ireland.

**Brief outline:** The plan aims to re-establish navigation on the Ulster Canal between Upper Lough Erne and Clones, in counties Fermanagh, Monaghan and Cavan, in order to extend the available length of canal navigation in Ireland.

**Highlights:** Assessment of alternatives against detailed criteria checklists, clearly factoring in the range of effects.

**URL:** <http://www.iwai.ie/download/UlsterCanal-EnvironmentalReport.pdf>

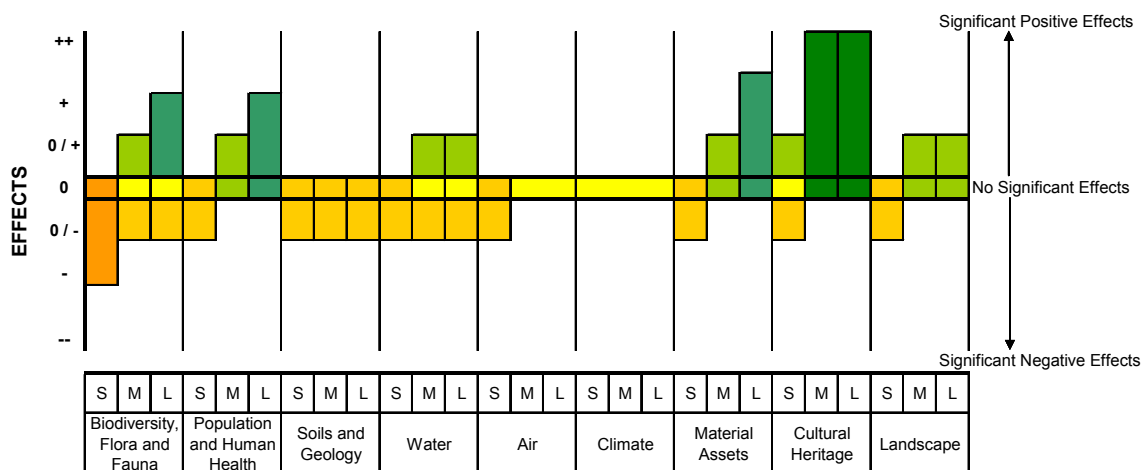
### Proposed alternatives

The SEA alternatives were: (1) “do-nothing” (i.e. no canal restoration); (2) restoring the Ulster Canal from Upper Lough Erne to Clones, following as closely as possible the original path of the canal; and (3) restoring the Ulster Canal from Upper Lough Erne to Clones, with a number of variants on the original route from Upper Lough Erne to Gortnacarrow.

### Assessment and comparison of alternatives

The assessment of alternatives was carried out by environmental baseline categories, each of which was assessed to give the positive and negative effects, their significance and permanence, any secondary, cumulative or synergistic effects, and any inter-relationship of effects. The assessments were supported by concise scientific background and an impact summary table to provide a summary visual representation of the scale of potential positive and negative effects, as shown:

#### Alternative 2 – Restore Original Canal



### Key lessons

The strength of this case study is the use of baseline-based criteria as a structure for scoring the performance of the proposed alternatives. The assessment tables provide a clear summary on potential impacts and then link these to mitigation.



**Case study B5: Assessment and comparison of alternatives****LU****IE**

**Plan/programme name:** Kilkenny County Development Plan 2008–2014. Prepared by Kilkenny County Council.

**Brief outline:** The plan sets out policies and objectives for the planning and sustainable development of the county from 2008 to 2014.

**Highlights:** *Spatial assessment of multiple environmental criteria against the mapped alternatives, and quantification of potential land use conflicts.*

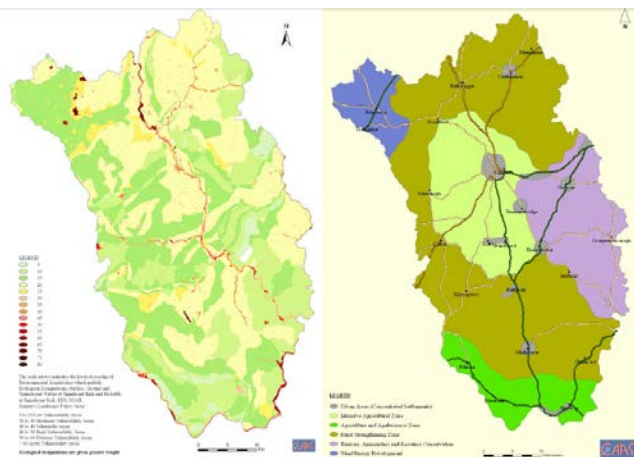
**URL:** [http://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development\\_Plans\\_2008-2014/Kilkenny%20County%20Development%20Plan/Kilkenny\\_County\\_Development\\_Plan\\_2008-2014.html](http://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development_Plans_2008-2014/Kilkenny%20County%20Development%20Plan/Kilkenny_County_Development_Plan_2008-2014.html)

**Proposed alternatives**

The alternatives were developed on the basis of planning enforcement as follows: scenario 1 – weak planning (strongly follows market demands with little regard to planning or environmental protection); scenario 2 – normal planning (a responsive regime led by strong, but highly differentiated, local economic forces, based primarily on the use of existing natural and cultural resources); and scenario 3 – strong planning (a highly regulated environment with very strict enforcement of rural planning guidelines).

**Assessment and comparison of alternatives**

The scenarios were mapped in consultation with the planning team. A composite environmental map was prepared illustrating the various degrees of environmental sensitivity across the county. The alternatives were then overlaid and the areas most likely to be affected by each scenario were computed, providing a clear quantification of the environmentally sensitive lands affected by development pressure.



*Environmental sensitivity (left) and scenario 3 (right) with the quantified land areas below. The calculations indicated that more sensitive factors would be affected more by scenario 3 than by scenarios 1 or 2.*

Vulnerability Area	Scenario 3 Strong Planning
Low	22.54
Moderate	34.63
Vulnerable	5.42
High	1.24
Extreme	0.09
Acute	0

**Key lessons**

Mapping of alternatives enabled their spatial analysis with a clear indication of the relative extent of environmentally sensitive factors likely to be affected. Although the spatial definition of alternatives may be more feasible and pragmatic at the local level, this approach enabled a transparent and quantitative analysis of alternatives.

## Case study B6: Assessment and comparison of alternatives

WS EU

**Plan/programme name:** Viennese Waste Management Plan 2013–2018. Prepared by the Viennese Waste Management Authority.

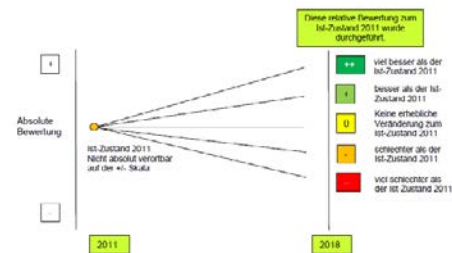
**Brief outline:** The plan proposes measures to minimise and manage Vienna's waste to 2018.

**Highlights:** The SEA clearly states the criteria for assessment, and quantifies the assessment where possible.

**URL:** <http://www.wien.gv.at/umwelt/ma48/service/pdf/umweltbericht-2012.pdf>

### Proposed alternatives

A range of alternatives for managing Vienna's waste to 2018 were considered: three alternatives for waste collection, and a wide range of different actions to increase composting, recycling, etc. Particular emphasis was placed on waste prevention.



### Assessment and comparison of alternatives

Each alternative was tested against a range of SEA objectives, using the 2011 situation as a baseline ("will the future situation under this alternative be better or worse than in 2011?"), as illustrated above. Where possible, impact predictions were quantified. The figure below compares the air pollution impacts of three alternatives.

	Untersuchungskriterien und Detaillierungsgrad	Trend-Alternative:	Ersatz der PROSA-Container durch eine Intensivierung der mobilen PROSA:	Verringerung des PROSA-Sammelnetzwerks:
Luft	Abschätzung der Emissionen aus Abfallbehandlungsanlagen, Transport des Abfalls etc., z.B.	es werden nur Emissionen aus den Transporten betrachtet, weil aus der Lagerung, Manipulation und Behandlung der Problemstoffe keine erheblichen Emissionen in die Luft zu erwarten sind; Berechnungsgrundlagen: Handbuch Emissionsfaktoren des Straßenverkehrs V2.1, NOx: Emissionsfaktor ca. 7,3 g NOx/km für den LKW Transport, ca. 0,9 g NOx/km für den Transport mit leichten Nutzfahrzeugen und ca. 0,3 g NOx/km für den PKW Transport; Partikel: Emissionsfaktor ca. 0,18 g/km für den LKW Transport; ca. 0,08 g/km für den Transport mit leichten Nutzfahrzeugen und ca. 0,02 g/km für den Transport mit PKW		
	- NOx	ca. 374,5 kg/a NOx durch Transport: 50.000 km (LKW-Transport) x 7,3 g NOx/km = 365 kg NOx/a + 10.000 km/a (Transport mit leichten Nutzfahrzeugen) x 0,9 g NOx/km = 9,5 kg NOx/a => Summe: ca. 374,5 kg NOx/a	ca. 309 kg/a NOx durch Transport: 40.000 km/a (LKW-Transport) x 7,3 g NOx/km = 292 kg NOx/a + 18.000 km/a (Transport mit leichten Nutzfahrzeugen) x 0,9 g NOx/km = 17,1 kg NOx/a => Summe: ca. 309,1 kg NOx/a	ca. 309,2 kg/a NOx durch Transport: 40.000 km/a (LKW-Transport) x 7,3 g NOx/km = 292 kg NOx/a + 50.000 km/a (PKW-Transport) x 0,3 g NOx/km = 15 kg NOx/a => Summe: ca. 309,2 kg NOx/a
	- Feinstaub (PM10, PM2,5)	ca. 9,6 kg/a Partikel durch Transport: 50.000 km/a (LKW-Transport) x 0,18 g Partikel/km = 9 kg Partikel/a + 10.000 km/a (Transport mit leichten Nutzfahrzeugen) x 0,08 g Partikel/km = 0,8 kg Partikel/a => Summe: ca. 9,8 kg Partikel/a	ca. 8,6 kg/a Partikel durch Transport: 40.000 km/a (LKW-Transport) x 0,18 g Partikel/km = 7,2 kg Partikel/a + 18.000 km/a (Transport mit leichten Nutzfahrzeugen) x 0,08 g Partikel/km = 1,4 kg Partikel/a => Summe: ca. 8,6 kg Partikel/a	ca. 8,2 kg/a Partikel durch Transport: 40.000 km/a (LKW-Transport) x 0,18 g Partikel/km = 7,2 kg Partikel/a + 50.000 km/a (Transport mit PKW) x 0,02 g Partikel/km = 1 kg Partikel/a => Summe: ca. 8,2 kg Partikel/a
	- SO2	aus den Transporten gibt es keine erheblichen Auswirkungen aus den Emissionen von SO2, Schwermetallen und weiteren (z.B. NMVOCs) weil die Emissionen sehr gering sind		
	- Schwermetalle			
	Bewertung	0	0	0

### Key lessons

This case study clearly explains the methodology used for the assessment and comparison of alternatives, allowing the reader to understand the findings more readily. Quantifying the impact predictions where possible allows a more informed comparison of alternatives to be made.

## Case study C1: Selection and reporting of alternatives

LU

IE

**Plan/programme name:** Planning Scheme for North Lotts/Grand Canal Dock Strategic Development Zone (SDZ). Prepared by Dublin City Council.

**Brief outline:** The SDZ plan promotes the social and economic regeneration of the area, employment creation and community engagement and markets the docklands internationally.

**Highlights:** Tiered approach to alternative selection.

**URL:** <http://www.dublincity.ie/sites/default/files/content//Planning/OtherDevelopmentPlans/LocalAreaPlans/Documents/NLEnvironmentalReport.pdf>

### Proposed alternatives

The four alternatives were:

1. Do-nothing scenario: absence of a planning scheme for the area.
2. High-density scenario: phased development of approximately 300 units per hectare, ranging from four storeys up to 18, with a commercial to residential ratio of 40:60.
3. Medium-density scenario: network of spatial and sectoral clusters, with the development of five hubs, approximately 200 units per hectare, ranging from five to eight storeys, with a commercial to residential ratio of 50:50.
4. Low-density scenario: predominantly family homes, approximately 100 units per hectare, ranging from four to six storeys, with a commercial to residential ratio of 30:70.



Each alternative took into account the established high-level themes (i.e. sustainability, economic renewal and employment, quality of living, identity, infrastructure, movement and connectivity).

### Selection of alternatives

The SEA notes that:

The medium density model [...] is robust in terms of implementation and would prove resilient over time. It is not seriously dependent on complex phasing and can be responsive to an emerging process of collaboration. Above all, it has a robust practicality which responds strongly to core strands of sustainability, while avoiding the risks associated with the high and low density options.

Strategic Environmental Objective	Alternative 1 High Density Development	Alternative 2 Medium Density (Planning Scheme)	Alternative 3 Low Density Development
PE1 To protect and enhance people's quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns.	++	++	++
PE2 To protect and enhance the diversity and range of habitats, species, natural heritage features and wildlife corridors / green corridors.	++	++	++

### Key lessons

This is a good example of how to clearly set out the aims of the plan (through high-level themes), and assess how each alternative conforms to these aims. It shows a good approach to flexibility that is realistic, reasonable and measurable.

## Case study C2: Selection and reporting of alternatives

LU

IE

**Plan/programme name:** Galway County Development Plan 2015–2021. Prepared by Galway County Council.

**Brief outline:** The plan puts forward an overall development strategy for Galway County, including a spatial strategy, housing strategy and Record of Protected Structures.

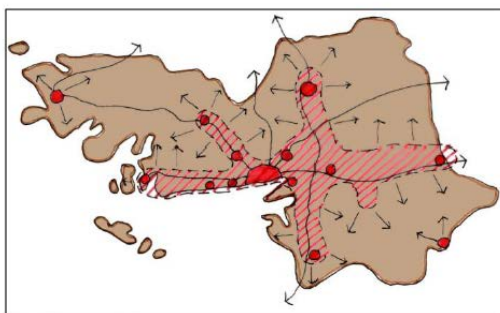
**Highlights:** Clear explanation of the choice of preferred option.

**URL:** <http://www.galway.ie/en/media/GCDP%202015-2021%20Environmental%20Report.pdf>

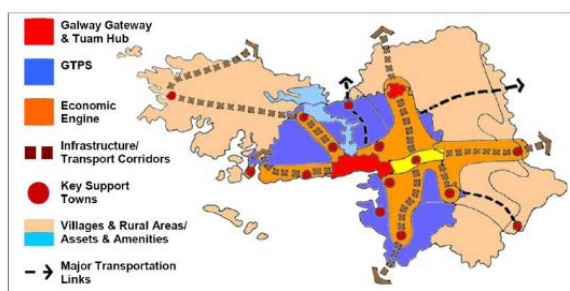
### Proposed alternatives

The alternatives were:

1. concentrating growth in urban areas and settlements with development outside these centres strictly controlled to retain the character of rural areas and a strong environmental protection policy;
2. focusing growth predominantly on the hub town of Tuam;
3. promoting dispersed development throughout the county; and
4. developing the hub town of Tuam, supporting the gateway and key towns, while encouraging the development of other settlement centres and appropriate rural development (see figure below).



Alternative Scenario 2 -  
Structured Development Strategy  
(Well Developed Urban Structure Supporting Diverse Rural Areas)



Illustrative depiction of the spatial planning and settlement strategy for the County from Draft County Development Plan

### Selection of alternatives

The figures show the evaluated alternative 4 (above) and the emerging preferred strategy (below).

The SEA notes that:

The preferred Plan represents a pragmatic recognition and continuation of established patterns and trends of development in County Galway. These have been modified to take account of the significant environmental sensitivities that exist over very large portions of the County with a view to stabilising both environmental conditions and the populations of those communities who continue to sustain these environments.

### Key lessons

This case study highlights how clear explanation of the choice of preferred alternative helps the public and statutory consultees to understand how the planning decision has been made. The preferred alternative takes into account how the plan will be implemented and its impact.

**Case study C3: Selection and reporting of alternatives****E****EU**

**Plan/programme name:** Structure Vision Amsterdam 2040. Prepared by the Government of the Netherlands.

**Brief outline:** The plan sets out a spatial structure vision for the City of Amsterdam.

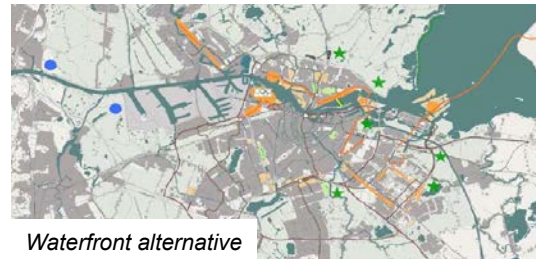
**Highlights:** *Extensive public involvement and collaboration to devise a better alternative.*

**URL:** [http://api.commissiemer.nl/docs/mer/diversen/os\\_structurevisionamsterdam.pdf](http://api.commissiemer.nl/docs/mer/diversen/os_structurevisionamsterdam.pdf)

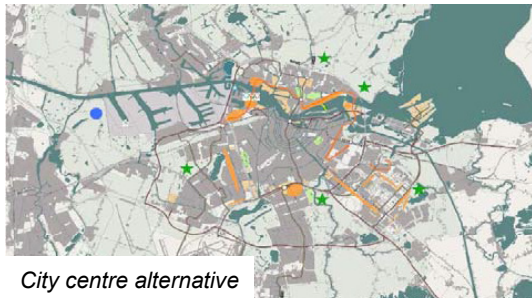
**Proposed alternatives**

The alternatives were formulated on the basis of 10 previously identified and agreed themes, including the extension of the metropolitan core, regional transport systems, connectivity between green and blue infrastructure and public space, and climate resilience. Each alternative had to accommodate the desire to build 70,000 new houses. The alternatives differed in where the accents of urbanisation were located: around the current city centre, along the river (waterfront) or in the southern flank. The alternatives differed in:

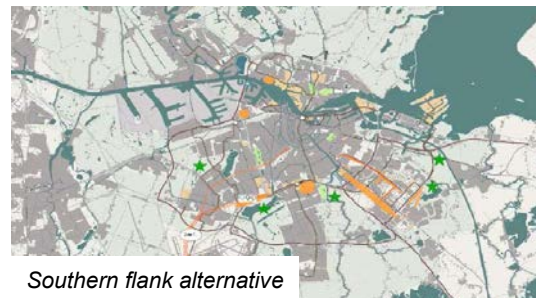
- locations of areas for public transport;
- location of the harbour area;
- design of water and green areas;
- reservation for the Olympic games;
- use of sustainable energy.



Waterfront alternative



City centre alternative



Southern flank alternative

**Selection of alternatives**

While undertaking this SEA, the City of Amsterdam experimented with new forms of public involvement. Specific stakeholders and the general public were actively sought out to partake in meetings. Their comments and wishes were translated into pillars and used as the building blocks for the structure vision. The final vision design used the range of alternatives and examined trade-offs to develop a new preferred alternative. Because the preferred alternative had not been described in the SEA Environmental Report, the City of Amsterdam supplemented it with an explanation of the reasons for selecting the final structure vision.

**Key lessons**

This case study highlights how proactive public involvement and iteration between the planning process and the SEA process can lead to selection of a preferred alternative that combines the best elements of the alternatives initially considered. It also illustrates the importance of substantiating alternative selection.



## Case study C4: Selection and reporting of alternatives

LU

EU

**Plan/programme name:** Shepway Core Strategy. Prepared by Shepway District Council, UK.

**Brief outline:** The Core Strategy is a 20-year plan for development in Shepway District (Kent, UK).

**Highlights:** Clear documentation of how alternatives were identified, and reasons for choosing the preferred alternatives.

**URL:** [http://consult.shepway.gov.uk/events/13437/1266486\\_accessible.pdf](http://consult.shepway.gov.uk/events/13437/1266486_accessible.pdf)

### Proposed alternatives

The first level of alternatives considered was “growth quantum” of 850, 550, 400 and 290 dwellings per year; of these, 400 per year was chosen. Based on this, two broad spatial approaches to accommodating growth were considered: both had growth focused on main settlements and Romney Marsh, but one also considered an additional area of land; the former was chosen. Seven broad locations were then considered: of these, three were chosen as preferred alternatives. For each of the three, different combinations of housing numbers, employment land and infrastructure were considered. The SEA also considered three approaches to providing green infrastructure.

### Selection and documentation of alternatives

For each set of alternatives, the Environmental Report explains how the alternatives were identified; for instance:

A starting point when identifying reasonable alternative broad spatial approaches to growth was the evidence provided by the Strategic Housing Land Availability Assessment (SHLAA) [...]. This study shows that sites potentially suitable for development are concentrated in the urban areas, largely on brownfield land, and that there are also some potentially suitable large greenfield sites to the west of Folkestone/Hythe.

Where appropriate, the Environmental Report explains why some alternatives were not considered reasonable and were rejected at the outset; for instance:

Evidence from Shepway’s SHLAA suggests a higher figure [than 850] would not be deliverable. [There are also] significant questions as to whether the market would be able to bring forward the level of housing and employment associated with this option.

The report also explains, for each set of alternatives, why the preferred alternative(s) was/were chosen; for instance:

The Council’s preferred broad spatial approach is to focus growth on the District’s main settlements, plus the Romney Marsh area. This approach has the potential to meet housing needs over the plan period and in turn achieve the objective of promoting economic growth and competitiveness. As such, the ‘corridor’ approach is deemed to be unnecessary within the plan period [...]. [An additional benefit] is that it will enable a clear focus on delivering urban regeneration and addressing problems of rural isolation.

### Key lessons

This case study both shows a good hierarchy of alternatives and clearly documents how the alternatives were identified and chosen.

## Appendix 2 MOLAND land use modelling<sup>1</sup>

### A2.1 Introduction

MOLAND is a land use computer model that is based on socio-economic and demographic data and provides an image of the possible future. The model can ascertain what land use planning alternatives will look like over set time periods, and so it can be used to assess, monitor and model the development of (sub-)regional environments.

MOLAND comprises a number of components, as illustrated in Figure A2.1, including population and economic activity (as measured by the number of jobs in a county) in the macro-scale part of the model, and (1) land use (24 land use classes from pasture and arable to ports and residential fabric); (2) suitability (slope, soil type, elevation); (3) local authority land use zonings (as supplied by MyPlan.ie); and (4) accessibility/transport network maps measuring the degree to which services, markets and people can be reached. A basic user of the model can change the quantum and distribution of population and/or the quantum of employment, with the land use, zoning and accessibility components remaining fixed.

MOLAND can help to both develop and assess the impact of alternatives. It mainly addresses the “location” aspect of the *Need, Mode, Location and Timing* elements of this Toolkit.

A separate MOLAND Lite guidance document, MOLAND Lite – land use modelling for SEA alternatives development and assessment, is available for download online at <http://erc.epa.ie/safer/report>

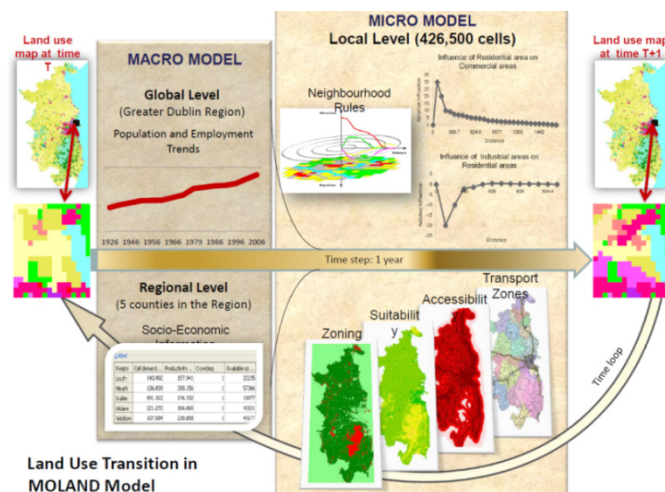


Figure A2.1. Land use components and transition in MOLAND.

### A2.2 Developing alternatives

While MOLAND can be iteratively adapted to include additional layers of information and for use across sectors, its current applicability lies in spatial land use planning. Alternatives should first be developed using the Toolkit and then input into the model. For demonstration purposes, hypothetical alternatives were outlined for an existing plan, namely the Wicklow County Development Plan 2010–2016. The quantum of population is determined by the higher tier of planning, the Regional Planning Guidelines for the Greater Dublin Area, 2010–2022. Suitability buffers for

<sup>1</sup> All figures are courtesy of the Urban Environment Project research group ([www.uep.ie](http://www.uep.ie)).

population allocation were created outside the model in ArcGIS and imported back into the model; they tell the model where to push projected population growth. Three alternatives were proposed: (1) a *managed dispersal*, which maintains the status quo and distributes population according to the limiting elements of the other layers; (2) *north county development*, which increases development around the towns of Bray and Greystones, based on the assumption of improved transport and waste water treatment infrastructure; and (3) *north and south county development*, which increases development in all the major coastal towns, based on assumptions of infrastructure development being delivered. Figure A2.2 shows the suitability maps and MOLAND land use maps for scenarios 2 and 3. Differences in suitability and resulting differences in residential patterns of development in key settlements can be observed. There is a notable amount of additional residential development in Wicklow and Arklow for scenario 3, shown in pink.

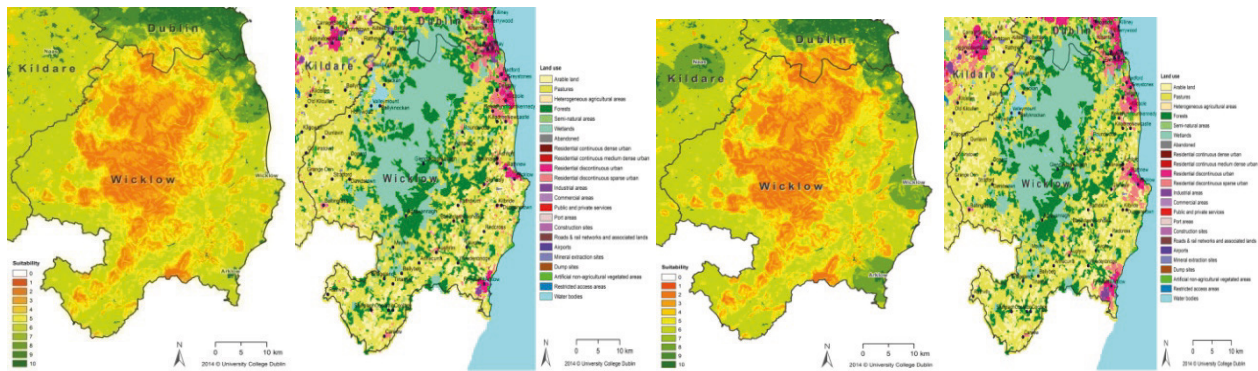


Figure A2.2. North county (left) and north and south county development maps (right) for 2022.

### A2.3 Assessing alternatives

MOLAND allows the user to examine the impact of alternatives on the different land classes by exporting the results to Microsoft Excel. For the Wicklow example, Figure A2.3 shows the difference for pasture land (given in square metres) between the three scenarios.

The impact on land use consumed by growth patterns across a county can be analysed in this way for all 24 land use classes. The user can also export data to ArcGIS and estimate the impact of an alternative scenario on Natura 2000 areas (Figure A2.4).



Figure A2.3. Impact of alternatives on pastures.



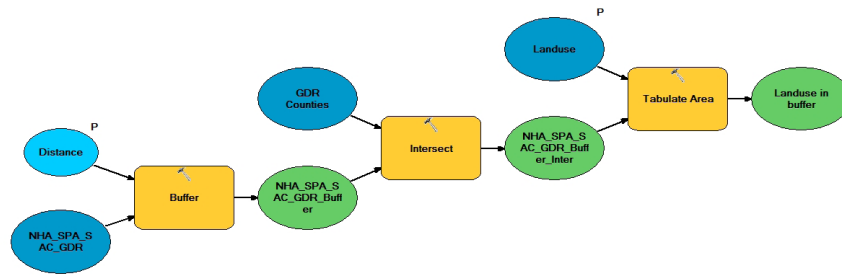


Figure A2.4. Natura 2000 model which accepts buffer distances and land use layers as parameters.

## A2.4 Running the model and benefits of the model

Running a simulation within the model is relatively straightforward once the macro model drivers have been set. Maps for each alternative and associated statistics can be transformed into animations and tabular output, respectively. A stepwise procedure is outlined in the user manual.<sup>2</sup> The land use model provides evidence to help identify the most sustainable alternatives based on quantitative information on spatial and temporal scales, as well as impact assessment of alternatives on Natura 2000 and on 24 land use classes.

<sup>2</sup> <http://erc.epa.ie/safer/iso19115/displayISO19115.jsp?isoID=285>



## AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Gníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaoil a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaoil a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

### Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

**Rialú:** *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gclóíonn leis na córais sin.*

**Eolas:** *Soláthraimid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírthe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

**Tacaíocht:** *Bimid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaoil atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaoil inbhuanaithe.*

### Ár bhFreagrachtaí

#### Ceadúnú

- Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaoil:
- saoráidí dramhaíola (m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola);
- gníomhaíochtaí tionsclaíocha ar scála mór (m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta);
- an diantalmhaíocht (m.sh. muca, éanlaith);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (OGM);
- foinsí radaíochta ianúcháin (m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha);
- áiseanna móra stórála peitрил;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

#### Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhíriú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaoil.

#### Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

### Monatóireacht, Anailís agus Tuairisciú ar an gComhshaoil

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (m.sh. tuairisciú tréimhsiúil ar staid Chomhshaoil na hÉireann agus Tuarascálacha ar Tháscairí).

### Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn

### Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainaitheint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

### Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaoil in Éirinn (m.sh. mórfhleananna forbartha).

### Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

### Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaoil ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaoil (m.sh. Timpeall an Tí, léarscáileanna radóin).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

### Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlacha a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

### Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig Aeráide, Ceadúnaithe agus Úsáide Acmhainní
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Measúnú Comhshaoil
- An Oifig um Cosaint Raideolaíoch
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.



## ENVIRONMENTAL PROTECTION AGENCY

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