

APPENDIX 3 - LITERATURE REVIEW

1. Introduction

To inform the review, a desk-top evaluation of existing studies, academic papers and other reviews carried out was undertaken in order to understand and establish current practices and current perception of SEA's efficiency and effectiveness. The literature review underpinned the development of the research method used in the review and supported the approach to evidence gathering.

2. SEA effectiveness

The objective of the SEA process is that information on significant environmental effects should be gathered and made available to decision makers as a plan, programme or strategy (PPS) is prepared. SEA should result in better environmental outcomes and enable real changes to PPSs. This review assesses how effective SEA is in delivering these objectives in the Scottish context.

The international SEA literature considers SEA effectiveness in some detail and suggests that measuring and achieving effectiveness is both complex and challenging, and clear parameters need to be established to determine what "effectiveness" is in the SEA context¹.² SEA can exert influence in plan-making directly, resulting in actual changes to PPSs. A direct effect of the SEA process is also the consideration of mitigation measures to address the significant environmental effects identified in the assessment. However, there are also a number of indirect effects that may result and indirect effects should be considered as part of the SEA effectiveness^{3, 4, 5}. Some indirect effects include:

- Better understanding of the environmental assessment process and environmental capacity; better understanding of environmental issues and relationships;
- Valuable long-term role in transforming individual, professional and organisational norm and practices in support of sustainable development;
- More transparent decision making and accountability;
- More environmental knowledge and expertise for future rounds of decision making;

¹ Sadler B, *On evaluating the success of EIA and SEA. Assessing Impact: Handbook of EIA and SEA follow-up*, Morrison-Saunders A and Arts J, London Earthscan, 2004, Pages 248-285

² Fischer TB and Gazzola P, *SEA effectiveness criteria—equally valid in all countries? The case of Italy. Environmental Impact Assessment Review*, Volume 26, Issue 4, May 2006, Pages 396-409

³ Runhaar H and Driessen PPJ, *What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. Impact Assessment and Project Appraisal*, 25 (1), March 2007, Pages 2-14

⁴ Stoeglehner G, Brown AL, Kjørnø LB, *SEA and planning: "ownership" of strategic environmental assessment by the planners is the key to its effectiveness. Impact Assessment and Project Appraisal*, 27 (2), June 2009, Pages 111-120

⁵ Jha-Thakur U, Gazzola P, Peel D, Fischer TB, Kidd S, *Effectiveness of strategic environmental assessment - the significance of learning. Impact Assessment and Project Appraisal*, Volume 27 No 2 Jun 2009, Pages 133-144

- Timely stakeholder involvement is likely to result in better awareness of plan proposals and access to information on decision-making; stakeholders may have an opportunity to influence alternatives if involved at early stages.

SEA operates in a complex political decision-making environment and the context in which SEA is undertaken can have a considerable impact on its effectiveness and how it influences decision-making⁶. There are a number of factors that will contribute to the likelihood of SEA being effective which can be described as “cross cutting” factors. These factors may contribute or hinder the success of the SEA process in influencing plan-making and include 7, 8, 9, 10, 11, 12,.

- Integration and timing of the SEA with the plan-making process;
- Successful tiering, linking different levels of assessment in a hierarchy;
- Openness of decision makers; political will to use information;
- Who leads on the SEA and ownership is key to effectiveness;
- Who undertakes SEA (consultant vs in house) and building up knowledge and capacity within the RA;
- Resources available to support the SEA process and SEA experience;
- Early and effective stakeholder involvement;
- Adequate input from the relevant experts through meetings/discussions/workshops including CAs;
- Quality of the SEA process and methodology- e.g. if the SEA is poor or too complex it is unlikely to be successful in influencing.

The Scottish SEA Review has considered both direct and indirect aspects and the influence of the cross cutting factors contributing to SEA effectiveness.

⁶ Marsden S, *Importance of context in measuring the effectiveness of strategic environmental assessment. Impact Assessment and Project Appraisal, Volume 16, No 4 December 1998, Pages 255-266*

⁷ Hildén M, Furman E, Kaljonen M, *Views on planning and expectations of SEA: the case of transport planning. Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536*

⁸ Runhaar H and Driessen PJJ, *What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. Impact Assessment and Project Appraisal, 25 (1), March 2007, Pages 2-14*

⁹ Fischer TB, *Theory and practice of strategic environmental assessment: towards a more systematic approach. London Earthscan, 2007*

¹⁰ Soederman Tand Kallio T, *Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management Volume 11, no. 1, March 2009, Pages 1-28*

¹¹ Stoeglehner G, Brown AL, Kørnøvn LB, *SEA and planning: “ownership” of strategic environmental assessment by the planners is the key to its effectiveness. Impact Assessment and Project Appraisal, 27 (2), June 2009, Pages 111-120*

¹² Jha-Thakur U, Gazzola P, Peel D, Fischer TB, Kidd S, *Effectiveness of strategic environmental assessment - the significance of learning. Impact Assessment and Project Appraisal, Volume 27, No 2, June 2009, Pages 133-144*

3. European Commission review

In September 2009, the European Commission published a report¹³ which made some broad findings on the application and effectiveness of the SEA Directive. Many of the findings related to how European Member States have transposed the Directive, but there were a number of issues arising across Europe that were relevant to this review. These include (note, those marked with an asterisk indicate a similar finding in this review):

Baseline

- Identification of the correct scale of data for the baseline [*]
- Access to or lack of good quality information for the baseline [* for some topics]
- Time consuming nature of data collection [*]
- Lack of homogenous criteria for scope and content of baseline [*]

Assessment

- Identification of the correct level of detail of the assessment [*]
- Absence of a standard set of environmental or sustainability criteria against which to assess the plan

Alternatives

- Consideration and identification of alternatives [*]

Monitoring

- Questions how effective monitoring provision actually is [*]

Relationship with EIA

- Boundaries between what constitutes a plan or programme and a project are not always clear and therefore some doubt as to whether the subject of the assessment meets the criteria of one, other or both Directives

Climate Change

- Lack of a well established method to determine impacts is seen as a key problem [*]

Effectiveness

- SEA driving an improved organisation and structure for plan-making processes [*]
- SEA particularly effective at improving consultation and transparency
- In many cases SEA changed the content of plans particularly national ones, although experiences differ [*]
- SEA generally did not change the major goals or financial allocations of plans [*] reported, but evidence suggests not as bad as reported
- Plans are gradually being modified as a consequence of the iterative improvement process driven by SEA [*]
- Specific mention of the reduced need for post project mitigation as a consequence of early consideration of environmental issues in plans
- SEA can help drive improved compliance with other environmental policies

¹³ European Commission (2009) Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the application and effectiveness of the Directive on Strategic Environmental Assessment (Directive 2001/42/EC) (COM(2009) 469 Final)

Opportunities for enhancing SEA

- Applying SEA to policies and legislation as per the SEA Protocol¹⁴ (note: this already occurs in Scotland through the extended scope of the Environmental Assessment (Scotland) Act 2005).

4. Academic reviews

A number of reviews have been undertaken across Europe in terms of evaluating the effectiveness of SEA since the implementation of the SEA Directive. These are not all based on similar contexts and do not apply the same sets of criteria. Some are based on procedures, methods and assessment techniques and how they support an effective SEA process. Others describe a similar approach to the Scottish SEA review which involves assessing direct and indirect impacts of SEA as described above and taking into account contextual aspects. One of the conclusions of the studies undertaken was that the contribution of SEA to decision-making process can differ noticeably from case study to case study. Some reviews of practice outside Europe were also considered when appropriate. The summary of the main findings of these reviews are grouped and summarised below:

EFFECTIVENESS	
Findings	References
<ul style="list-style-type: none"> • Some reviews report that the assessment had only minor effects on the adopted plans^{a, b, c, f} while others reported SEA has having an important role in the decision-making process and influencing decisions^{d, e, f, k} • Integrated SEA/Sustainability Appraisal (SA) does not appear to achieve a high level of protection of the environment, possibly due to the need to achieve other sustainability objectives^b • SEA process was more successful in the case of plans for which the assessment was in the second round of SEA^a • Clear impact of bringing environmental issues into the open even if SEA did not have direct impact on the plan^a • SEA will have a long term impact affecting planning practices and ensuring environmentally sustainable plans and programmes^{a, g, o} • Environmental issues and sustainable development will be considered in more depth due to lessons learned in the SEA process for future plans^{a, b, g} • SEA contributed to better structuring and coordination of the planning process; but some views that SEA has only a limited potential as a planning tool and is seen as a burden^{a, c} 	<p>^a Soedermam T, Kallio T, <i>Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, <i>Sustainability-focused impact assessment: English experiences. Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^c Stoeglehner G, <i>Enhancing SEA effectiveness: lessons learnt from Austrian experiences in spatial planning. Impact Assessment and Project Appraisal, 28 (3), September 2010, Pages 217-231</i></p> <p>^d Runhaar H and Driessen PPJ, <i>What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. Impact Assessment and Project Appraisal, 25 (1), March 2007, Pages 2-14</i></p> <p>^e van Buuren A and Nooteboom S, <i>Evaluating strategic environmental assessment in The Netherlands: content, process and procedure as indissoluble criteria for effectiveness. Impact Assessment and Project Appraisal, 27 (2), June 2009, Pages 145-154</i></p> <p>^f Hildén M, Furman E, Kaljonen M, <i>Views on</i></p>

¹⁴ Protocol on Strategic Environmental Assessment to the UNECE Convention on EIA in Transboundary Context (Kiev 2003). This was approved by the EU in decision 2008/871/EC OJ L 308, 19.11.08, p33.

<ul style="list-style-type: none"> • SEA more effective when undertaken early in the decision-making process ^{e, f} • SEA more effective when close integration between SEA, planning and decision makers ^{e, f} • Importance of the decision making context and openness for understanding the impact of SEA ^{d, f} • Impact of SEA was greater when SEA recommendations supported the values and interests of the main decision-makers ^d • SEAs undertaken in house can promote full integration of SEA and plan-making processes and build capacity on environmental issues within RAs ^{a, g}; but external collaborations with consultancies viewed as valuable in providing diverse inputs and experiences ^g • Lack of resources was identified as a barrier for a good quality assessment ^a • Integrated SEA/SA changed plan-making to be more balanced ^b • Knowledge that an SEA or SEA/SA are required ensured plan makers considered environmental and sustainability issues from the start resulting in more environmentally friendly decisions ^d and sustainable plans ^b • Lack of obligation on planners to act on the SEA/SA findings identified as a weakness in the SA/SEA process ^b • SEA or SEA/SA as a key piece of evidence for planning authorities to explain decisions made ^k • SEA or SEA/SA approaches and techniques can promote knowledge brokerage and strengthen the science-policy link ^l 	<p><i>planning and expectations of SEA: the case of transport planning. Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536</i></p> <p>^gJha-Thakur U, Gazzola P, Pee D, Fischer TB, Kidd S, Effectiveness of strategic environmental assessment - the significance of learning. <i>Impact Assessment and Project Appraisal, Volume 27, No 2 Jun 2009, Pages 133-144</i></p> <p>^k Burdett T, Application of the SEA Directive in the UK: is it having an effect? IAIA Conference Proceedings, 2008</p> <p>^l Sheate, WR and Partidário MR, Strategic approaches and assessment techniques: potential for knowledge brokerage towards sustainability. <i>Environmental Impact Assessment Review, Volume 30, April 2010, Pages 278-288</i></p> <p>^oFry C, Towards the next wave of SEA. <i>The Environmentalist, May 2007</i></p>
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SIGNIFICANT ENVIRONMENTAL EFFECTS

Findings	References
<p>Significant environmental effects</p> <ul style="list-style-type: none"> • Recognition of significant impacts and readiness to use SEA as a planning tool to integrate environmental considerations into plan-making ^a • Assessments did not always provide sufficient information for decision-making due to a lack of justification for the assessment, assessment undertaken at too high level or too many uncertainties ^a • Integrated SEAs/Sustainability Appraisals were likely to underestimate negative environmental impacts ^b • Lack of assessment of climatic factors, health effects and difficulties in assessment biodiversity quantitatively ^f • SEAs consider health effects mainly in relation to natural and physical factors affecting health while 	<p>^a Soederman T and Kallio T, Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. <i>Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, Sustainability-focused impact assessment: English experiences. <i>Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^f Hildén M, Furman E, Kaljonen M, Views on planning and expectations of SEA: the case of transport planning. <i>Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536</i></p>

behavioural and social aspects only considered occasionally ^m	^m Fischer T B, Matuzzi M, Nowacki J, <i>The consideration of health in strategic environmental assessment (SEA), Environmental Impact Assessment Review, Volume 30, Issue 3, April 2010, Pages 200-210</i>
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CUMULATIVE EFFECTS	
Findings	References
<p>Cumulative effects</p> <ul style="list-style-type: none"> • Difficulties in evaluation of the cumulative impacts of the plans ^{a, n} • Integrated SEAs/Sustainability Appraisals provided a limited analysis of cumulative impacts ^b • Assessment of cumulative effects is underdeveloped and further methodological guidance for practitioners is necessary ^c • Assessment of secondary, cumulative and synergistic effects raises problems of scientific knowledge and certainty ^k • Difficulties in establishing the nature and definition of cumulative effects ⁿ • Difficulties in aggregating effects and interpreting the significance of cumulative effects and the consideration of multi-scale approaches; lack of consideration of ecosystems perspective ⁿ • Need to identify ecosystem limits, targets and indicators ⁿ • Lack of “good-practice” examples of cumulative environmental assessments ⁿ • Need to use effective tiering so the cumulative effects assessment at strategic level can provide context for project-based assessments ⁿ 	<p>^a Soederman T and Kallio T, <i>Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, <i>Sustainability-focused impact assessment: English experiences. Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^c Stoeglehner G, <i>Enhancing SEA effectiveness: lessons learnt from Austrian experiences in spatial planning. Impact Assessment and Project Appraisal, Volume 28(3), September 2010, Pages 217-231</i></p> <p>^k Burdett, T, <i>Application of the SEA Directive in the UK: is it having an effect? IAIA Conference Proceedings, 2008</i></p> <p>ⁿ Gunn J and Noble BF, <i>Conceptual and methodological challenges to integrating SEA and cumulative effects assessment, Environmental Impact Assessment Review, Volume 31, Issue 2, March 2011, Pages 154-160</i></p>

PUBLIC PARTICIPATION AND STAKEHOLDER INVOLVEMENT	
Findings	References
<p>Public participation and stakeholder involvement</p> <ul style="list-style-type: none"> • SEA was used to structure stakeholder involvement and stakeholder feedback was used to develop alternatives; SEA played an important role in engaging affected groups in some cases but in other cases SEA did not facilitate an inclusive collaborative process ^e • The interactive SEA process allowed stakeholders to express their concerns ^d • Public participation and consultation had an effect on the assessment when stakeholder involvement was promoted at the early stages of the plan preparation 	<p>^a Soederman, T and Kallio, T, <i>Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^d Runhaar H and Driessen PPJ, <i>What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. Impact Assessment and Project Appraisal, 25 (1), March 2007, Pages 2-14</i></p> <p>^e van Buuren A and Nooteboom S, <i>Evaluating strategic environmental assessment in The</i></p>

<p>and assessment, although a low level of participation was recorded^a</p> <ul style="list-style-type: none"> • SEA resulted in a greater awareness of the need for public participation amongst RAs^a • SEA resulted in greater cooperation between authorities^a • Formal stakeholder participation contributed to transparency as part of the SEA process^a • Views that environmental authorities should bring their expertise providing baseline data, analysing impacts and carrying out monitoring^a • SEA enhanced awareness of environmental issues among all concerned and promoted a partnership approach to the protection of the environment^j • SEA consultation as a key requirement helping to ensure a consistent, fully informed and transparent process for plan making^k • Knowledge brokerage promoted through SEA or SEA/SA approaches and techniques has the potential to help build capacity amongst stakeholders and deliver better capacity building^l • SEA is helping to open up plan making to a wider audience through consultation and participation^o 	<p><i>Netherlands: content, process and procedure as indissoluble criteria for effectiveness. Impact Assessment and Project Appraisal, 27 (2), June 2009, Pages 145-154</i></p> <p>^j <i>D'Auria L and Cinneide MO, Integrating strategic environmental assessment into the review process of a development plan in Ireland. Impact Assessment and Project Appraisal, 27 (4), December 2009, Pages 309-319</i></p> <p>^k <i>Burdett, T, Application of the SEA Directive in the UK: is it having an effect? IAIA Conference Proceedings, 2008</i></p> <p>^l <i>Sheate W R and Partidário M R, Strategic approaches and assessment techniques: potential for knowledge brokerage towards sustainability., Environmental Impact Assessment Review, Volume 30, April 2010, Pages 278-288</i></p> <p>^o <i>Fry C, Towards the next wave of SEA. The Environmentalist, May 2007</i></p>
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BASELINE AND ASSESSMENT	
Findings	References
<p>Baseline</p> <ul style="list-style-type: none"> • Inadequacies in the definition of relevant environmental problems^a • No clear connection between the baseline gathered and the prediction of impacts^a • Collection of information at an appropriate scale^k • Collection of appropriate baseline data for health is an important starting point for an effective health inclusive SEA^m • SEA is helping authorities understand environmental information and improving evidence base^o <p>Environmental objectives and targets</p> <ul style="list-style-type: none"> • The environmental objectives developed in Environmental Reports generally reflected best practice^h • There was a general lack of linkage between SEA objectives and environmental targets with difficulties in establishing thresholds/limits and time frames^h <p>Assessment Method</p> <ul style="list-style-type: none"> • Methodologies mostly involved professional judgement and knowledge and used assessment matrices while 	<p>^a <i>Soederman T, Kallio T, Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b <i>Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, Sustainability-focused impact assessment: English experiences. Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^f <i>Hildén M, Furman E, Kaljonen M, Views on planning and expectations of SEA: the case of transport planning. Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536</i></p> <p>^h <i>Donnelly A, Prendergast T, Hanusch M, Examining Quality of environmental objectives, targets and indicators in environmental reports prepared for strategic environmental assessment. Journal of Environmental Assessment Policy and Management, Volume 10, no. 4, December 2008, Pages 381-401</i></p> <p>^k <i>Burdett, T, Application of the SEA Directive in the UK: is it having an effect? IAIA Conference</i></p>

<p>modelling, scenario building or GIS only used rarely ^{a, k}</p> <ul style="list-style-type: none"> • SEA provides a systematic consideration of environmental issues ^a • SEA seen as a flexible planning and decision-making framework ^a • Lack of quantification and modelling; no robust testing against environmental standards and limits ^b • Excessive complexity in matrices comparing options against SEA objectives ^k • Tailoring the assessment to each particular PPS may contribute to SEA effectiveness ^f • Avoiding duplication between different levels in hierarchies ^k • A combination of quantitative as well as qualitative assessments is likely to enhance the consideration of health in SEA (integration with Health Impact Assessments) ^m • “Long-winded” SEA /SA documents and a wealth of information gathered but not well targeted at the really significant decisions ^o • Scoping stage not being used to focus on significant environmental effects ^o 	<p><i>Proceedings, 2008</i></p> <p>^mFischer T B, Matuzzi M, Nowacki J, <i>The consideration of health in strategic environmental assessment (SEA), Environmental Impact Assessment Review, Volume 30, Issue 3, April 2010, Pages 200-210</i></p> <p>^oFry C, <i>Towards the next wave of SEA. The Environmentalist, May 2007</i></p>
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CONSIDERATION OF ALTERNATIVES

Findings	References
<p>Consideration of alternatives</p> <ul style="list-style-type: none"> • General lack of consideration of meaningful alternatives ^a • SEA assisted in developing the most feasible and valuable alternatives ^e • Effective SEA tiering helps to focus on alternatives ^f • SEA is contributing to “pushing boundaries” in relation to strategic alternatives ^o 	<p>^a Soederman T and Kallio T, <i>Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^e van Buuren and, Nooteboom S, <i>Evaluating strategic environmental assessment in The Netherlands: content, process and procedure as indissoluble criteria for effectiveness. Impact Assessment and Project Appraisal, 27 (2), June 2009, Pages 145-154</i></p> <p>^fHildén M, Furman E, Kaljonen M, <i>Views on planning and expectations of SEA: the case of transport planning. Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536</i></p> <p>^oFry C, <i>Towards the next wave of SEA. The Environmentalist, May 2007</i></p>

MITIGATION, MONITORING AND POST ADOPTION

Findings	References
<p>Mitigation</p> <ul style="list-style-type: none"> • Mitigation not well defined in the Environmental Reports 	<p>^a Soederman T and Kallio T, <i>Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. Journal of</i></p>

<p>and uncertainties in implementation ^a</p> <ul style="list-style-type: none"> • Integrated SEAs/Sustainability Appraisals made assumptions about the effectiveness of yet unidentified mitigation measures during the appraisal ^b • Integrated SEAs/Sustainability Appraisals proposed a wide range of mitigation measures that reduce the plan's environmental impacts ^b <p>Monitoring and post adoption</p> <ul style="list-style-type: none"> • Lack of information and follow up on monitoring ^{a, o} • Post adoption statements did not provide a transparent view on how the assessment had influenced the planning process and its outcomes ^a • The environmental indicators proposed in Environmental Reports were generally adequate ^h • Tendency to have too many indicators which may result in resourcing issues for the monitoring stages ^h • Availability of data to support indicators proposed not always clear and responsibility for data collection not always identified ^h • Lack of awareness of existing environmental monitoring data and activities, leading to duplication of effort ^k • There was a general lack of linkage between SEA objectives, environmental targets and indicators ^h 	<p><i>Environmental Assessment Policy and Management, Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, Sustainability-focused impact assessment: English experiences. <i>Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^h Donnelly A, Prendergast T, Hanusch M, Examining Quality of environmental objectives, targets and indicators in environmental reports prepared for strategic environmental assessment. <i>Journal of Environmental Assessment Policy and Management, Volume 10, no. 4, December 2008, Pages 381-401</i></p> <p>^k Burdett, T, Application of the SEA Directive in the UK: is it having an effect? IAIA Conference Proceedings, 2008</p> <p>^o Fry C, Towards the next wave of SEA. <i>The Environmentalist, May 2007</i></p>
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OPPORTUNITIES FOR ENHANCING SEA

Findings	References
<p>Opportunities for enhancing SEA</p> <ul style="list-style-type: none"> • Focussing on significant environmental effects & strengthening links between planning, participation and decision-making ^{a, f, m} • Raise awareness of SEA as a flexible tool that adds value to planning and makes decision-making more transparent ^a • SEA to better communicate positive environmental effects of the plan ^a • Requirement for SA/SEAs to assess plan's impacts in terms of environmental limits and identification of environmental limits or capacities for each Local Authority ^b • Standardised baseline information and better definition of environmental thresholds ⁱ • Requirement for SA/SEAs to examine in detail the magnitude and likelihood of implementation of mitigation measures ^b • Mitigation and compensatory measures identified as a result of SEA should be made mandatory and SEA outputs should be legally enforced ^c 	<p>^a Soederman T and Kallio, T, Strategic Environmental Assessment in Finland: An evaluation of the SEA Act application. <i>Journal of Environmental Assessment Policy and Management Volume 11, no. 1, March 2009, Pages 1-28</i></p> <p>^b Therivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D and Yamane M, Sustainability-focused impact assessment: English experiences. <i>Impact Assessment and Project Appraisal, Volume 27, No. 2, June 2009, Pages 155-168</i></p> <p>^c Stoeglehner G, Enhancing SEA effectiveness: lessons learnt from Austrian experiences in spatial planning. <i>Impact Assessment and Project Appraisal, Volume 28(3), September 2010, Pages 217-231</i></p> <p>^f Hildén M, Furman E, Kaljonen M, Views on planning and expectations of SEA: the case of transport planning. <i>Environmental Impact Assessment Review, Volume 24, Issue 5, July 2004, Pages 519-536</i></p> <p>^g Jha-Thakur U, Gazzola P, Peel D, Fischer TB, Kidd S, Effectiveness of strategic environmental</p>

<ul style="list-style-type: none"> • Creating mechanisms to retain organisational knowledge/experience on SEA to building up capacity within RAs ^g • Transfer of knowledge and expertise across sectors and cross sector working ^o • Introduce more structured quality control measures, e.g. independent body to oversee SEA outputs ^{i, m} • The involvement of health professionals and stakeholders for effective health inclusive SEAs and the release of specific guidance on health ^m; coordination/integration with other assessment tools ^{m, o} • Implementation of the required monitoring arrangements to inform interim remedial action and inform and “plug gaps” for the next plan cycle ^o • Better consideration of long term indirect and cumulative effects and national and global challenges like climate change ^o 	<p>assessment - the significance of learning. <i>Impact Assessment and Project Appraisal</i>, Volume 27, No 2, June 2009, Pages 133-144</p> <p>ⁱ Gazzola P, What appears to make SEA effective in different planning systems. <i>Journal of Environmental Assessment Policy and Management</i>, Volume 10, No 1, March 2008, Pages 1-24</p> <p>^mFischer T B, Matuzzi M, Nowacki J, The consideration of health in strategic environmental assessment (SEA), <i>Environmental Impact Assessment Review</i>, Volume 30, Issue 3, April 2010, Pages 200-210</p> <p>^oFry C, Towards the next wave of SEA. <i>The Environmentalist</i>, May 2007</p>
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RELATIONSHIP WITH EIA	
Findings	References
<p>Relationship with EIA</p> <ul style="list-style-type: none"> • No evidence of SEAs making project EIAs redundant in subsequent decision making in terms of stakeholder “buy-in” to decisions ^d • Wide participation in the SEA process will ensure SEA findings inform EIA level ^f 	<p>^d Runhaar H and Driessen PPJ, What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. <i>Impact Assessment and Project Appraisal</i>, 25 (1), March 2007, Pages 2-14</p> <p>^fHildén M, Furman E, Kaljonen M, Views on planning and expectations of SEA: the case of transport planning. <i>Environmental Impact Assessment Review</i>, Volume 24, Issue 5, July 2004, Pages 519-536</p>

Limitations identified

SEA as an iterative process

Strategic environmental assessment is an ongoing iterative process and is part of an ongoing decision cycle¹⁵. When the SEA is carried out as an integral part of the development of the strategic action it may be difficult to distinguish the changes made as a result of the assessment from those made as a result of the normal plan-making process, i.e. the iterative process is not always documented ^{16,17}.

¹⁵ Hildén M, Furman E, Kaljonen M, Views on planning and expectations of SEA: the case of transport planning. *Environmental Impact Assessment Review*, Volume 24, Issue 5, July 2004, Pages 519-536

¹⁶ Therivel R and Minas P, Measuring SEA effectiveness: Ensuring effective sustainability appraisal. *Impact Assessment and Project Appraisal*, Volume 20, No 2, June 2002, Pages 81-91

¹⁷ Retief F, A performance evaluation of strategic environmental assessment (SEA) processes within the South African context. *Environmental Impact Assessment Review*, Volume 27, Issue 1, January 2007, Pages 84-100

Different planning systems

What appears to make an SEA effective and the definition of SEA effectiveness may vary in different planning systems and different countries' decision-making culture will affect the effectiveness of SEA¹⁸. The benefits that the overall SEA process can achieve are likely to vary in different planning systems and will depend on the values, routines, priorities, attitudes and traditions of a particular planning framework in which SEA is developed¹⁹.

Existing integration of environmental issues

SEA effectiveness in the European or wider context depends on how well environmental issues are already considered, the starting point on which the SEA is undertaken, i.e. if environmental issues are already highly considered by planners²⁰. For planning systems where environmental considerations are already well integrated, SEA is unlikely to result in a significant increase in environmental protection. In this case SEA will still achieve the objectives of improving transparency and providing an audit trail in decision-making²¹.

Long-term effectiveness

Some of the indirect effects described above may be difficult to measure objectively as, for example changes to established planning practices and decision-making cultures are likely to take some time and this indirect effectiveness of SEA may only be realised in the long-term²².

5. Department of Communities and Local Government (DCLG) review

In March 2010, the UK Department of Communities and Local Government in the United Kingdom published a report²³ which sets out the research findings and recommendations of a study undertaken by Scott Wilson, on improving the efficiency and effectiveness with which SEA and Sustainability Appraisal (SA) are practiced in spatial planning. The report refers to the combined requirements of SA/SEA and assesses the efficiency, primarily in relation to the resources used in the SA/SEA process, and effectiveness in terms of the degree to which the SA/SEA process influences the content of the plan and facilitates public engagement. The study investigated a number of case studies and a number of stakeholder interviews were undertaken. The main findings are summarised below (note, those marked with an asterisk indicate a similar finding in this review).

¹⁸ Fischer TB and Gazzola P, SEA effectiveness criteria—equally valid in all countries? The case of Italy. *Environmental Impact Assessment Review*, Volume 26, Issue 4, May 2006, Pages 396-409

¹⁹ Gazzola P, What Appears to Make Sea Effective in Different Planning Systems. *Journal of Environmental Assessment Policy and Management*, Volume 10, no. 1, March 2008, Pages 1-24

²⁰ Jha-Thakur U, Gazzola P, Peel D, Fischer TB, Kidd S, Effectiveness of strategic environmental assessment - the significance of learning. *Impact Assessment and Project Appraisal*, Volume 27, No 2, Jun 2009, Pages 133-144

²¹ Stoeglehner G, Enhancing SEA effectiveness: lessons learnt from Austrian experiences in spatial planning. *Impact Assessment and Project Appraisal*, Volume 28(3), September 2010, Pages 217-231

²² Fischer TB, *Theory and practice of strategic environmental assessment: towards a more systematic approach*. London Earthscan, 2007

²³ Department of Communities and Local Government report "Towards a more efficient and effective use of Strategic Environmental Assessment and Sustainability Appraisal in spatial planning", Scott Wilson, London 2010

Scoping and evidence base

- Views that scoping stage does not focus on key issues and poor confidence in scoping topics out; however case studies highlighted that the scoping stage was effective in identifying the key issues; flexibility to scope topics later in the process would be beneficial [*]
- Methods and appropriate level of detail should be tailored to the plan [*]
- Scoping was considered the most time consuming and labour intensive stage of SA/SEA

Alternatives

- SA/SEA has led to the development and articulation of alternatives [*]
- Case studies revealed some alternatives were constrained by higher level plans in the hierarchy [*]
- Some views that SA/SEA process could promote the development of unrealistic alternatives

Assessment and reporting

- Use of SEA objectives affords clarity and supports a more transparent and systematic assessment; too many or poorly worded objectives or lengthy matrices can affect the quality of assessment [*]
- SA reports too complex and difficult to follow; importance of a good non technical summary [*]
- In-house collaboration through close and informal liaison between the SA/SEA officer and the plan-makers was very important; benefits also from workshop approaches [*]

Consultation

- SA/SEA provides opportunities for early engagement, but in practice difficult to engage public; views that SA/SEA is not an effective tool for engagement [*]
- Consultation more beneficial at early stages in the process (scoping stage); workshops useful approach [*]
- Engage decision-makers throughout the process [*]

Efficiency and effectiveness

- Early stages of implementation and process requires time to embed itself and be fully integrated with the planning process
- SA/SEA should remain strategic but a certain amount of detail is also necessary
- SA/SEA should not lengthen the time it takes to prepare the plan as long as it is started early enough but it increases the resources needed [*]
- Adequate resources including a SA “Champion”, high level buy-in including councillors and chief executives, and joint working between authorities will promote efficiency and effectiveness [*]
- SA/SEA useful and beneficial process but it could be improved and be more integrated with the plan-making processes; integration with other assessments also raised [*]
- SEA/SEA challenges complacency within the planning process; enhanced transparency in the decision-making process major benefit [*]

- SA/SEA too procedural and too much focus on legal compliance and the fear of legal challenge
- SA/SEA often perceived as having a minor influence on the plan, however the process itself was seen as more important than the final output (Environmental Report) in terms of influencing plan making; changes are often difficult to measure as they are indirect and informal [*]
- The measure of effectiveness of SA/SEA should relate to more sustainable plans and should not be about the number of changes to a plan; however differences of opinion as to what makes a plan more or less sustainable
- More guidance required on aspects of the process (e.g. alternatives, cumulative impacts, consultation); but also views that the existing guidance is too rigid and exchanging best practice through workshops, conferences and case-studies would provide a better approach [*]
- Poor level of involvement, understanding and relationship between SEA/SEA practitioners and plan-makers; need to better integrate the appraisal and plan-making processes
- SA/SEA can play a key role in bringing the environment to the fore at the strategic level and highlighting trade-offs
- Better planning outcomes achieved when the SA/SEA was undertaken in-house

Opportunities for enhancing SA/SEA

- Closer links between plan-making and SA/SEA in the early stages [*]
- Better scoping and a more spatial and useful evidence base [*]
- A more baseline-led approach to SA/SEA [*]
- Well thought out and clearly articulated alternatives [*]
- More focussed, inclusive assessment (other assessments incorporated within SEA with the exception of HRA)
- Realistic take on deliverability with greater emphasis on evaluating the actual effects of the plan through monitoring
- Recommendations of SA/SEA explicitly taken into account [*]
- Less complex reporting to allow accessibility to SA/SEA findings [*]
- Further innovation in stakeholder engagement [*]
- A greater emphasis on environmental limits.

6. Scottish Government Pathfinder project

The Scottish Government's Pathfinder Project was a three year study into SEA activity, within a small group of volunteers, with the aim of identifying early good practice and practical steps to facilitate the implementation of its findings and recommendations²⁴. A report was published in November 2010 making recommendations for SEA practice in Scotland and outlining an action plan in response to the findings of the study. It is important to note that this study represents very early practice and some of the findings in this study may have been superseded or addressed by practitioners increasing confidence and

²⁴ *Strategic Environmental Assessment Pathfinder Project: STAGE 1 AND 2- COMBINED SUMMARY REPORT, Scottish Government, November 2010*

experience, development of best practice, new guidance and alterations to procedures. The key findings arising from the case studies are outline below (note, those marked with an asterisk indicate a similar finding in this review):

Efficiency and effectiveness

- Scope to improve integration and the iterative relationship between SEA and PPS preparation [*]
- SEA was not realising its full potential to actively influence planning and decision-making [*]
- SEA undertaken in house was more resource constrained in terms of appropriate skills, experience and training opportunities; SEA undertaken by consultants resulted in a lack of full integration of the SEA process into decision-making

Scoping

- Scoping stage was found to be resource intensive and some case studies experienced difficulties
- Limited consideration of alternatives and aspects of the methodology [*]
- Positive use of internally and centrally provided guidance [*]

Stakeholder engagement and communications

- Difficulties in focusing reporting on the key aspects of the SEA and decision-making process [*]
- Lengthy and technical reporting can undermine efforts to engage the public in the SEA process; there was limited public participation; usefulness of public engagement questioned [*]
- Early participation and informal liaison with Consultation Authorities was recommended [*]

Assessment methods

- Lack of confidence and experience to use creative approaches to SEA
- Existing guidance was rigidly applied, incorrectly regarded as a requirement to ensure legal compliance (SEA toolkit and reporting templates)
- Limited consideration of the assessment of alternatives [*]

Mitigation and monitoring

- Insufficient assurance that mitigation and/or enhancement measures would be implemented [*]
- Unclear whether SEA monitoring would be carried out; lack of detail or absence of a coherent framework to ensure implementation but also a possible issue of timing of the Pathfinder research

Opportunities for enhancing SEA

- Earlier, more open and informal participation and engagement with the Consultation Authorities [*]
- Growing confidence of Responsible Authorities likely to stimulate more creative approaches

- Use of non-technical summaries and innovative approaches to improve stakeholder engagement and communications
- Improve integration of SEA with the PPS [*]

7. Other studies

A review of some key Scottish Environmental legislation, including the Environmental Assessment (Scotland) Act 2005, was commissioned by the Scottish Environment Link to ascertain whether the objectives and aspirations of the legislation are being delivered in practice²⁵. The key issues identified from this review are outline below:

- Environmental assessment of higher level policy documents which would not previously have undergone such an assessment
- Contents of some plans and strategies influenced by the SEA, but not yet evidence that it has resulted in different environmental outcomes
- SEA has not caused a “seismic shift” in decision-making
- SEA still undertaken as a separate process rather than integral to the process of plan or policy development
- Inconsistency in determining which plans and policies are subjected to SEA
- Focus on mitigation of significant impacts but rare consideration of enhancement

Opportunities for enhancing SEA

- More flexibility in SEA guidance tailored at different levels, e.g. strategic policy documents vs. more detailed plans
- Effective feedback mechanism to track environmental impacts and success of mitigation measures
- Take into account resilience of ecosystems and better consideration of cumulative impacts
- Report on evidence of outcomes as a reporting mechanism for the Act.

8. Existing guidance and advice

The Scottish Government and the Statutory Consultation Authorities have issued guidance documents to aid the implementation of SEA in Scotland. The main guidance available at www.scotland.gov.uk/Topics/Environment/SustainableDevelopment/14587/Guidance is listed below:

- SEA Toolkit- comprehensive guidance to Responsible Authorities for practitioners which offers guidance on the content and structure of the SEA documentation; it also includes SEA templates
- Basic introduction to SEA- background information on the fundamental SEA procedures
- Guidance on consideration of Climatic Factors within SEA aimed at SEA practitioners undertaking assessments in Scotland
- Planning Advice Note 1/2010 Strategic Environmental Assessment of Development Plans- outlines the principles of SEA within the planning context and provides advice specifically aimed at development plan preparation

²⁵ *Scotland's Environmental Laws since Devolution- from rhetoric to reality, prepared by Tamsin Bailey for the Scottish Environment Link, December 2010*

- Strategic Environmental Assessment Guidance on Air, Soil & Water- provides detailed practical guidance for SEA practitioners in Scotland and Northern Ireland on how to take into account the potential significant environmental effects of implementing a PPS on the SEA topics of air, soil and water

The Department of Communities and Local Government has also published UK guidance on SEA: A Practical Guide to the Strategic Environmental Assessment Directive available at: www.communities.gov.uk/publications/planningandbuilding/practicalguidesea .

9. Developing a casework assessment method

The evaluation of existing literature undertaken at the early stages of the review project underpinned the development of the research methodology used to measure the efficiency and effectiveness of the SEA process. It was clear from the examples provided in the existing literature that a number of research methodologies were required to fully deliver the objectives of the SEA review. These are briefly described below with the full methodology described in appendices 4, 5 and 6.

Casework analysis-A number of case studies were analysed to determine the direct effects of the SEA process in changing and influencing the development of PPS.

To complement the findings of the SEA casework analysis, **on-line surveys and stakeholder workshops** were undertaken to seek SEA practitioners and decision-makers' views on some of the indirect effect of the SEA process and gather information on some of the "cross-cutting" issues described above. The views of stakeholders were also sought as one of the objectives of the SEA process is to offer an opportunity for stakeholders to influence the decision making process.

A number of procedures, methods and assessment techniques also support an effective SEA process²⁶ and we have sought the views of SEA practitioners on these procedural aspects through the on-line survey and workshops. Equally the survey covered aspects of SEA efficiency in terms of cost, time spent undertaking SEA and how useful practitioners find the existing guidance and advice.

Another key feature of the SEA process in Scotland is the involvement at early stages of the Statutory Consultation Authorities (SEPA, SNH and HS) to provide advice on the SEA process from their respective areas of expertise. Appropriate support mechanisms for RAs, including the support from advisory bodies are considered of essential importance to undertaking an effective and efficient SEA²⁷. The review also explores the effectiveness of the CAs input into the process, how the CAs comments are taken into account during the different SEA stages and how their input is perceived amongst Responsible Authorities.

Building on these multiple sources of evidence, we were able to complement the findings of the case study analysis particularly with regards to establishing the influence of the context

²⁶ Fischer TB, *Theory and practice of strategic environmental assessment: towards a more systematic approach*. London Earthscan, 2007

²⁷ Fischer TB, *Theory and practice of strategic environmental assessment: towards a more systematic approach*. London Earthscan, 2007

of the SEA on decision making and cross cutting issues, as well as evaluating some indirect effects of the SEA process that the analysis of case studies alone would be unable to reveal.