

Strategic Environmental Assessment and Regional Transport Planning: Opportunities in New Zealand

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Abstract

Recent changes to transport legislation in New Zealand have meant that a much greater consideration of the environmental consequences of transport decisions is now required. The concept of considering the environmental effects of individual transport projects is well established under the assessment of effects on the environment (AEE) provisions of the Resource Management Act 1991 (RMA). More recently, amendments to land transport legislation have indicated that the environmental effects of transport policies and plans should also be undertaken. The application of strategic environmental assessment (SEA) to policies, plans or programmes helps to inform the decision-making and implementation process at a strategic level. SEA is widely used internationally, particularly in the European Union where it is mandated, to assess the environmental and sustainability implications of policies, plans or programmes. SEA is not formally practiced in New Zealand. This paper reports on research that investigated the possible application of SEA to regional transport planning in New Zealand. It presents the results of a case study conducted in the Bay of Plenty (BOP) region.

The paper begins with a brief introduction to the principles and elements of best-practice SEA, including an example of its application in the United Kingdom (UK). The BOP case study is then presented which critically evaluates the consideration of sustainability in current regional transport planning practice before considering whether the more direct use of SEA would aid current decision-making processes. Ultimately, it was found that the use of SEA would be likely to improve the consideration of environmental sustainability in regional transport decision-making in New Zealand. The paper concludes by outlining where changes to the current decision-making process could be made to improve the consideration of environmental sustainability and ultimately lead to more sustainable transport solutions.

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1. Introduction

A robust consideration of the consequences of decisions taken at all governance levels is a vital component of a just and democratic society. Similarly, it is also a vital requisite for making genuinely sustainable decisions. In New Zealand, and internationally, there has been an ever-increasing push to have environmental and social consequences considered more thoroughly in decision-making processes. Traditionally, decision making has been heavily dominated by economic considerations, often through the use of tools such as costs-benefit analysis. Although a greater consideration of the environmental and social consequences of decisions is widely recognised as being beneficial, its practical realisation is problematic. Reasons for this are complex, but include factors such as the large temporal and spatial scale of many environmental and social aspects as well as their often intangible nature. In New Zealand, at the level of individual projects, consideration of these aspects takes the form of environmental impact assessment (EIA) procedures within the resource consent and designation processes under the Resource Management Act 1991 (RMA). At higher decision making levels, such as the development of policies and plans, the requirement to consider the environmental impacts of decisions is much more ad hoc.

One area where there is a relatively strong mandate for a higher (strategic) level consideration of sustainability is in the development of regional transport policy under the Land Transportation Management Act 2003 (LTMA). This mandate includes ‘environmental sustainability’ as a core transport objective and includes a requirement to ‘avoid, to the extent reasonable, adverse effects on the environment’. Internationally, one of the main tools used to achieve similar transport and sustainability goals is strategic environmental assessment (SEA). The use of SEA sees the environmental and sustainability implications of possible policy and plan options being formally assessed as transport plans and policies are being developed.

Given this increased mandate for environmental impacts and sustainability issues to be considered in transport planning in New Zealand, this paper explores the possible use of SEA in this country to help fulfil this mandate. Specifically, the objectives of this research were:

- § To examine the degree to which sustainability is currently incorporated into regional transport planning; and
- § To explore whether the more direct application of SEA could assist in improving the incorporation of sustainability into regional transport planning.

The paper begins with a brief introduction to SEA which includes a United Kingdom (UK) example. The research approach and findings of the BOP case study are presented in section 3. This involved an examination of the consideration of sustainability in the current regional transport planning process and then an exploration of how this could be improved using SEA. The final section concludes with comments about the findings and suggests some further areas where SEA could be of benefit.

2. Strategic Environmental Assessment: An Overview

Strategic environmental assessment is a process used to systematically assess the environmental effects and consequences of a proposed strategic action, i.e. a policy, plan or programme. The ultimate purpose of SEA is to provide planners and decision makers with high quality, reliable information about the likely environmental effects and consequences of

a proposed strategic action. In this regard, SEA is primarily a predictive tool, as are all forms of impact assessment. SEA was developed, in part, due to limitations with project-level EIA. In particular, longer term and cumulative impacts are often not well handled by EIA. More recently, the concept of sustainability has provided a further impetus for the application of SEA.

SEA is often applied to the transport sector in many parts of the world, including in the European Union (EU), where it has been mandated since July 2004. This frequent application to the transport sector is because many of the environmental impacts of transport are indirect or cumulative (Dom, 1999). One of the most frequently cited benefits of SEA is that it can help to facilitate the consideration of environmental impacts earlier in the decision-making process than would have been achieved otherwise. The significance of the environmental impacts of transport has been widely recognised, hence the considerable interest in SEA in relation to the sector (Dom, 1999).

The application of SEA is based upon a number of core principles. In general terms, an SEA process should:

- § Fit the purpose and be customised for application at the policy level or at the level of plans and programmes;
- § Have integrity, so that it is applied in accordance with the objectives and provisions established for it; and be effective in meeting those objectives;
- § Be focused on delivering information necessary to the decisions to be made, and address the significant and key issues;
- § Be driven by sustainable development principles (taking into account environmental, social and economic considerations);
- § Be integrated with parallel analyses of economic and social dimensions and issues, and with other planning and assessment instruments and processes;
- § Relate to project EIA where appropriate – perhaps through tiering mechanisms;
- § Be transparent and open;
- § Be practical, easy to implement, oriented to problem-solving, and cost-effective;
- § Introduce new perspectives and creativity (it should “provide bonuses, not be a burden”); and
- § Be a learning process (thus it is essential to start ‘doing SEA’ to gain experience) (Dalal-Clayton and Sadler, 2005)

Table 2.1 outlines the key procedural characteristics of the SEA process.

Table 2.1: Procedural characteristics of SEA

Phase	Characteristics
<i>Screening</i>	<ul style="list-style-type: none"> • Use of SEA for a proposed strategic action needs to be justified.
<i>Baseline Evaluation</i>	<ul style="list-style-type: none"> • The current environment needs to be understood in sufficient detail, particularly for subsequent impact prediction and monitoring stages to be undertaken. • The nature of this evaluation is likely to be both quantitative and qualitative and should consider environmental, social and economic aspects.
<i>Alternatives and Scenarios</i>	<ul style="list-style-type: none"> • Early in the development of a proposed strategic action, the various possible alternatives should be outlined. The use of scenarios may also be appropriate.
<i>Scoping</i>	<ul style="list-style-type: none"> • The setting of the boundaries and foci for the subsequent prediction of impacts needs to be clear and systematic. • The approach used should involve all relevant stakeholders.
<i>Forecasting of Impacts</i>	<ul style="list-style-type: none"> • Impact prediction should be guided by the scoping process. • Level of resolution of impact prediction should be aligned with decision making tier but should be as detailed as practicable. • Positive and negative impacts should be included. • Cumulative, synergistic, indirect and delayed impacts should be included where appropriate.
<i>Mitigation of Impacts</i>	<ul style="list-style-type: none"> • It should be clear how the impacts identified could be reduced or mitigated, where appropriate.
<i>Monitoring</i>	<ul style="list-style-type: none"> • A detailed monitoring strategy should be included and should be clearly linked to earlier scoping, prediction and mitigation phases. • The use of indicators is often appropriate.
<i>Quality Control</i>	<ul style="list-style-type: none"> • The entire process and the final report should be of a high standard, particularly if decision makers and the public are to have faith in SEA. • This can be achieved through independent auditing or peer review of the process. • The wider public can also act as a form of quality control.
<i>Reflective Evaluation</i>	<ul style="list-style-type: none"> • At the conclusion it is useful to review the SEA process. This can be seen as a learning exercise. • This could include gaining feedback from those involved in the process and those who used the results. Suggestions for improvements in the future would also be useful. • The positive and negative aspects should be identified.

There are a number of important aspects identified in the above principles and characteristics. For instance, the importance of customising the SEA to fit the situation is emphasised, as is integrating it with other dimensions and instruments in the decision making process to gain a sustainable outcome for a policy, plan or programme. Another essential principle identified is that the SEA process should be focused on aiding decision-makers. In essence, SEA needs to add something to the decision making process that would otherwise be missing from a generic strategic planning process. Related to this is the idea of using SEA as a learning experience, both to improve future practice but also to increase awareness and familiarity with SEA among planners, policy analysts and decision-makers. Partidário (2000) notes that the ability to show how it has added value to the decision making process is one of the critical factors improving awareness of SEA and increasing its use as a decision-aiding tool. Another key principle is the potential for SEA to facilitate a more transparent, open and democratic process. Again this has links with quality control and reviewing procedures, but also with

documentation and public participation. A well-documented SEA process should show how decisions have been reached and where trade-offs have been made.

2.1 SEA in action: Norfolk Local Transport Plan

In the UK SEA processes are applied to a wide range of plans and programmes, as required under the EU Directive. The overall objective of the SEA Directive, as identified in Article 1, is to:

Provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development (Article 1:7)

This example examines the application of SEA to the Norfolk Second Local Transport Plan (LTP2). The LTP system aims to encourage high quality planning and effective delivery of local transport, over a set period and for a specific geographical area. The preparation of LTPs commonly includes the following components:

- § Local objectives consistent with the UK Government's overarching objectives for transport;
- § An analysis of problems and opportunities;
- § A coherent, integrated strategy to tackle the problems and deliver the LTP objectives;
- § A 5-year implementation programme of schemes and policy measures, which include value for money solutions; and
- § Targets, performance indicators, trajectories and other outputs that can be used to assess whether the plan is delivering its objectives at the local level.

The SEA was undertaken on the Norfolk LTP for the period 2006 to 2011. By carrying out an SEA on the LTP, Norfolk County Council (NCC), the local government body for the area, aimed to:

- § Identify alternative options for delivering transport improvements through the LTP;
- § Identify and describe the environmental effects of alternative options; and
- § Reduce and minimise the negative environmental effects that may result from the implementation of the LTP.

The provision of a high quality transport system for the county is seen as a key priority of the County Council, which sees transport in the context of the 'bigger picture' in helping to improve Norfolk's economy and addressing its social issues such as deprivation, but also protecting and enhancing its unique environment (NCC, 2006a).

The LTP notes that due to its predominantly rural nature and the often poor viability of reasonable public transport services there is a high level of dependence upon the private car in a similar manner to much of New Zealand. This dependence on the car has had a knock on effect on the extent to which people use other forms of transport, for example walking and cycling have been in decline over recent years. The LTP also notes that, public transport use had been reducing for a number of years, although due to the introduction of various transport

policy measures such as the provision of park and ride schemes in the previous transport plan this decline has begun to be turned around (NCC 2006a).

Within the above context a range of transport options and measures for the LTP were developed and considered by NCC to address the current and future transport needs of the county. These included:

- § *“Different ways of locating new development in relation of transport infrastructure;*
- § *Providing new transport infrastructure and additional capacity;*
- § *Intense information and awareness raising campaigns to encourage the use of sustainable modes of transport, such as public transport, walking and cycling;*
- § *Different ways of managing the demands for transport infrastructure; and*
- § *Use of financial incentives to achieve transport objectives”* (NCC, 2006b).

Following a consultation process with various stakeholders, three strategic options were defined for the LTP as follows:

- Option 1: Reduce the demand for travel;
- Option 2: Meet the forecast demand for travel, but in a sustainable manner; and
- Option 3: Increase transport infrastructure supply to meet the forecast demand for travel.

As part of the SEA process baseline data was collected on a range of environmental (and social) topic areas and a series of environmental indicators were developed that were used to measure the effects that the three LTP strategy options may have on the environment. The indicators covered a range of environmental and social topic areas, including:

- § Environmental: Air pollution, climate change, noise, landscape and townscape, wildlife and habitats, and water quality; and
- § Social: Human health, safety, access to services and economic assets such as roads and pavements.

Using the above environmental and social indicators and associated baseline data a review was undertaken to help predict how the environment of the county may change in light of the implementation of each of the LTP strategy options. The assessment found that Option 1 was likely to have the most beneficial environmental effects, whilst Option 3 was identified to have the most significant adverse effects on the county’s environment.

The assessment identified that Option 2 had both beneficial and adverse environmental effects. Following this initial review Option 2 was taken forward for further development and became the Council’s LTP, as it was felt that this strategy option achieved the best balance in meeting both the transport and environmental objectives for the county. A detailed assessment of Option 2 was then undertaken which highlighted where adverse environmental effects may arise and what could be done to mitigate these negative effects. This information was taken on board during the further development of the LTP and was used to improve the overall environmental performance of the transport plan (NCC, 2006b).

It should be noted that the Council also undertook further environmental assessment of the LTP once completed. This assessment was used to determine the environmental effects that could be expected from the implementation of the final LTP. Table 2.2 below from the LTP2 compares the initial environmental assessment of Option 2 and the final assessment of the LTP and qualifies how the assessment changed in light of the mitigation measures proposed in the initial assessment and integrated into the final plan. It can be seen that the implementation of the LTP would lead to some adverse environmental effects. Potential negative effects on the environment from the implementation of the LTP included adverse effects on the landscape mainly from the provision of new transport infrastructure on previously undeveloped land, with a secondary negative impact upon local biodiversity from the loss of habitats that the landscape supports.

Table 2.2: Effect of the SEA on the LTP development (NCC, 2006a)

SEA topic	Strategy option		
	Preliminary assessment (Option 2)	Final assessment (LTP – no major schemes)	Net effect of SEA on the LTP
Air	Slight beneficial	Moderate beneficial	Positive
Climate change issues	Slight adverse	Slight beneficial	Positive
Landscape	Moderate adverse	Slight adverse	Positive
Townscape	Slight beneficial	Slight beneficial	None
Cultural heritage	Slight beneficial	Slight beneficial	None
Biodiversity	Moderate adverse	Slight adverse	Positive
Water	No significant effect	No significant effect	None
Accessibility	Slight beneficial	Slight beneficial	None
Noise	Slight adverse	Slight adverse	None
Safety	No significant effect	Slight beneficial	Positive
Physical fitness	Neutral	Slight beneficial	Positive
Material assets	No significant effect	Slight beneficial	Positive

The application of an SEA process to the LTP identified that the implementation of the plan would also introduce a number of positive environmental effects, including improvements in air quality with the secondary benefit of a potential reduction in respiratory illnesses. The LTP also notes a number of other benefits including the promotion of physically active modes of transport such as walking and cycling and improving accessibility by public transport and also for reducing the number and severity of casualties from road traffic accidents.

The LTP noted that:

Overall, the SEA was influential in improving the environmental performance of the LTP by identifying potential environmental effects before the full development of the plan. This allowed environmental considerations to be fully integrated into the plan as it was being developed” (NCC, 2006: 6).

3. Using SEA in New Zealand

As was shown in the Norfolk example, SEA can help to improve the consideration of environmental impacts and the sustainability implications of transport plans as they are being developed. The core purpose of this research was to investigate how SEA might be used in New Zealand. An intensive case study was undertaken on the BOP region, an area experiencing relatively high population growth and facing significant transport issues. Four key processes were examined as part of the research:

- § The Regional Land Transport Strategy process (under the Land Transport Management Act 2003);

- § The Regional Policy Statement process (under the Resource Management Act 1991);
- § The Long Term Community Council Plan process (under the Local Government Act 2002); and
- § The Western Bay of Plenty SmartGrowth Strategy process (non-statutory).

The processes were investigated by analysing documents and interviewing Regional Council officials. The research involved two key phases, addressing the two research objectives respectively.

3.1 Research objective 1: Appraisal of the current transport planning process

The appraisal of the four processes identified a number of issues and barriers associated with the consideration of sustainability within the current transport planning process, most notably:

ISSUE 1: A lack of structure within elements of the process and throughout the process as a whole

Some elements of the process, most notably the treatment of issues, lacked structure and coherence. Equally, the links between many elements of the process were unclear or only implicit.

ISSUE 2: The limited development and consideration of different options

Only three broad transport philosophies were given consideration. It is clear the options and alternatives for addressing the issues and problems raised in the scoping phase were not explored. The lack of a more detailed exploration of options for addressing specific issues means that the ability of the Regional Land Transport Strategy (RLTS) to influence strategic directions for transport in the region is likely to be compromised.

ISSUE 3: The minimal availability and use of baseline environmental information

The presence of high quality information does not, in itself, ensure good environmental outcomes. It is, however, a key prerequisite. It was found that even where potentially useful information already existed, it was generally not used.

ISSUE 4: A limited consideration of 'adverse effects on the environment' and environmental sustainability

The consideration of environmental effects was relatively modest and the considerable rhetoric about the environmental impacts of transport and environmental sustainability did not appear to have been well translated into the final strategic action(s). All key informants were of the opinion that the environmental impacts of transport were best considered by the resource consent and designation processes under the RMA 1991, rather than the RLTS.

ISSUE 5: Some disconnect between different regional-level processes

One of the overwhelming themes that emerged was the difference in focus, mandate and timeframe between the respective processes. Encouragingly, no major tensions between processes were revealed in relation to transport, but it is clear that some disconnects do exist. In particular, some of the transport activities in the (Long Term Community Action Plan (LTCCP) were not funded at the level intended in the RLTS. The difference in planning cycles was cited as one of the main obstacles to closer alignment between processes.

ISSUE 6: Some difficulties in the incorporation and translation of national-level strategic directions into regional processes

It was noted, though, that moving from rhetoric to practice has been challenging, particularly with the relatively rapid change in legislative mandate since the first sector reforms in 1998. Regional-level capacity to carry out this new mandate has been limited, but equally the degree of national-level leadership has not been adequate (SSC, 2007). The review also found that gaps existed in the interpretation of the New Zealand Transport Strategy (NZTS) objectives that compromised their realisation. The evidence collected in the BOP case certainly supports these findings.

It was clear from the analysis of the current process that sustainability and environmental impacts were not always being considered in the existing process as well as they could have been.

3.2 Research objective 2: A role for SEA?

The second phase of the research involved exploring if and how SEA could potentially assist in addressing some of the issues identified. Before considering how SEA might be used to improve current practice, it was determined where the current process utilises elements of SEA. It was found that all of the main phases of SEA were present to some degree. Many of these elements, however, were peripheral to the overall process, namely: the use of baseline information, the consideration of alternatives, and the forecasting of impacts. The development of objectives and the scoping of issues was done reasonably well and likewise monitoring and quality control mechanisms were in place. Overall, the regional transport planning process did contain all of the main stages of SEA, but many essential components were of poor quality or completely absent. The level of public and stakeholder participation was reasonable for a strategic-level process. The appraisal also revealed that connections between some of the elements were not always clear or coherent. For instance, the range of objectives set did not appear to cover all the issues identified and the options were generally not developed with reference to the issues and objectives.

Taken as a whole, the regional transport planning process in the BOP did not constitute an SEA process. The SEA elements that were most clearly observed were those that would be expected from a generic strategic planning process, such as the setting of objectives, the identification of important issues and formal monitoring and quality control mechanisms. Elements such as the use of baselines, the consideration of alternatives and impact forecasting were not observed to the same level. It is worth noting that the transport planning process was undertaken without any reference to SEA and so a complete coverage of all SEA elements would have been highly unlikely. These findings are similar to those of Ward et al. (2005) who observed similarities between the RLTS development process and a typical SEA process. Dixon (2005) also found in her Halswell-Wigram study that, although a number of SEA-type tools had been used, the strategic planning process itself could not be considered a form of SEA.

3.2.1 A conceptual model for SEA in New Zealand

The first phase of the research found that sustainability and environmental impacts were not being particularly well incorporated into current transport planning processes. Interestingly, it was also found that all of the main elements of SEA could be observed in the current process to some degree but that they lacked the quality and coherence that would be expected from

the formal use of the tool. The second phase of the research explored how SEA might be used more directly to address some of the issues raised in phase 1.

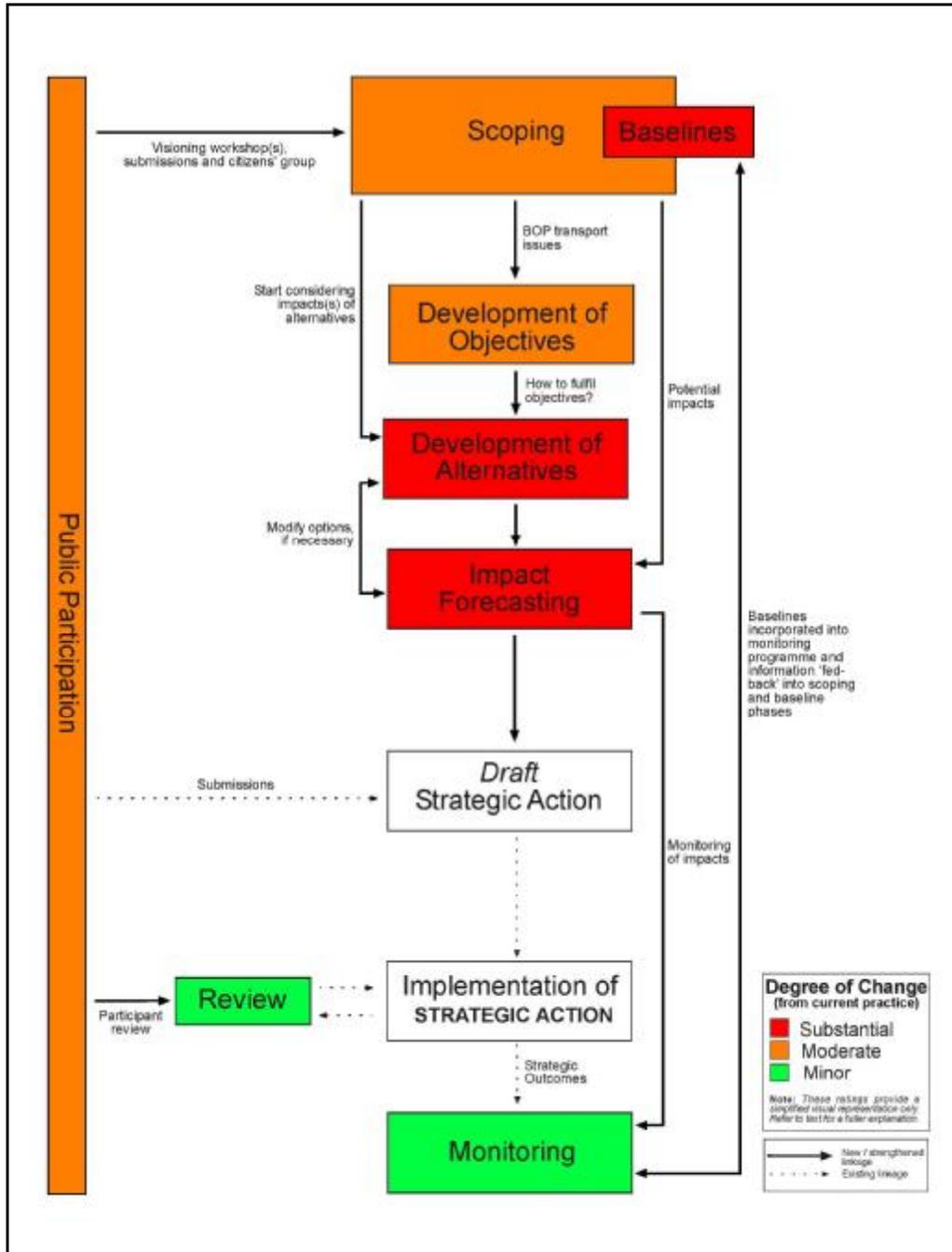


Figure 3.1: Conceptual model of a revised SEA-based regional transport planning process

Figure 3.1 is a conceptual model of how this revised, SEA-based, process might look. The model uses a simple colour coding system to show the location and degree of change recommended. The model does not propose the introduction of any completely new elements, but rather, that a number of the existing elements should be restructured or refocused or that linkages could be introduced or strengthened. The most substantial restructuring is recommended to the options development, impact forecasting and baseline

phases, respectively. Moderate levels of restructuring are proposed for the scoping, objectives development and public participation phases, respectively. It is also proposed to expand to focus of the existing monitoring programme and formal review process, respectively. The strengthening of some existing linkages and the introduction of a number of new linkages is also recommended. The most significant new linkages recommended involve a more explicit connection between issues (scoping), the development of objectives and the development of alternatives. A much closer link between these three elements and impact forecasting is also recommended. The other area where more explicit connections are recommended is between the baselines and the monitoring programme. In particular, it is recommended that fed-back loops be much clearer than they are currently. The following recommendations were made as to how SEA would be likely to assist in addressing many of the issues identified:

ISSUE 1: A lack of structure within elements of the process and throughout the process as a whole

The strengthening of many existing linkages and the introduction of new linkages is recommended. The process should fundamentally be driven by the issues identified in the scoping phase.

ISSUE 2: The limited development and consideration of different options

The exploration of options specifically to address current issues is recommended.

ISSUE 3: The minimal availability and use of baseline information

Much greater use of baseline information is recommended. This should be directed by the issues and impacts identified in the scoping phase.

ISSUE 4: The limited consideration of 'adverse effects on the environment' and environmental sustainability

The explicit use of impact forecasting techniques is recommended. Forecasting should permeate the entire process to a degree but should particularly focus on evaluating the environmental impacts of the different options developed.

ISSUE 5: Some disconnect between different regional-level processes

It is unclear whether the use of SEA could help to achieve greater integration between regional-level processes. This would depend largely on 'where' the process was located. If it was constrained within a single existing process such as the RLTS then the potential for integration might not be as high as if it was conducted as a separate process with links into existing processes. It is tentatively recommended that locating an SEA-based process outside any formal statutory process, but with links into existing processes, may help to improve integration between existing processes.

ISSUE 6: Some difficulties in the translation and incorporation of national-level strategic directions into regional processes

The SEA-based approach that has been suggested is strongly driven by the issues and objectives that are identified early in the process. In this regard, it is anticipated that the translation of high-level objectives into tangible strategic action is likely to be enhanced.

4. Conclusions

It is clear from the BOP case study and the UK example that SEA has the potential to improve the consideration of sustainability and the environmental effects in the development of transport plans and policies. As shown in table 4.1, at least four of the six key issues identified would be likely to be addressed to some degree through the use of an SEA-based approach.

Table 4.1: Potential role of SEA in addressing key issues identified

Issue	Could SEA help?		
	Yes	No	Maybe
1. <i>A lack of structure within elements of the process and throughout the process as a whole</i>	ü		
2. <i>The limited development and consideration of different options</i>	ü		
3. <i>The minimal availability and use of baseline information</i>	ü		
4. <i>The limited consideration of 'adverse effects on the environment' and environmental sustainability</i>	ü		
5. <i>Some disconnect between different regional-level processes</i>			?
6. <i>Some difficulties in the translation and incorporation of national-level strategic directions into regional processes</i>			?

Furthermore, it is suggested in the conceptual model that the existing process could be restructured, rather than completely overhauled, to achieve this. The next phase of the research would involve moving from this conceptual level to implement the suggested approach and evaluate its effectiveness. The implementation would hopefully reveal valuable information about the degree to which SEA might achieve the proclaimed environmental and sustainability benefits and could potentially be used as a basis to introduce SEA principles into strategic-level decision-making in New Zealand.

Although this research has focused solely on the transport sector, SEA can similarly be applied to a range of topic areas of significance in New Zealand including electricity generation, energy management, tourism and conservation planning, waste management, freshwater management and land-use planning. In other countries it is frequently used in relation to these, and other, areas.

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