

# Measuring the benefits of the Strategic Planning Act

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Economics  
& Planning





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# Glossary

KEY TERM / ACRONYM	DEFINITION
RMA	The Resource Management Act 1991 (RMA) is New Zealand's main piece of legislation that sets out how the natural and built environment should be managed.
MfE	The Ministry for the Environment (MfE) is the department responsible for advising New Zealand's Central Government on environmental service matters.
RIS	A Regulatory Impact Statement (RIS) is required by legislation to make, change or appeal Acts or regulations.
SPA	The Strategic Planning Act (SPA) is one of the three pieces of legislation proposed to replace the current RMA. It has a focus on land-use change, infrastructure development and delivery, environmental management and recognition of cultural values.
RSSs	Regional Spatial Strategies (RSSs) will set a strategic direction for land-use for 14 regions over a 30+ year timeframe for infrastructure provision and a 100+ year plans to guide a response to the effects of climate change.
NBA	The Natural and Built Environments Act (NBA) will be the central Act replacing the RMA.
CCAA	The Climate Change Adaptation Act (CCAA) is proposed to support the NBA in achieving reform objectives, with particular emphasis on matters relating to climate change.
NPF	The National Planning Framework (NPF) is a statutory document that will be created and, under the policy reform, will deliver national directions via a single statutory document.
NPS-UD	The National Policy Statement on Urban Development 2020 (NPS-UD) is a current national direction being delivered in a separate statutory document under the RMA. Among other things, it focusses on delivering more intensely developed urban environments. It was enacted in 2020 and replaced the NPS-UDC
NPS-UDC	The National Policy Statement on Urban Development Capacity (NPS-UDC) was the direction delivered before the NPS-UD and provides development capacity in their resource management plans.
UGA	The Urban Growth Agenda (UGA) is a programme that was designed to improve housing affordability underpinned by affordable urban land.
CBA	A Cost Benefit Analysis (CBA) is a form of analysis to measure welfare loss/gain by comparing the overall cost and benefits.
GDP	Gross Domestic Product (GDP) measures the total market value of all production of goods and services within a country.
ES	Ecosystem Services (ES) is an approach to value environmental services by capturing the many and varied benefits to society provided by the natural environment.
TEV	The Total Economic Value (TEV) measures the economic value of any environmental asset and comprises both use and non-use values.
WTP	The Willingness To Pay (WTP) is a method to monetise benefits by capturing consumers' marginal benefits.



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# Executive Summary

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# Executive Summary

## Role of the proposed Strategic Planning Act

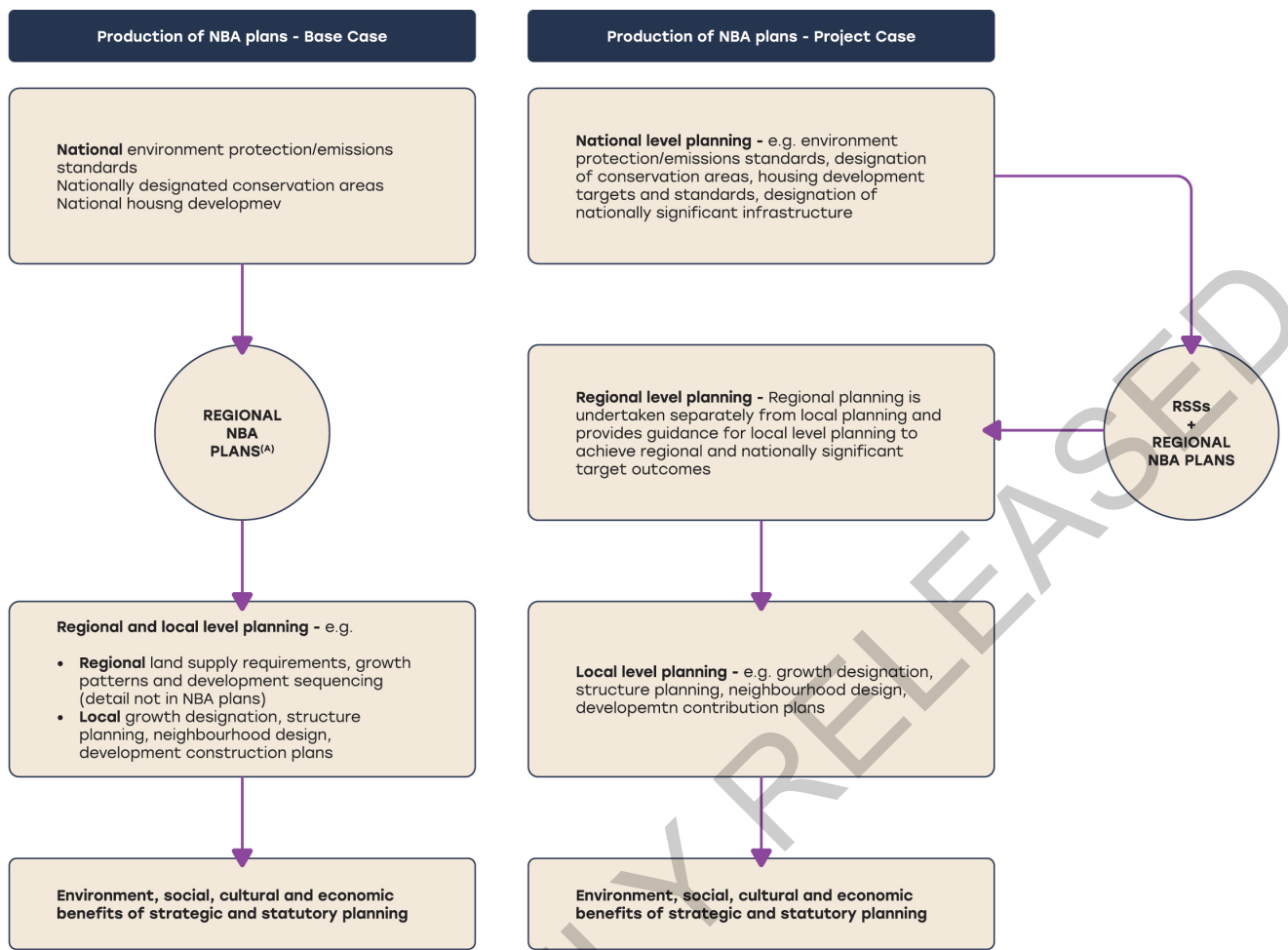
New Zealand's Central Government is in the process of replacing the Resource Management Act 1991 (RMA) with new legislation to better protect and restore the natural environment, support development within biophysical limits, improve integration and recognition of Māori in decision making, adapt to climate risks and improve system efficiency.

The core legislation replacing the RMA will be the Natural and Built Environment Act (NBA). The NBA will consolidate over 100 RMA plans into 14 Natural and Built Environment Plans (NBA Plans). Supplementary legislation to support the NBA includes the Strategic Planning Act (SPA). The purpose of this report is to provide evidence and advice on the type and magnitude of impacts generated by the SPA and to inform ministers and government decision making about the SPA.

The SPA will mandate the preparation of 14 Regional Spatial Strategies (RSSs) – aligning with the 14 NBA Plans – to contribute to the realisation of a preferred future in these regions. The role of the SPA and RSSs will be to interpret national policies, standards and infrastructure priorities at the regional level, ensuring consistency and alignment of NBA Plans on such matters. The SPA and RSSs will not expand the scope of NBA Plans; however, they will ensure that the national and regional considerations which are built into these plans are dealt with in a consistent and rigorous way (refer to Figure 1).



FIGURE 1: PRODUCTION OF NBA PLANS - BASE CASE (LEFT) AND PROJECT CASE (RIGHT)



Source: SGS Economics & Planning, 2021 Note: (A) NBA plans do not provide adequate guidance to inform regionally significant infrastructure corridors, land supply requirements, growth management plans, or development sequencing.

The MfE has defined three options for the SPA and associated RSSs. These would involve the specification of national and regional requirements at a high level with a limited spatial resolution (the ‘narrow option’) through to the creation of RSSs which provide a more extensive, detailed and by extension prescriptive specification of

national and regional considerations for incorporation in NBA Plans (the ‘comprehensive option’). These options are contrasted with a Base Case in which NBA Plans of similar scope are prepared without the guidance and direction provided by the SPA and RSSs. See Figure 2.

FIGURE 2: BASE CASE AND PROJECT OPTIONS

Base Case	Project options		
The NBA replaces the RMA, however, the SPA and RSSs are not delivered	<b>Narrow Option</b>	<b>Strategic Option</b>	<b>Comprehensive Option</b>
	Mainly concerned with urban issues including interface with rural areas, this option provides spatial designation of key environmental areas, including transport corridors	Narrow option with additional emphasis/detail at the regional level, plus spatial designation of major social in	Strategic option with additional emphasis/detail at the local level, plus non-spatial elements and targets

Source: SGS Economics & Planning, 2021



## Approach to economic analysis

There will be no requirement to prepare NBA Plans in the context of prescribed RSSs in the Base Case. Nevertheless, as illustrated in Figure 1, it will not be possible for national and regional policies and priorities to be ignored in the Base Case NBA Plans. These matters will still need to be factored into NBA Plan making; otherwise, the RMA reform agenda could not be achieved.

Arguably, NBA Plans which give effect to national policies, filtered through a regional lens and taking into account distinctive local factors could be delivered without the SPA and RSSs. Thus, a question arises as to what additional welfare contribution the SPA and RSSs might make and at what cost.

Additional prescription associated with the SPA will carry compliance costs; local bodies charged with the production of NBA Plans will have to give due attention to RSSs, which themselves will come at a resource cost. However, at least two benefits could be expected from the SPA/RSSs process. Firstly, NBA Plans may be produced faster as national direction will be clearly set out at the regional level to guide local planning.

Secondly, as the national and regional inputs to NBA Plan making will be subject to clear tests of comprehensiveness and rigour, rather than being left to ad hoc discovery, consultation and negotiation processes in each of the 14 regions, it is reasonable to expect that the NBA Plans will more consistently achieve the quality standards required for the full benefits of the RMA reform program to be realised.

Put another way, the SPA and RSSs provide a means of mitigating the risk of non-achievement or underachievement of the benefits expected from NBA Plans. Viewed this way, the welfare gain offered by the SPA/RSSs will be given by the New Zealand community's willingness to pay (WTP) for greater certainty that the full value from good urban planning will be realised. This is analogous to a household paying an insurance premium to maintain an expected beneficial outcome (e.g., income protection) or corporations hedging against an investment portfolio strategy not delivering modelled returns. In these cases, the WTP relates to the mitigation of risk in achieving benefits, not the substantive benefits themselves. We have no evidence as to the extent to which the

reliability, quality and effectiveness of NBA plans, in the absence of the guidance and direction given by the SPA and RSSs, will fall short and therefore compromise the delivery of planning benefits. However, any such lapse will undoubtedly have serious cost implications for the country, as is evident in the failures experienced under the RMA.

Given the scale of potential losses, the New Zealand community might be willing to pay a high premium for greater assurance of benefit delivery. Nevertheless, for the economic analysis, we have applied a low (insurance) premium to benefit value ratio of one per cent. Sensitivity tests have been conducted using premium-to-benefit value ratios of 2.5 and 5 per cent, as well as a ratio that generates a BCR of 1.0. This latter test was conducted to highlight that a very small WTP still suggests there is an economic rationale for pursuing the SPA and RSSs.

The cost benefit analysis (CBA) presented in this report, therefore, takes as its starting point a basket of benefits expected from the successful implementation of the NBA plans. These benefits have been estimated by SGS and/or garnered from previous studies. Costs and benefits are modelled over a 30-year benefit period starting from FY2023 (following implementation of the SPA and creation of RSSs) and capitalised at five per cent to provide a notional present value. The welfare gain expected from implementing the SPA and RSSs is then estimated as one per cent of this notional present value.

## Findings

### Marginal costs associated with the SPA

Table 1 shows the present value cost of resource management reform for the Project Case and the Base Case. Project Case values have been sourced from cost modelling undertaken by Castalia. Base Case values also draw on cost modelling by Castalia. However, they omit items specific to the SPA and RSSs.

Castalia's modelling suggests that present value Project Case costs would be greater than present value Base Case costs by around \$231 million. Most of this (\$150 million) incremental increase occurs in the establishment phase, owing to the high costs of producing the key 'artefacts' of the SPA, that is, the RSSs.

This \$231 million estimate is likely to be a gross overstatement of the marginal costs associated with the Project Case. As explained, there would be no prescribed requirement in the Base Case to analyse national and regional policies, constraints and priorities, but such considerations will inevitably have to be factored into NBA Plans if they are to be effective and, indeed, acceptable to Central Government.

Thus, the scope of planning work that would go into the preparation of RSSs in the Project Case would likely also be required in the Base Case. Indeed, fulfilling this scope of work in the Base Case could well be more expensive than in the Project Case notwithstanding that the latter mandates the creation of particular regulatory artefacts.

By comparison to the Project Case, the Base Case could be prone to higher discovery, negotiation and transaction costs as each region finds its own way to factor national and regional matters into their NBA Plans.

We have therefore assumed that the establishment costs for the SPA will be offset by savings in discovery, negotiation and transaction costs that would otherwise be incurred in the Base Case. The net marginal cost of the Project Case becomes \$81 million. This captures ongoing incremental costs of the Project Case only, though it is noted that this also may be an overstatement as the absence of the SPA and RSSs in the Base Case may lead to increased costs of maintaining and enforcing NBA Plans.

TABLE 1: PRESENT VALUE COSTS OF THE SPA AND RSSS (DISCOUNTED AT 5%)

SCENARIO	COST ACCRUING TO	ESTABLISHMENT COSTS (\$'000)	ONGOING COSTS FOR 30 YEARS (\$'000)
Base Case Cost	Central Government	331,845	494,744
	Local governments	334,960	2,351,577
	Maori	38,180	3,235
	RM Users	16,072	1,681,637
	<b>Total</b>	<b>721,057</b>	<b>4,531,193</b>
Project Case Cost	Central Government	3796,837	494,744
	Local governments	409,356	2,413,854
	Maori	57,940	3,235
	RM Users	26,644	1,700,297
	<b>Total</b>	<b>870,777</b>	<b>4,612,130</b>
Incremental cost of the project case	Central Government	44,992	0
	Local governments	74,395	62,278
	Maori	19,761	0
	RM Users	10,572	18,660
	<b>Total</b>	<b>149,720</b>	<b>80,938</b>

Source: SGS Economics & Planning, 2021, based on Castalia cost model

## Marginal benefits associated with the SPA

As outlined in this report, we have conceptualised the benefits of the SPA and RSSs in terms of greater assurance in the delivery of the substantive benefits expected from the NBA Plans. Table 2 on the following page identifies a selection of these substantive benefits as estimated by SGS and/or garnered from previous studies. Note that this is not a complete listing; the NBA Plans are expected to generate other benefits, including better integration of Māori interests in the resource management process. Including these benefits, as well as a broader suite of benefits, would improve the economic case for the SPA and RSSs.

The limited selection of benefits shown in the table sum to \$18.9 billion. This is (part of) the value expected to be delivered in the Base Case by abolishing the RMA and replacing it with a more effective planning framework, namely the NBA and its operational outputs – the NBA Plans.

The *additional* value created in the Project Case is achieving a higher level of confidence that these promised benefits of NBA Plans will be realised. Or, as noted, the additional value is the mitigation of the risk that the full expected value of the NBA Plans will not be delivered. This benefit is estimated at one per cent of the substantive NBA Plan benefits, recalling the insurance premium payable to mitigate the risks in question.





TABLE 2: PRESENT VALUE BENEFITS OF THE SPA AND RSSS (DISCOUNTED AT 5%)

SUBSTANTIVE BENEFIT OFFERED BY NBA PLANS	DESCRIPTION OF SUBSTANTIVE BENEFIT OF NBA PLANS	PV OF SUBSTANTIVE BENEFIT	WELFARE GAIN FROM SPA & RSS
1. Better management of environmental assets	New Zealand's natural capital is in decline and facing increasing pressure from climate change, industry expansion and urban development. The NBA based resource management system will put measures in place to restore the natural environment and ensure the continuity of industries that depend on natural resources.	\$10 billion	\$100 million
2. Improved housing supply and choice	New Zealand is experiencing a housing crisis, with some of the highest urban land and housing prices relative to incomes in the developed world. The NBA Plans are expected to give full effect to the National Policy Statement on Urban Development (NPS-UD). Fulfilment of this policy intent will enable greater access to affordable housing reflected in the consumer surplus enjoyed by home buyers and renters alike.	\$1.4 billion	\$14 million
3. Coordinated infrastructure and land development	Coordinating infrastructure provision with urban development generates significant cost savings. This benefit accrues to central and local governments as well as to households	\$0.2 billion	\$2 million
4. Leveraging urban Agglomeration economies	Increasing economic density boosts productivity leading to income gains for the country	\$4.6 billion	\$46 million
5. improved infrastructure resilience	A significant portion of New Zealand's infrastructure and housing is exposed to climate risk and other natural systems risks. NBA Plans are expected to focus development into lower risk areas generating significant cost savings for the nation.	\$9.4 billion	\$94 million
6. Reduced transport carbon emissions	More compact urban development in line with the NPS-UD will facilitate more efficient travel and transport patterns, resulting in reduced carbon emissions.	\$0.1 billion	\$1 million
<b>Total</b>	<b>This is the sum of the benefits above</b>	<b>\$25.7 billion</b>	<b>\$257 million</b>

Source: SGS Economics and Planning, 2021

## Welfare impact

Incremental costs and benefits of the Project Case versus the Base Case are shown in Table 3, along with key performance indicators.

Implementation of the SPA is shown to deliver a net present value (NPV), or net community benefit, of some \$176 million at a benefit cost ratio (BCR) of 3.2. This indicates that for each \$1 invested, a welfare gain of \$3.2 is realised, indicating that the SPA and RSSs constitute an economically warranted regulatory reform.

The NPV of \$176 million is for a 30-year appraisal period and translates to an average annual net benefit of around \$5.9 million. This suggests a net benefit of just over \$1 per New Zealand citizen per year.

SGS's approach models the welfare gain of the SPA and RSSs at one per cent of the present value of substantive benefits of better planning. As shown above, this generates present value benefits of \$257 million against a present value cost of \$81 million. The application of a rate of one per cent to determine the welfare gain of the SPA and RSSs is sourced from literature relating to WTP to mitigate risk within household insurance markets and corporate risk hedging practices. In these markets, risk likelihood and severity are subjected to actuarial analysis to determine appropriate risk premiums. These markets provide a broad indication of what the community might be willing to pay for greater assurance of planning based outcomes – including those relating to the preservation and restoration of the natural environment. However, such indications cannot be regarded as definitive. Therefore, SGS applied a range of sensitivity scenarios around the benchmark insurance premium of one per cent of benefit value.

TABLE 3: SUMMARY OF COSTS AND BENEFITS (DISCOUNTED AT 5%)

ECONOMIC INDICATOR	PV OR INDICATOR
Incremental costs of the Project Case	80,938,659
Incremental benefits of the Project Case	256,785,709
Net Present Value	175,848,049
Benefit cost ratio	3.2

Source: SGS Economics and Planning, 2021

While the benefits have been calculated at a WTP rate of one per cent, modelling indicates that an annual WTP of 0.32 per cent of substantive benefits would generate a BCR of 1.0. Any WTP above this rate would, therefore, generate increasing benefits relative to the costs and improve the economic warrant of the SPA and RSSs.

Sensitivity testing was undertaken using a WTP of 2.5 per cent and 5 per cent. The findings of these sensitivity tests are shown in Table 4 – BCRs increase significantly to 7.9 and 15.9, respectively.

There is merit in using these larger WTP ratios. SGS's approach to quantifying benefits has been highly conservative. In particular:

- management reform since the implementation of the RMA, has the potential to generate greater housing supply and choice and urban agglomeration benefits than those targeted in the NPS-UD.
- SGS modelled six benefit streams only. Spatial planning has the potential to deliver a range of other benefits that have not been monetised in this study, including better integrating Māori interests in the resource management process, reduced externalities (only reduced vehicle emissions have been modelled), improved transport sustainability, more equitable access to job and service opportunities, and others.

**TABLE 4: WTP SENSITIVITY TESTS OF 2.5 AND 5%**

ECONOMIC INDICATOR	PV OR INDICATOR USING WTP OF 2.5%	PV OR INDICATOR USING WTP OF 5%
Incremental costs of the Project Case	80,938,659	80,938,659
Incremental benefits of the Project Case	641,964,271	1,283,928,543
Net Present Value	561,026,612	1,202,990,883
Benefit cost ratio	7.9	15.9

Source: SGS Economics and Planning, 2021

- For benefit 1 (better management of environmental assets), SGS modelled NBA Plans to be a risk mitigation tool with a WTP of one per cent of total environmental benefits. The benefit of the SPA and RSSs was then modelled at one per cent of that or 0.01 per cent of total environmental benefits. Additionally, the SPA and RSSs could, theoretically, contribute to better NBA Plans that comparatively protect these assets to provide benefit continuity. Increasing the WTP from 0.01 per cent of total environment benefits to 0.025 or 0.05 would significantly increase the modelled benefits.
- For benefit 2 and benefit 4 (improved housing supply and choice, and leveraging urban agglomeration economies), SGS has strictly extended the benefits modelled by PwC as part of the NPS-UD Business Case over a 30-year appraisal period. The SPA and RSSs, packaged as the most significant suite of resource

## Conclusion

We conclude that the SPA is an economically warranted element of resource management reform in New Zealand. It will ensure national policies, standards and infrastructure priorities are systematically and thoroughly factored into NBA Plans. This, in turn, will provide greater assurance for the New Zealand community that the NBA Plans will deliver the considerable value expected of them in terms of environmental safeguarding, housing affordability, urban productivity, efficient infrastructure provision, climate-resilient urban development and reduced emissions, amongst other benefits.



# Report structure

This report is set out in three parts.

## **Part A – Introduction and context**

This section details the project background, the scope of this report, the legislative and policy context and options for the Strategic Planning Act (SPA) and Regional Spatial Strategies (RSSs).

## **Part B – Valuing Strategic Planning Act outcomes**

This part provides an overview of the evaluation framework, then describes how the SPA and RSSs can positively contribute to achieving the five objectives of resource management reform via six central quantified benefits.

## **Part C – Conclusion**

This part distils key findings of the report.



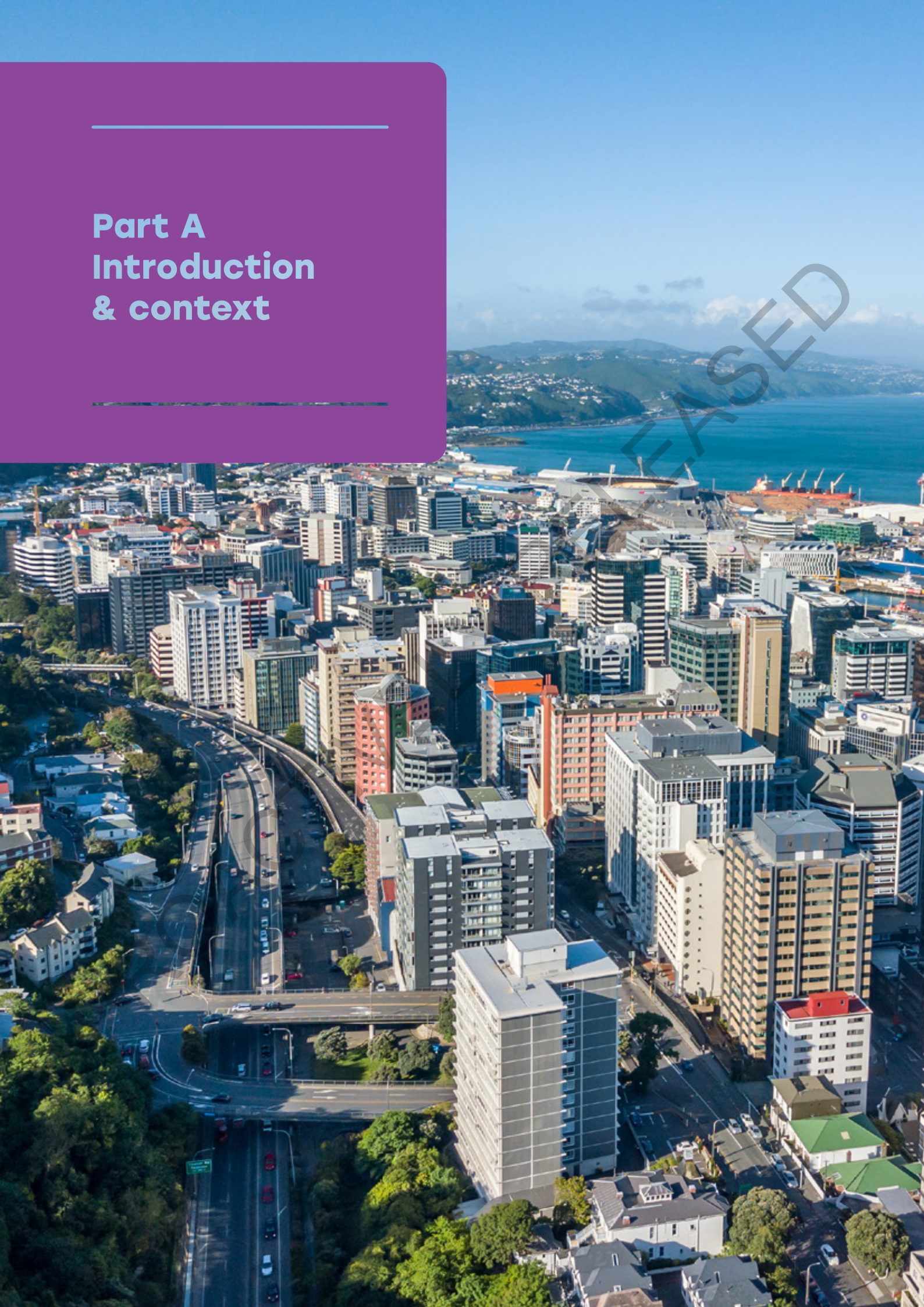


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# Part A

## Introduction & context

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# Introduction

## Project background

The Resource Management Act 1991 (RMA) is New Zealand's main legislation governing how the natural and built environment should be managed. It is based on the principle of sustainability and regulates the management of air, soil, fresh water and coastal marine areas, as well as land use and the provision of infrastructure. While the RMA has delivered numerous benefits since its adoption, including managing New Zealand's natural and physical resources with consideration of environmental bottom lines, the nation has experienced a gradual deterioration in several aspects of the natural environment and some urban planning challenges. The Ministry for the Environment (MfE) lists the following concerns associated with the RMA<sup>1</sup>:

- **New Zealand's natural environment is under significant pressure:** the way land and water are used and managed has proved to be unsustainable for the natural environment. The quality of freshwater, coastal and marine environments is in serious decline, and biodiversity is under threat.
- **Urban areas are struggling to keep pace with population growth:** poorly managed urban growth has led to increasing difficulty in providing affordable housing, worsening traffic congestion, greater pollution, and reduced productivity.
- **An urgent need to reduce carbon emissions and adapt to climate change:** the impacts of climate change are already affecting where people live and how we use our environment. Land and resource use patterns need to change to mitigate and adapt to the effects of climate change while simultaneously supporting reduced greenhouse gas emissions.
- **The need to ensure that Māori have an effective role in the system, consistent with the principles of Te Tiriti o Waitangi:** when it was enacted, the RMA was a significant step forward for Māori, offering opportunities for shared management of the environment. However, it has failed to live up to its promise, leaving Māori out of critical decision-making.
- **The need to improve system efficiency and effectiveness:** significant criticisms of the RMA have been its increasing complexity, cost and delay caused by its processes, uncertainty, and lack of responsiveness to changing circumstances and demands.

<sup>1</sup> MfE website, accessed 2021

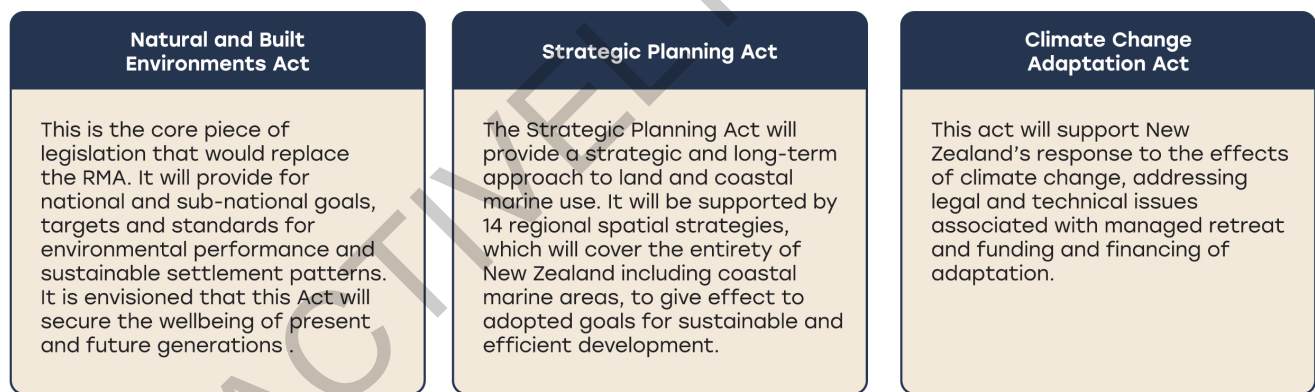


Seeking to better understand and address these concerns, the New Zealand Government appointed an independent Resource Management Review Panel (the Panel) to undertake a comprehensive review of the RMA. The Panel, led by the Hon. Tony Randerson QC, was asked to find ways of improving environmental outcomes and facilitating efficient urban development. The Panel’s findings were presented via two key documents; Transforming the resource management system: opportunities for change (Nov 2019), and New directions for resource management in New Zealand: Report of the Resource Management Review Panel (Jun 2020). A core conclusion of the Panel was cited by the Hon. Tony Randerson QC as follows:

[The RMA has undue] focus on managing the adverse effects of activities on the environment rather than promoting more positive outcomes.

Rather than amend the RMA, which has been subject to numerous amendments over the last 30 years resulting in undue complexity, the Panel recommended that the RMA should be repealed and replaced with three new pieces of legislation, outlined in Figure 3.

FIGURE 3: NEW LEGISLATION TO REPLACE RMA



Source: SGS Economics and Planning, 2021

### Project scope and purpose

New or amended regulations in New Zealand require regulatory impact assessment, summarised in a Regulatory Impact Statement (RIS). The purpose of a RIS is to ensure that Ministers are provided with evidence-based, robust advice to enable confident decision making about regulatory change. A RIS should assess whether a proposed regulatory change will be economically ‘efficient’ or ‘beneficial’; that is, whether the welfare gains from the change would outweigh the resource costs of

The objectives of this suite of legislation are as follows:

- **Objective 1.** Protect and restore the environment and its capacity to provide for the wellbeing of present and future generations.
- **Objective 2.** Better enable development within environmental biophysical limits including a significant improvement in housing supply, affordability and choice, and timely provision of appropriate infrastructure, including social infrastructure.
- **Objective 3.** Give proper recognition to the principles of Te Tiriti of Waitangi and provide greater recognition of te ao Māori including mātauranga Māori.
- **Objective 4.** Better prepare for adapting to climate change and risks from natural hazards, and better mitigate emissions contributing to climate change.
- **Objective 5.** Improve system efficiency and effectiveness, and reduce complexity while retaining appropriate local democratic input.

implementation. MfE is required to prepare a RIS for each of the three proposed new pieces of legislation. SGS was engaged to review the potential impacts of the SPA and the associated 14 RSSs.

The purpose of SGS’s scope of work was to identify the benefits that may be delivered by the SPA and RSSs, potentially with some order of magnitude quantification.

# Project Context

## The role of planning

Managing natural and built environments to achieve sustainability and net community benefits is difficult and inherently requires some trade-offs. Planning is deemed necessary to balance this trade-off and because of 'market failure', specifically, the presence of externalities and natural monopolies in the provision of urban infrastructure. Effective planning that optimises economic efficiency while mitigating or reducing externalities can achieve marginal benefits compared to a 'business-as-usual' approach.

Within New Zealand, planning encapsulates the legislation, strategies and policies that govern land and other natural resource use. Among other things, planning may establish the location and intensity of different types of activity (i.e., residential, commercial, rural, transport), design requirements and standards, financial transfers required to pay for public infrastructure, and environmental performance measures. The degree to which natural and built environments are managed through planning can be broadly categorised into three models, ranging from conservative through to activist<sup>2</sup>:

- **The public health model.** Ensuring that negative externalities from the land use and development process are avoided or duly compensated by those giving rise to these costs.

- **The urban efficiency model.** Seeking to optimise economic (allocative) efficiency within the confines of environmental limits.
- **The social resource model.** Using the regulation of land use and development to proactively deliver equity as well as efficiency outcomes.

New Zealand's current planning system under the RMA most reflects the urban efficiency model. However, as outlined by the Panel and evidenced above, the RMA is neither delivering optimal economic efficiency nor effectively managing the environment within environmental limits. Accruing externalities (e.g. increasingly worsening housing affordability and environmental degradation issues) are increasingly highlighting shortfalls of the RMA.

While replacement of the RMA with the Natural and Built Environments Act (NBA), SPA and Climate Change Adaptation Act (CCAA) is designed to generate a step-change in how decisions about natural and urban environments are managed, it does not reflect a change to planning philosophy in New Zealand. Rather, the reformed resource management system provides an opportunity for New Zealand to realign the planning system to better achieve the intent of the urban efficiency model.

<sup>2</sup> Spiller, M. (2012) Land Management and Planning Legislation, Chapter 6 in Wellman, K. and Spiller, M. (2012) Urban Infrastructure Finance and Management, Wiley Blackwell

## Strategic Planning Act and Regional Spatial Strategies

The NBA will simplify the system by consolidating over 100 RMA policy statements into 14 Natural and Built Environment Plans (NBA Plans)<sup>3</sup>. The SPA is considered to be supplementary legislation that will require the development of 14 RSSs – spatially aligning with the 14 NBA Plans – to realise a preferred or ‘designed’ future, with 30+ year plans required for infrastructure provision, and 100+ year plans required to guide a response to the effects of climate change. The 14 RSSs will draw together aspects of Central Government legislation and the currently disjointed district and regional strategies of New Zealand’s 78 local authorities.

Targeted outcomes of the SPA and RSSs are to<sup>4</sup>:

- Promote the social, economic, environmental and cultural wellbeing of present and future generations.
- Protect Māori interests, support Māori aspirations and uphold Treaty settlements and rights.
- Better enable development within natural environmental limits, including by identifying:
  - areas of the natural environment to protect or restore
  - areas suitable for development that is at least sufficient to meet housing and business demands and enable competitive land/development markets, and
  - indicative locations for future infrastructure corridors and significant new infrastructure, including social infrastructure.

- Contribute to climate change responses and natural hazard risk reduction, including by identifying:
  - areas/infrastructure particularly vulnerable to the effects of climate change or hazards
  - climate-resilient locations for communities to grow or move into over time, and
  - how a region will drive emissions reductions.
- Support economic development, including in the primary sector; for example, through better integrated land and transport decisions that support well-functioning labour markets.
- Improve efficiency, including by:
  - managing issues and trade-offs higher up in the planning hierarchy, reducing the need for complex planning processes at lower levels, and
  - improving coordination of infrastructure investment.

The degree to which the SPA and RSSs achieve the above outcomes and contribute to achieving the objectives of reform (refer ‘project background’ above) depends upon the degree to which RSSs influence land use and how they relate to other legislation and policy directives. MfE has defined three options for the SPA and associated RSSs. All options aim to bring out trade-offs between different land uses and effectively inform subsequent decision making. This said, they are not intended to become a mechanism by which decisions about land use are made. This will be the role of the plans made under the NBA.



<sup>3</sup> NBA Bill: Parliamentary paper on the exposure draft, accessed July 2021

<sup>4</sup> MfE, provided to SGS on 15 March 2021

The three options for the SPA relate to the scope of national and regional considerations to be incorporated in RSSs and the level of detail with which they are described. These are defined in Table 5.

In addition to uncertainty relating to elements that will be included within RSSs, there is also uncertainty about how binding the RSSs should be. In particular, the degree to which the SPA and RSSs affect central and local government decision making and funding structures was unclear at the time of writing.

TABLE 5: SPA AND RSS OPTIONS

PROJECT OPTION	ELEMENTS INCLUDED IN OPTION
Base case option	In this option, the NBA is assumed to be delivered to replace the RMA. However, the SPA and RSSs are not delivered. This is our counterfactual case against which each of the other three options (narrow, strategic and comprehensive) are evaluated.
Narrow option	<ul style="list-style-type: none"> <li>Existing and future regional constraints to development (e.g. significant ecological areas, cultural heritage landscapes or sites, and areas vulnerable to natural hazards and the effects of climate change).</li> <li>Existing and future growth areas for intensification and expansion.</li> <li>Existing and future transport, infrastructure networks and sites required to unlock or provide for this growth.</li> </ul>
Strategic option	<p>All elements in the narrow option, plus the below:</p> <ul style="list-style-type: none"> <li>Major social infrastructure of regional or sub-regional scale (e.g. hospitals).</li> <li>Current coastal and rural land uses (at a high-level) and future changes of regional or sub-regional scale (e.g. major afforestation).</li> <li>Specific transformation and regeneration areas requiring government investment.</li> <li>Other major strategic matters that meet a statutory test or criteria relating to their significance (e.g. scale, ability to shape/influence regional or sub-regional transport and settlement patterns, environmental outcomes, and other strategic opportunities).</li> </ul>
Comprehensive option	<p>All elements in the narrow and strategic options, plus the below:</p> <ul style="list-style-type: none"> <li>All local government social and community infrastructure (community and recreational facilities and parks, hospitals, schools, court houses, major public housing areas etc).</li> <li>Non-spatial elements and targets that complement the spatial strategy and contribute to wellbeing (e.g. skills and business support/economic development, health and educational attainment outcomes).</li> </ul>

Source: MfE, 2021

**Key implication for evaluating impacts of the SPA and RSSs:** uncertainty regarding elements included within RSSs and the degree to which the SPA and RSSs bind government to actions affects how granular and precise SGS's analysis can be. Reflecting uncertainty, SGS has adopted a broad evaluation approach to describe and partly quantify impacts that are associated with effective strategic and spatial planning without detailing precise impacts of the SPA and RSSs. Our approach is detailed in Part B.



## Legislative and policy context

Under the current resource management system, decisions about zoning, infrastructure provision, environmental protection and management of climate change risks and hazards are made largely independently of each other and without consideration of long-term impacts<sup>5</sup>. The RMA is primarily implemented by local government.

However, Central Government can steer decision making about matters deemed nationally significant via 'national directions', which encompasses national environmental standards, national policy statements and national planning standards. While national directions have statutory weight under the RMA, disjointed planning with a short to medium-term focus is still inherent within the current resource management system. This is worsened as funding mechanisms across central and local governments are often misaligned, with differing priorities for land use and infrastructure.

The new legislative architecture proposed as part of RMA reform aims to resolve these issues. The SPA and RSSs, nested within a hierarchy of planning documents, has the potential to draw the requirements of the resource management system together to align central and local government expectations spatially. This would focus and streamline infrastructure planning across both levels of government and elevate public and private sector confidence to invest with a long-term vision.

Precisely how the SPA and RSSs will interact with and complement existing legislation and policies is currently being considered. However, it is envisaged that RSSs will be jointly produced by Central Government, local authorities and iwi. These partnerships are intended to improve capability and capacity in the system, and to ensure decision-makers have incentives to achieve good environmental outcomes.

While the SPA will be a standalone act, it will have strong linkages to NBA, especially in light of the spatial alignment of 14 NBA Plans and 14 RSSs. The SPA can be viewed as supporting legislation that, if effectively structured and managed, will elevate natural and built outcomes and contribute to achieving the objectives of RMA reform. The new resource management system under the NBA seeks to deliver improvements compared to the RMA<sup>6</sup>, including:

- Introducing a mandatory suite of natural environment limits to protect the natural environment's life-supporting capacity
- A stronger Te Tiriti clause and better recognition of te ao Māori and mātauranga Māori within the legislation
- An increased focus on planning for positive outcomes, in addition to managing effects
- Greater application of mandatory direction from Central Government to assist local government to fulfil its functions, including representing the interests of communities.

Achieving these improvements is consistent with RMA reform objectives. Specific details about how the NBA and associated reformed resource management system will achieve the above improvements were still being designed at the time of writing. However, the interim NBA RIS outlines two broad options, as detailed in Table 6 on the following page.

<sup>5</sup> MfE, provided to SGS on 15 March 2021

<sup>6</sup> MfE, Summary of Initial Impact Analysis to Inform Select Committee Inquiry, 2021

TABLE 6: NBA OPTIONS

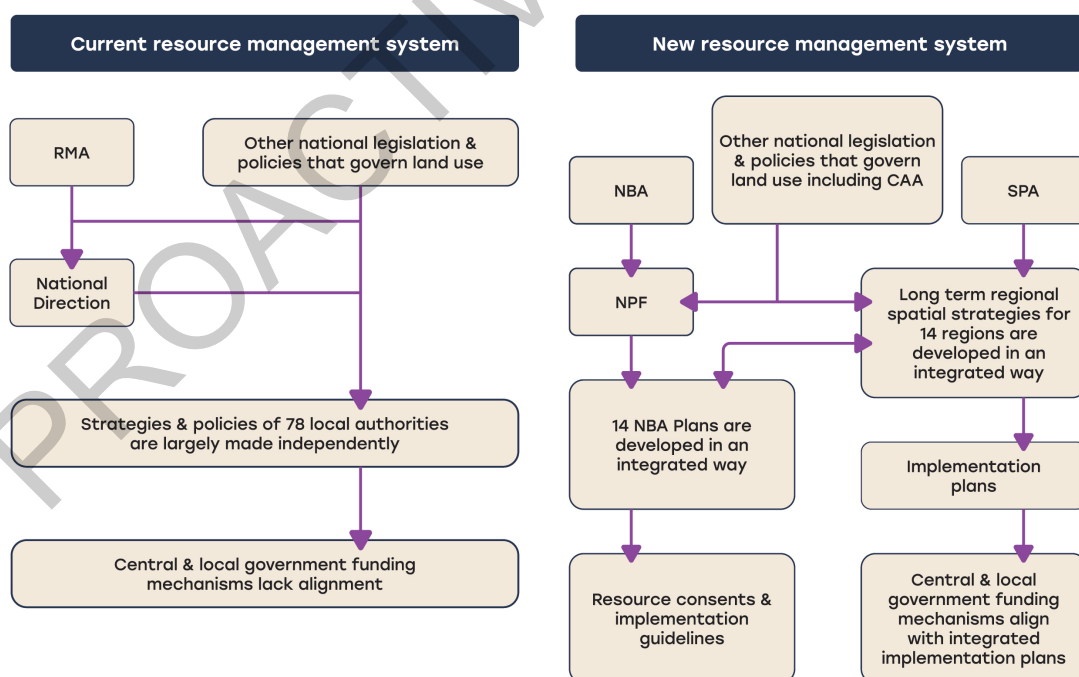
POLICY AREA	PANEL RECOMMENDATION	MFR RECOMMENDATION (PANEL PLUS)
Legislative Architecture	The Panel recommendation and MfE recommendation are consistent; replace the RMA with the NBA and create new legislation for spatial planning and managed retreat	
NBA purpose and supporting provisions	A statutory purpose to enhance the quality of the environment, guided by directives about limits and outcomes. It would also incorporate stronger Te Tiriti provisions and the concept of Te Mana o te Taiao.	As per Panel recommendations, with some strengthening to ensure use and development are within natural environmental limits. It would also incorporate stronger Te Tiriti provisions and the concept of Te Mana o te Taiao.
NBA NPF	National direction is released as separate statutory documents, as per under the RMA	The National Planning Framework (NPF) will be created, and national direction will be delivered via one statutory document
NBA Plans	The Panel recommendation and MfE recommendation are consistent; regional policy statement and resource management plans of 78 local authorities would be combined into 14 NBA Plans covering land, freshwater and the coastal marine area.	

Source: SGS, based on the NBA Interim RIS, 2021

In addition to strong linkages with the NBA, the SPA will also have lateral linkages and interdependencies with a range of existing legislation and policies which will remain within the new resource management system. The role

of the SPA and RSSs must be understood within the broader context of changes associated with RMA reform. The current and proposed resource management system hierarchies are outlined in Figure 4 below.

FIGURE 4: CURRENT AND MFE RECOMMENDED LEGISLATIVE AND POLICY HIERARCHY



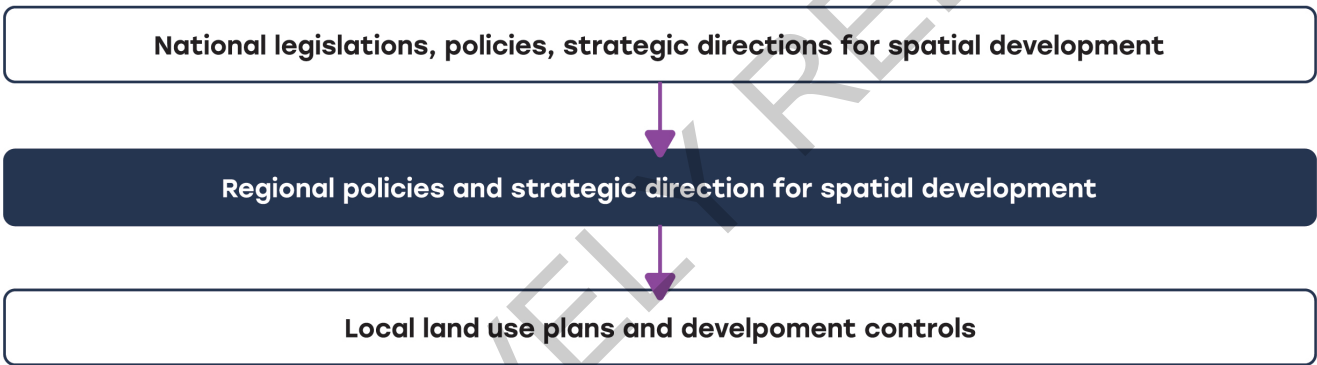
Source: SGS Economics and Planning, 2021

Under the new resource management system, planning decisions will be made in a coordinated way, that is, aligned with the NBA, CCAA, NPF and other relevant legislation and policy. The various planning-related objectives of the suite of existing legislation will be combined into RSSs, ensuring the integration of local authority plans and activities. In turn, RSSs will be legally bound by the NBA, SPA and NPF.

It is crucial that decision makers understand the existing legislative and policy context in order to make appropriate decisions about the SPA and RSSs. Key legislation and policies that will remain and/or evolve in the new resource management system are summarised in Appendix A. In sum, the current legislative and policy context is complex, with overlapping objectives and differing mechanisms to drive change. Although there is Central Government direction, it is largely the remit of local authorities to create strategic land use plans.

A simplified distillation of how the RSSs will interpret national direction at the regional level and ensure consistency and alignment of local planning is shown in Figure 5. This highlights the assumed pivotal role of RSSs. Without this intermediate level, local councils must solve ‘regional’ problems in their strategic and spatial planning from the position of institutions that only have a local mandate. This has been shown to be ineffective – local interests and biases may trump regional priorities regardless of the weight that Central Government give to regional issues. A heavy-handed top-down approach may not work either – this is likely to be resented by local authorities and carries high risks as central institutions do not appreciate or understand the local context.

FIGURE 5: THE ROLE OF RSSS



Source: SGS Economics and Planning, 2021

**Key implication for evaluating impacts of the SPA and RSSs:** While Panel findings detail systematic failings of the RMA, there are aspects of the current resource management system which do seek to spatially guide urban development in a way that enhances socio-economic outcomes within environmental limits. The SPA and RSSs, together with the NBA, have the potential to draw the complex resource management system together to provide a single, clear source of direction, with individual land use strategies and plans of 78 local authorities combined into 14 coordinated NBA Plans and RSSs. Conceptually, this provides opportunities to streamline decision making and improve wellbeing across the social, economic, environmental and cultural domains. However, if poorly structured and managed, the SPA and RSSs could add to a more complex environment. Resolution of design and governance details of the SPA and RSSs is a work in progress. This lack of resolution impedes granular analysis. Therefore, SGS’s approach seeks to provide qualitative and quantitative insights about the types of benefits that may typically be associated with effective structure and management of spatial plans within the context of the five objectives of RMA reform.



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**Part B**  
**Valuing Strategic**  
**Planning Act**  
**outcomes**

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# Approach to economic analysis



## Context for cost benefit analysis of the Strategic Planning Act

While the strategic scope of the reformed resource management system has been endorsed by Ministers, a number of system and regulatory design issues associated with the SPA and RSSs were still under consideration at the time of writing. These matters included which of the three options for the scope of the RSSs option would be adopted, and how the SPA and RSSs will specifically relate to, support and/or extend outcomes that will concurrently be delivered by the NBA, CCAA and other policies and legislation. As such, SGS has adopted a broad methodology to describe and quantify impacts associated with spatial planning.

For the purposes of the cost benefit analysis (CBA), SGS treated the SPA as an entirely optional reform, the pursuit of which would be contingent on a demonstrated net gain in community welfare compared to a Base Case where the objectives of RMA reform would be progressed solely via the NBA and CCAA. Were the SPA to be considered a non-negotiable essential element in the RMA reforms, it would form part of the Base Case and the economic analysis would focus not on whether the SPA should be implemented but how.

## Base Case and Project Case

Under the **Base Case**, the use and development of land will be regulated via designations, controls and standards set out in plans made under the NBA. Each NBA Plan will cover a statutorily defined region of New Zealand, of which there are 14.

Even though the RSSs will not exist in the Base Case, the NBA Plans will still need to align with or give effect to relevant national policies and standards. These may variously relate to the protection of environmental values and assets, reservation of nationally significant infrastructure corridors, achievement of more compact patterns of settlement and creation of adequate reserve stocks of developable land to support efficient housing markets.

Local governments in each region will be expected to work with each other and with relevant regional and national bodies to create the NBA Plans. In doing so, they will need to identify, understand and implement all relevant national policies as they relate to their particular region. Although no prescription has been made available as to how this process of translation from national to regional should occur, it will be an integral part of the NBA Plan production process in the Base Case.

This process is illustrated in Figure 6. Some form of cascading consideration will be applied to national, regional and local constraints and opportunities to arrive at NBA Plans which give due voice to all relevant policies and goals, regardless of geographic scale.

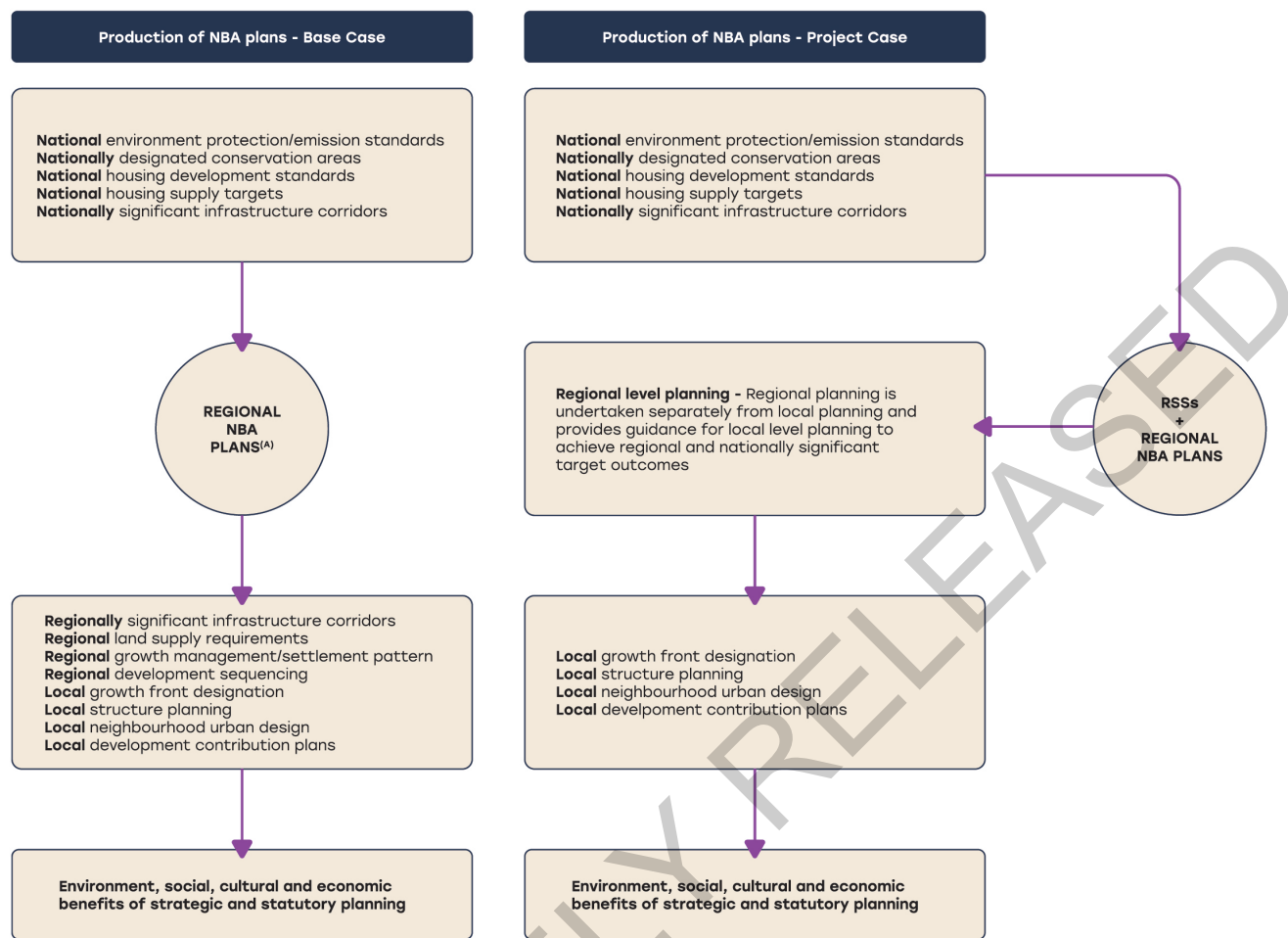
Through this reconciliation of national, regional and local considerations bearing on land use and development, the NBA Plans produced in the Base Case would, in principle, generate the full portfolio of well-documented benefits from good planning. These include protection of otherwise at-risk habitats and landscapes, continuity of agricultural production free from unwanted incursions of incompatible development, more compact cities including well-managed transit-oriented greenfield expansion, more walkable neighbourhoods, greater housing choice and more affordable housing to name a few.

In the **Project Case**, the SPA will mandate the creation of RSSs to provide a framework within which the NBA Plans will be produced.

The RSSs will, in effect, segment out the national and regional level planning considerations which, in any event, must be resolved in the generation of NBA Plans. In contrast to the Base Case, the resolution of these national and regional considerations will be subject to legislated prescriptions and conventions in respect of the discovery of relevant national policies and priorities, consultation with national and regional interests including infrastructure agencies, resolution of tensions between local and regional planning objectives, presentation of mapped constraints and opportunities and so on. In this sense, the Project Case represents a process reform as distinct from a substantive change in the scope of NBA Plans and the benefits they are expected to deliver.



FIGURE 6: PRODUCTION OF NBA PLANS – BASE CASE (LEFT) AND PROJECT CASE (RIGHT)



Source: SGS Economics & Planning, 2021. Note: (A) NBA plans do not provide adequate guidance to inform regionally significant infrastructure corridors, land supply requirements, growth management plans, or development sequencing.

**Marginal costs and benefits associated with the Project Case**

Given that the SPA represents a process reform rather than a content reform of land use and development regulation in New Zealand, the question arises as to what welfare contribution might this legislation make and at what cost.

Arguably, the same planning outcome could be delivered in both the Base and Project Cases – that is, NBA Plans which give effect to national policies, filtered through a regional lens and taking into account distinctive local factors. What welfare gain is achieved by segmenting regional/national considerations out of the NBA Plan production process and rendering them subject to a prescribed process?

This prescription may carry compliance costs; local bodies charged with the production of NBA Plans will have to give due attention to RSSs. And, indeed, the RSSs themselves will come at a resource cost.

However, at least two benefits could be expected from the SPA/RSSs process:

- The nation could enjoy a reduction in transaction costs incurred in the preparation of NBA Plans; the translation of national and regional priorities into a framework to guide local planning will not need to be ‘reinvented’ 14 times. Rather, these higher-order goals, objectives and obligations will be clearly set out as regional directions to guide local planning. If nothing else, this will save time in the preparation of NBAs which are consistent with national and regional priorities.

- Secondly, the risk of intentional or inadvertent neglect/misinterpretation of national and regional requirements in local planning will be mitigated, thereby improving the prospect of national policy being properly reflected in local regulation of development.

The upshot of these effects is that effective NBA Plans could be produced faster and/or to a higher quality standard as a result of the SPA and RSSs. This, in turn, means that the substantive planning benefits on offer in the Base may be delivered sooner and/or with greater certainty under the Project Case.

## Estimating the costs and benefits

### Marginal cost - preparation and administration of RSSs

SGS has drawn upon cost modelling developed by Castalia.

We have accounted for the costs of creating the RSSs under the SPA. These include direct production costs, for example, the staff and consultants engaged to design, oversee, research and construct the RSSs as per the requirements of the Act. An allowance has also been made for indirect costs associated with the SPA, including the creation of institutions and governance processes at national, regional and local levels which will be required to validate and maintain the RSSs.

As noted above, the national and regional level planning work that will go into the RSSs will also need to be done

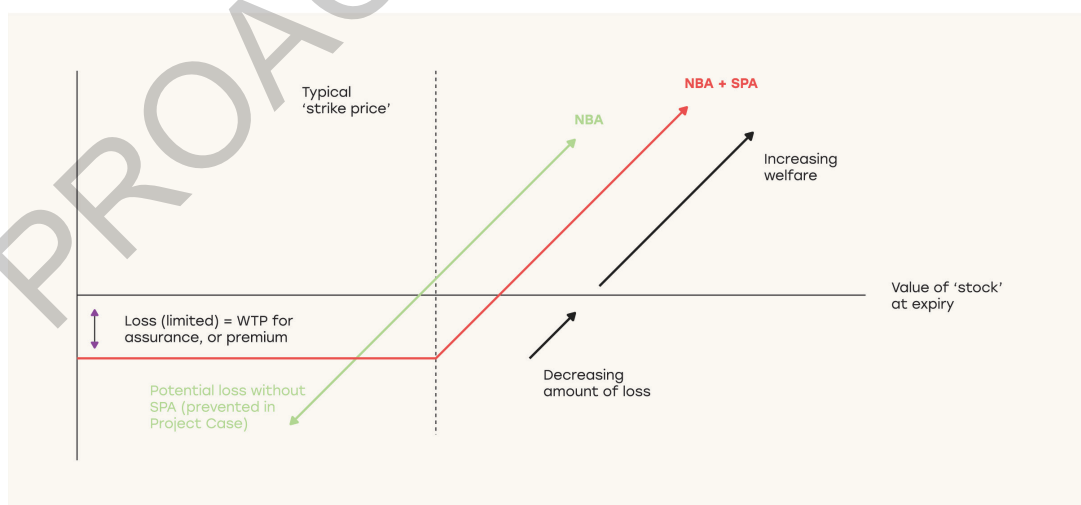
in the Base Case, albeit without the templates and prescriptions that would apply in the Project Case. The Project Case could even offer a net saving in this part of the process of generating NBA Plans. Accordingly, we have assumed that the establishment costs for the SPA and RSSs will be fully offset by avoided costs in the Base Case so that the net marginal cost of the Project Case is the present value of running the institutions and processes to maintain the RSSs.

### Marginal benefit – greater assurance of realising the benefits of good planning

The welfare gain offered by the SPA and the RSSs is that, compared to the Base Case, the prospects for timely production of high quality NBA Plans will be improved. Put another way, the risk of non-achievement or underachievement of the benefits expected from NBA Plans will be mitigated.

The value of this benefit will be given by the New Zealand community's willingness to pay (WTP) for greater certainty that the full value from good strategic household paying an insurance premium to maintain an expected beneficial outcome, for example, continuity of income in the event of an unforeseen disruption to business or employment. It is also analogous to a corporation knowingly incurring a cost to hedge against an investment portfolio not performing as planned. Figure 7 shows how the Base and Project Case can be viewed within the context of a call option. It shows that the Project Case costs can mitigate potential losses that may occur in the Base Case.

FIGURE 7: HEDGE STRUCTURE



Source: SGS Economics and Planning, 2021. Note: 'Stock' refers to either the NBA or the NBA+SPA scenarios.



Note that in these cases, the WTP relates to the mitigation of risk in achieving benefits, not the substantive benefits themselves. However, what an economic agent is willing to pay to avoid an adverse or unsatisfactory outcome will depend on both the likelihood and severity of any loss that might occur in the absence of a risk mitigation strategy. The following table records typical insurance premiums paid to mitigate various risks.

**TABLE 7: TYPICAL INSURANCE PREMIUMS**

RISK	SEVERITY	LIKELIHOOD	ANNUAL INSURANCE PREMIUM
Loss of house/ commercial building through fire, storm etc/	High	Low (other than in hazardous areas)	Around 0.2-0.5% of asset value
Loss of income	Moderate	Low-moderate	Around 1% of insured income stream (time limited and age dependent)
Irreparable damage to motor vehicle	Low	Moderate	Around 2-3% of asset value

Source: SGS, 2021

SGS has no evidence as to the extent to which the reliability, quality and effectiveness of NBA Plans, in the absence of the guidance and direction given by the SPA and RSSs, will fall short and therefore compromise the delivery of planning benefits. However, any such lapse would undoubtedly have serious cost implications for the country, as is evident in the failures experienced under the RMA. Given the scale of potential losses, it might be expected that the New Zealand community would be willing to pay a high premium for greater assurance of benefit delivery. Nevertheless, for the purposes of the economic analysis, we have applied a relatively low premium to capitalised benefit ratio of one per cent.

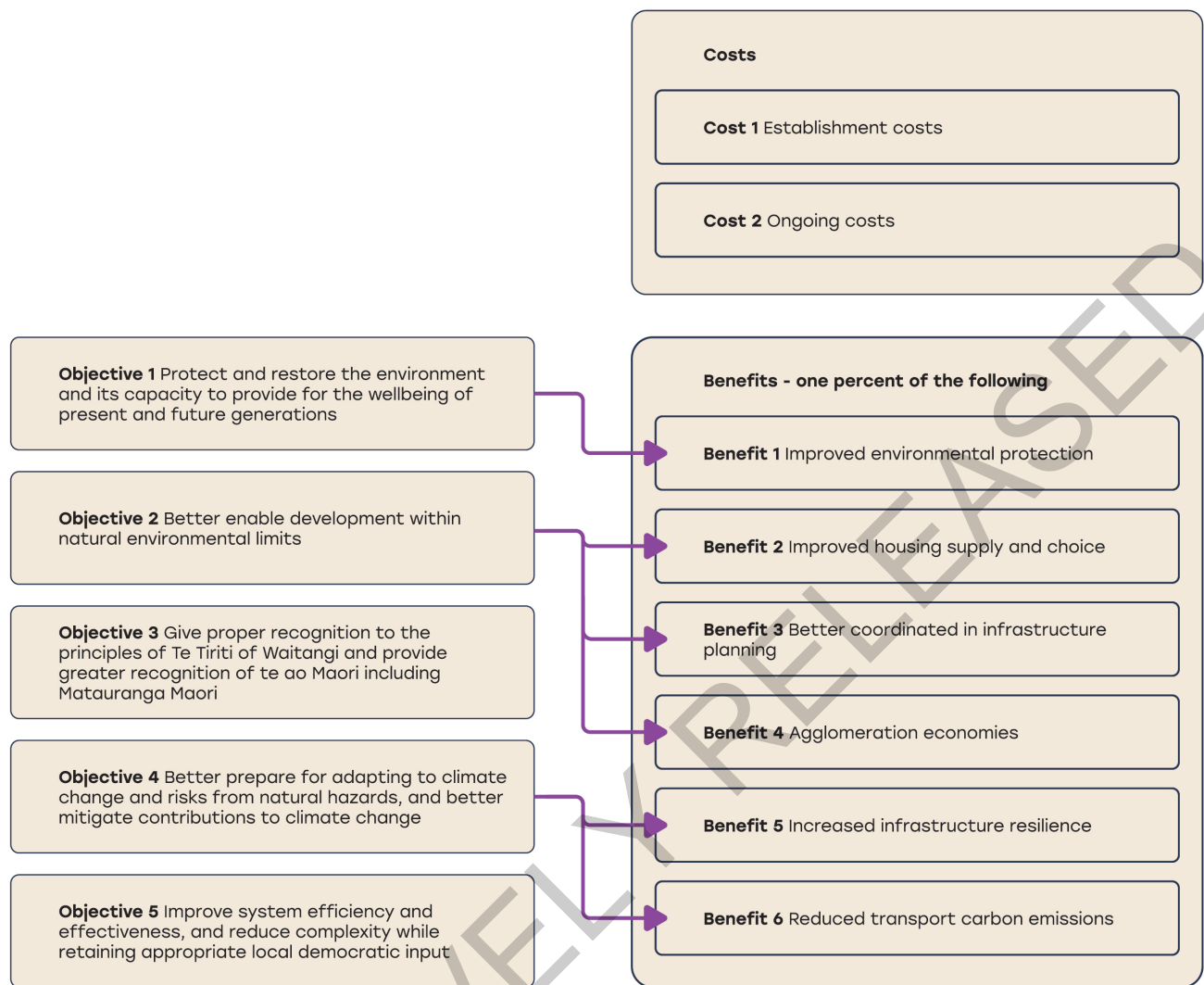
The CBA, therefore, takes as its starting point a portfolio of benefits expected from the successful implementation of the NBA Plans. These have been estimated by SGS and/or garnered from previous studies. These benefits are modelled over a 30-year benefit period<sup>7</sup> starting from FY2023 (following implementation of the SPA and creation of RSSs) and capitalised at five per cent to provide a notional present value<sup>8</sup>.

The costs and benefits of the SPA and RSSs are outlined in Figure 8. These costs and benefits are quantified in subsequent sections. Note that benefits have not been modelled against objective 3 or objective 5.

<sup>7</sup> This is the minimum timeframe that will be planned for in RSSs

<sup>8</sup> Five per cent is Treasury's recommended discount rate for projects that are difficult to categorise (e.g. regulatory proposals)

FIGURE 8: EVALUATION FRAMEWORK



Source: SGS Economics and Planning, 2021

# The cost of reform

Table 8 shows the present value cost of resource management reform for the Project Case and the Base Case. Project Case values have been sourced from cost modelling undertaken by Castalia. Base Case values also draw on cost modelling by Castalia. However, they omit items specific to the SPA and RSSs.

This suggests that present value Project Case costs would be greater than present value Base Case costs by around \$231 million. Most of this (\$150 million) incremental increase occurs in the establishment phase, owing to the high costs of producing the key 'artefacts' of the SPA, that is, the RSSs.

**TABLE 8: PRESENT VALUE COSTS OF THE SPA AND RSSS (DISCOUNTED AT 5%)**

SCENARIO	COST ACCRUING TO	ESTABLISHMENT COSTS (\$'000)	ONGOING COSTS FOR 30 YEARS (\$'000)
Base Case Cost	Central Government	331,845	494,744
	Local governments	334,960	2,351,577
	Maori	38,180	3,235
	RM Users	16,072	1,681,637
	<b>Total</b>	<b>721,057</b>	<b>4,531,193</b>
Project Case Cost	Central Government	3796,837	494,744
	Local governments	409,356	2,413,854
	Maori	57,940	3,235
	RM Users	26,644	1,700,297
	<b>Total</b>	<b>870,777</b>	<b>4,612,130</b>
Incremental cost of the project case	Central Government	44,992	0
	Local governments	74,395	62,278
	Maori	19,761	0
	RM Users	10,572	18,660
	<b>Total</b>	<b>149,720</b>	<b>80,938</b>

Source: SGS Economics & Planning, 2021, based on Castalia cost model



This \$231 million estimate is likely to be a gross overstatement of the marginal costs associated with the Project Case. As explained, there would be no prescribed requirement in the Base Case to analyse national and regional policies, constraints and priorities, but such considerations will inevitably have to be factored into NBA Plans if they are to be effective and, indeed, acceptable to Central Government. Thus, the scope of planning work that would go into the preparation of RSSs in the Project Case would likely also be required in the Base Case. Indeed, fulfilling this scope of work in the Base Case could well be more expensive than in the Project Case notwithstanding that the latter mandates the creation of particular regulatory artefacts.



By comparison to the Project Case, the Base Case could be prone to higher discovery, negotiation and transaction costs as each region finds its own way to factor national and regional matters into their NBA Plans. We have therefore assumed that the establishment costs for the SPA will be offset by savings in discovery, negotiation and transaction costs that would otherwise be incurred in the Base Case. The net marginal cost of the Project Case becomes \$81 million.

# Protect and restore the environment

**Objective 1.** Protect and restore the environment and its capacity to provide for the wellbeing of present and future generations.

**SPA and RSSs contribution.** RSSs would support this objective by making it easier for NBA Plans to rigorously account for spatial environmental limits and identified ecological and culturally significant areas that are inappropriate for development.

## Benefit 1 – Improved environmental outcomes

### Background and context

The protection of New Zealand's natural capital is vital, not just for the environmental function that it plays but also for New Zealand's economic productivity and the social opportunities that it provides to its citizens and visitors. New Zealand's natural capital has been valued at between \$520 billion (\$458 billion for marine and \$62 billion for land based natural assets) and \$1.8 trillion<sup>9</sup>. This equates to around 1.7 to 5.9 times the national gross domestic product (GDP). Primary industries directly dependent upon New Zealand's natural capital account for around 5.5 per cent of New Zealand's GDP, amounting to more than \$15 billion in 2019<sup>10</sup>, and 13 of New Zealand's top 20 export commodities (about 70 per cent of New Zealand's export earnings) depend on natural resources<sup>11</sup>.

New Zealand's natural capital is in decline. Only one-third of the original native forest remains, while wetland areas have been reduced to just 10 per cent of the pre-human area. Similarly, water quality in many rivers and lakes has deteriorated in recent decades<sup>12</sup>. Almost 4,000 native species are at risk of extinction. Some of these declines are irreversible (e.g. extinction), while others may be reversed with substantial effort due in part to the complexity of ecosystems.

“Large gaps in knowledge on the state of our biodiversity and the condition of many ecosystems may limit our ability to fully understand and reduce future declines.” – MfE, *Environment Aotearoa 2019*.

The NBA will introduce environmental limits and an outcomes-based approach that is anticipated to provide significant natural system benefits beyond those which would be generated under the retention of the RMA. It is anticipated that the 14 NBA Plans, developed in the Base Case, will define areas where reversal of environmental degradation is a priority (for example, where there has

<sup>9</sup> NBA Interim RIS, 2021

<sup>10</sup> Stats NZ, New Zealand national accounts – industry production and investment, year ending March 2019.

<sup>11</sup> Stats NZ, Environmental-economic accounts: 2018 (corrected).

<sup>12</sup> MfE Environment Aotearoa, 2019

been a significant loss of biodiversity or the land is highly productive, or areas with threatened species), areas that must not be developed, areas that are suitable for development, and so on. While the 14 NBA Plans will generally align with the NPF and will reflect the regional context, there is a risk that they will be developed in different ways and with inconsistent thoroughness. The Project Case, which incorporates the SPA and RSSs, will provide a framework within which the NBA Plans will be produced, and this will provide greater assurance that NBA Plans will be consistently developed in line with the national direction provided in the NPF.

It also provides an opportunity to enhance consideration of local context and buy-in from local authorities, businesses and citizens, stemming from improved participation in developing regional and local plans. That is, the SPA and RSSs have the potential to guide the development of comparatively better NBA Plans which will, in turn, generate benefits associated with a more efficient planning system and better planning outcomes. Within the context of Objective 1, the better outcome would be greater assurance of environmental protection and the continuation of productive industries.

Valuing annual benefits associated with New Zealand’s natural capital is difficult, and it is widely accepted that there is no method that captures benefits with precision. Numerous frameworks may be adopted to value annual benefits, each with advantages and shortfalls. Two approaches that are frequently adopted are ecosystem services (ES) and total economic value (TEV). These approaches are outlined below.

### ECOSYSTEM SERVICES

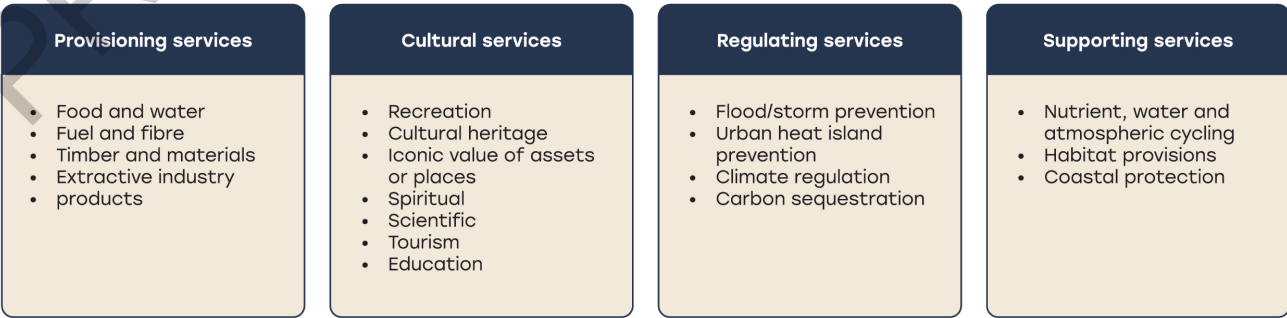
ES captures the many and varied benefits to society provided by the natural environment. It includes

provisioning services, cultural services, regulating services and supporting services. The types of benefits within each of these categories are shown in Figure 9. Note that the dot points do not reflect a complete list. ES provides a formal way of drawing links between ecological processes and the benefits they provide to people. They capture actual benefits, such as food, water and education, as well as benefits in the form of avoided costs, such as reduced property damage from flood mitigation provided by natural ecological systems.

ES are generally maximised when the underlying natural capital is of highest value. However, it is possible that a high ES value reflects the erosion of natural capital. For example, it is possible to overfish or over cultivate land, which generates short-term economic benefits associated with provisioning services at the expense of future benefits. The exploitation of natural capital for short-term gain may also have adverse effects on more intangible and complex benefits, such as those relating to regulatory and supporting services.

Unless ES have a market value (i.e., the good or service is tangibly exchanged/provided), they must be quantified or assessed by other means, generally via surveying or imputing WTP and/or via benefits transfer methodology, whereby the benefits modelled within one area are scaled across a broader region or broader population. The benefits transfer approach often relies upon parameters sourced from international literature and also incorporates a degree of subjectivity about expansion factors used to scale impacts. These factors and other limitations can lead to a high degree of uncertainty of outputs, and it is possible that the ES approach may significantly overstate or understate impacts. Furthermore, valuing future benefits associated with regulating service and support services is inherently complicated, reflecting their intangibility as well as uncertainty about the continuity of these complex functions.

FIGURE 9: ECOSYSTEM SERVICES



Source: SGS, based on a range of literature, 2021

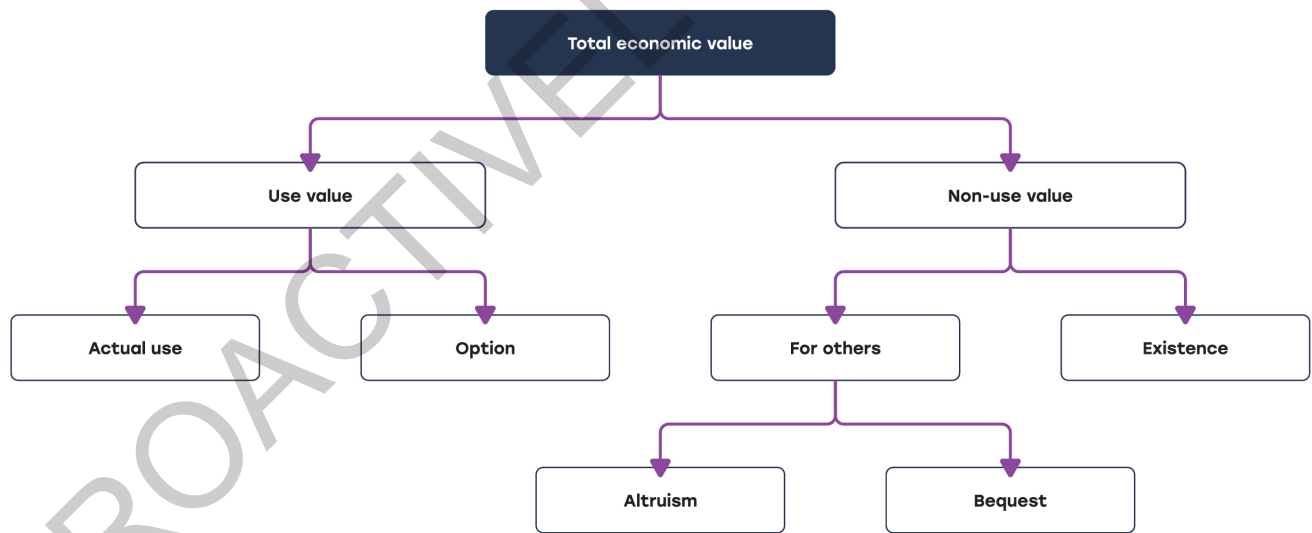


TOTAL ECONOMIC VALUE

TEV has a significant overlap with ES, although there are some key differences. TEV is a concept frequently used in CBA to capture the value that a group of people or society derive from a natural resource compared to not having that resource. It recognises that natural capital has value beyond tangible market factors. The general TEV framework is outlined in Figure 10, noting there are several variants to this model.

In the TEV model, there are ‘use’ and ‘non-use’ values. Use value includes the direct value of products removed from nature (e.g. provisioning and cultural services), as well as the value of having the option for future use. Non-use value includes the value for others alive today (altruism) and future generations (bequest), as well as existence value derived from the assurance that natural capital exists for other species and serves important regulating and supporting services. In the TEV model, non-use value is often calculated using the WTP methodology. As with ES, a high TEV can reflect the high value of the underlying natural capital as well as the erosion of that natural capital.

FIGURE 10: TOTAL ECONOMIC VALUE



Source: New Zealand Treasury, 2018 (original source OECD, 2006)



## SGS's approach

As outlined in the 'approach to economic analysis' section, SGS has quantified benefits associated with greater assurance about outcomes – e.g. improved environmental protection – as opposed to measuring actual outcomes.

SGS has drawn on academic literature to model provisioning and cultural, regulating, and passive (non-use) benefits. To this end, the analysis draws on both the ES approach and the TEV approach. Double counting has been eliminated.

The analysis only accounts for land-based benefits, which understates benefits as the SPA and RSSs will cover coastal marine areas which, as outlined earlier, have a natural capital value of around \$458 billion – this is around 7.5 times that of land based assets, which have a natural capital value of around \$62 billion.

The approach to valuing greater assurance of continuity of these ecosystem services is outlined in Table 10.

While there are limitations of the above approach – for example, the broad assumptions relating to applied percentages – the modelling is conservative for the following reasons:

- SGS has modelled NBA Plans to be a risk mitigation tool with a WTP of one per cent of total ecosystem service benefits. The benefit of the SPA and RSSs was then modelled at one per cent of that, or 0.01 per cent of total ecosystem service benefits. Increasing the WTP from 0.01 per cent of total ecosystem benefits to 0.025 or 0.05 would significantly increase the modelled benefits.
- The SPA and RSSs could, theoretically, contribute to better NBA Plans that comparatively protect environmental assets to provide benefit continuity. A WTP to the improvement to NBA Plans would provide further justification to elevate the WTP above 0.01 per cent of total ecosystem benefits.

**TABLE 9: VALUE OF NEW ZEALAND'S LAND BASED ECOSYSTEM AND THEIR SERVICES**

BENEFIT	ANNUAL VALUE
Provisioning and cultural	\$33.7 billion
Regulating services	\$17.0 billion
Passive value	\$13.7 billion
Total	\$64.5 billion

Source: 'Total Economic Value' of New Zealand's land based ecosystems and their services, Patterson, M & Cole, A, 2012. Note: SGS has inflated 2012 values to 2021 values within the model

**TABLE 10: GREATER ASSURANCE OF ENVIRONMENTAL PROTECTION THROUGH THE SPA AND RSS - PARAMETERS**

MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Annual benefit of ecosystems and their services	\$64.5 billion	Refer to Table 9
Growth of benefits	In line with population	Provisioning and cultural and passive values are likely to increase somewhat in proportion to population. Regulating services may not, however, these services are becoming increasingly important
WTP for greater assurance of continuity of annual benefit in the Base Case, that is, via NBA based resource management system	1% of annual benefit, i.e., \$645 million in 2021	This is assumed and reflects that there will be a WTP for improved management of ecosystems in the Base Case
WTP for additional assurance of continuity of annual benefit via the development of the SPA and RSSs	1% of reformed system, i.e., \$6.45 million in 2021	This is assumed and reflects that the NBA Plans developed in the Base Case will deliver the bulk of assurance of environmental protection

Source: SGS Economics and Planning, 2021

## Findings and implications

Compared to the current RMA system, the Base Case, including the NBA and NBA Plans in isolation, is likely to generate significant benefits by protecting and restoring the natural environment. Including the SPA and RSSs will, however, elevate the likelihood of achieving these benefits. The WTP for this increased likelihood has been modelled at one per cent of the total WTP for the NBA based resource management system.

The modelling outputs suggest the benefit of greater assurance of environmental protection through the inclusion of the SPA and RSSs within the broader planning framework has a present value of around \$100 million. This is an annual WTP of \$6.45 million in 2021 (refer to Table 10), increased in line with the population over a 30-year appraisal period and discounted at five per cent per annum.

This is a benefit for New Zealand's broader economy and environment and the wellbeing of its citizens. Across New Zealand's current population of 5.13 million, the present value benefit of \$100 million reflects a WTP of around \$20 per citizen to better protect the environment through the SPA and RSSs over a 30-year period, or around \$0.66 per year. This WTP would vary slightly across the narrow, strategic and comprehensive options.



# Better enable development within environmental limits

**Objective 2.** Better enable development within environmental biophysical limits including a significant improvement in housing supply, affordability and choice, and timely provision of appropriate infrastructure, including social infrastructure.

**SPA and RSSs contribution.** Achieving this objective will generate significant economic and social impacts. RSSs may facilitate faster and more accurate resolution of regional constraints and opportunities around the supply of development capacity.

**Better enabling development within environmental limits an improve housing supply and choice and lead to better coordination of infrastructure planning and delivery. These outcomes will deliver benefits in their own right, and will also contribute to elevating agglomeration economies within New Zealand. These benefits are described and quantified below.**

## Benefit 2 – Improved housing supply and choice

### Background and context

New Zealand, particularly Auckland, is in the midst of a housing affordability problem, with some of the highest urban land and housing prices relative to income in the developed world<sup>13</sup>. This adversely impacts productivity by distorting investment markets and constraining labour supply in key areas and industries. The social implications are equally serious. Housing costs for low-income New Zealanders have doubled as a proportion of income since the 1980s, accentuating social disadvantage<sup>14</sup>.

Such is the problem that the United Nations and New Zealand Government have formally recognised the country is facing a housing crisis<sup>15</sup>.

There are many drivers for New Zealand's housing crisis, some of which stem from the current resource management system – for example, limited supply of greenfield and infill land to enable development capacity (including the poor provision of supporting infrastructure), substandard housing quality, absence of an overarching Te Tiriti and human rights-based housing strategy, and lack of adequate social housing. These are complex drivers which partly result from the overarching issue of multiple, overlapping regulations that limit development within urban and fringe urban environments.

<sup>13</sup> Panel report, Transforming the resource management system: opportunities for change, Nov 2019

<sup>14</sup> Panel report, Transforming the resource management system: opportunities for change, Nov 2019

<sup>15</sup> United Nations Human Rights, Office of the High Commissioner website, accessed 2021

Rising land and housing prices relative to wages favour current homeowners at the expense of people who wish to enter the housing market. It also impacts renters, depending on the extent and speed at which rents move with property prices, and it leads to adverse flow-on effects throughout the economy, including:

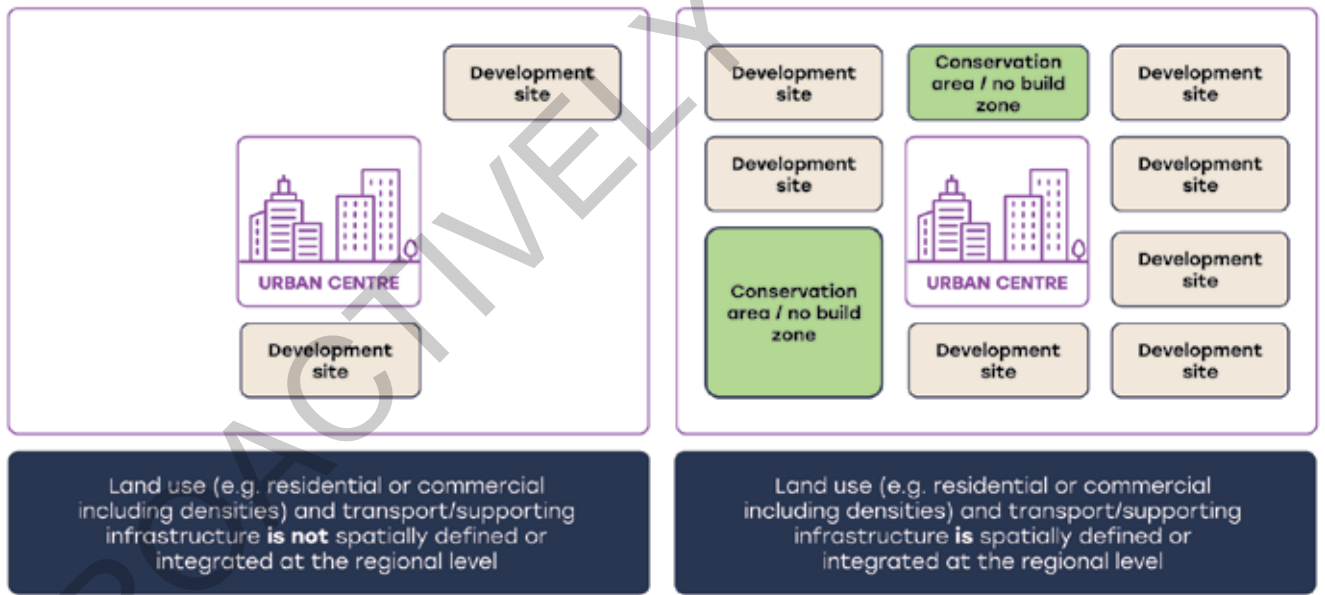
- Discouraging people from living and working in productive locations
- Increasing the cost of capital for investment and increasing investment risks associated with volatile land and housing prices
- Increasing social and economic inequality, including wealth inequality
- Exacerbating health problems associated with inadequate or overcrowded housing, and

- Imposing fiscal costs to Government because of expenditures on accommodation supplements for a large share (60 per cent) of rental properties. At present, the Government spends \$2 billion per year on accommodation supplements; if constrained supply pushes up rents, these expenditures also increase<sup>16</sup>.

Development opportunities in New Zealand are currently rationed through council sequencing. This limits choice and drives land banking, which is the practice of securing large blocks of undeveloped (generally peri-urban) land with a view to exploiting significant value uplift following future rezoning, public infrastructure investment, and associated development opportunities.

The current approach taken by councils to urban development and the opportunity available through the NBA based resource management system is presented in Figure 11. Note that ‘development site’ refers to both greenfield and infill development sites.

**FIGURE 11: CURRENT DEVELOPMENT OPPORTUNITIES ARE LIMITED BY COUNCIL SEQUENCING (LEFT); SPATIAL PLANNING HAS THE POTENTIAL TO CREATE MORE OPPORTUNITIES FOR DEVELOPMENT (RIGHT)**



Source: SGS Economics and Planning, adapted from Sense Partners, 2021

<sup>16</sup> MRCagney, 2016

The current approach limits development within urban and fringe urban areas. The effects of this on dwelling prices and supply, as conceptualised by PwC<sup>17</sup>, is shown in Figure 12.

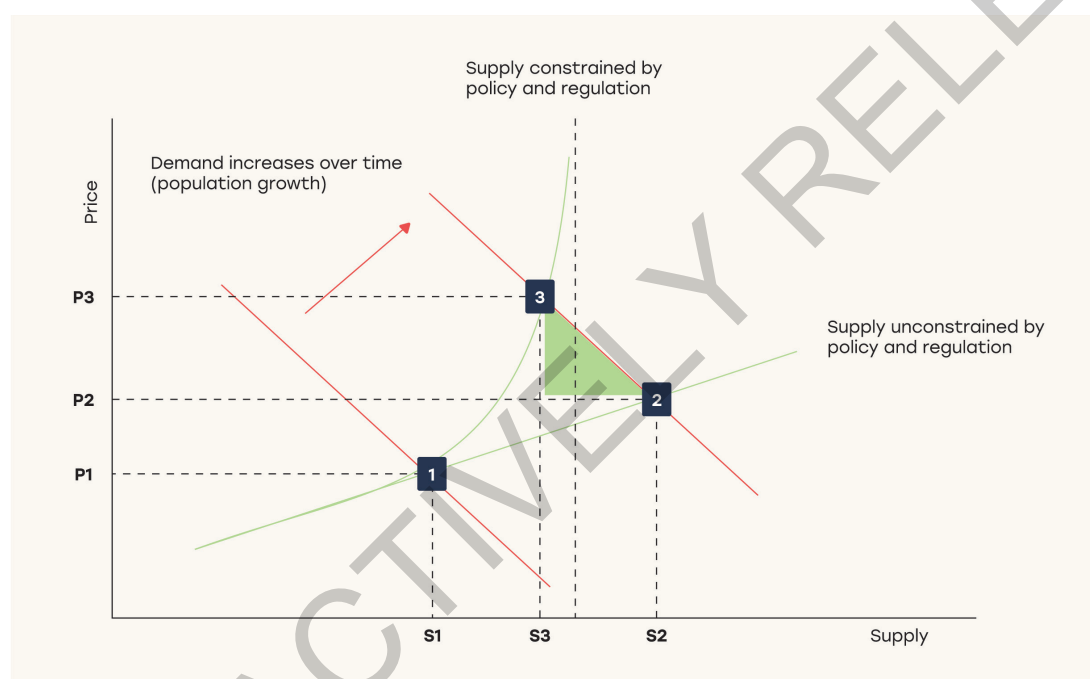
Under supply constrained conditions, housing prices shift from P1 to P3 as the population increases, while supply shifts from S1 to S3. Under a more responsive system, housing prices shift from P1 to P2, with supply shifting from S1 to S2.

This is a simplified stylisation of the relationship between housing supply and price. However, it is useful in explaining the widely shared intuition as to the root cause of New Zealand's, and particularly Auckland's, current housing

crisis – in essence, the housing crisis is the result of supply constraints. Loosening these constraints through the NBA based resource management system should deliver more dwellings at a lower cost per dwelling. This generates a consumer surplus (highlighted by the light green triangle in the below figure), or in plain terms, a benefit to consumers associated with paying a lower price for a product (in this instance, housing) than the price they were willing to pay.

Note that greater development opportunities do not directly translate to improved housing supply and choice. The policy and financial setting is complex, and funding constraints (private sector and government) may limit the delivery of optimum housing.

FIGURE 12: EFFECT OF POOR LAND USE REGULATION POLICY



Source: SGS, adapted from PwC, 2020

## RECENT EFFORTS TO ADDRESS THE HOUSING CRISIS HAVE STRUGGLED TO GAIN TRACTION

Over the past five years, two key national policy statements have been implemented to try and address the nation's housing crisis. The first policy was the National Policy Statement on Urban Development Capacity (NPS-UDC), which came into effect on 1 December 2016. The purpose of this policy was to ensure local authorities enable development capacity for housing and business – through

their land-use planning and infrastructure – so that urban areas could grow and change in response to the needs of their communities. MRCagney, Covec and Beca were engaged by MfE to assess the costs and benefits of implementing the NPS-UDC. Their analysis found that the net benefits of changing regulations limiting development in Auckland would deliver present value<sup>18</sup> benefits of:

- \$5.8 billion associated with lower housing costs for city residents, associated with expanding the urban growth boundary (larger city)

<sup>17</sup> PwC NPS UD (2020)

<sup>18</sup> Using an eight per cent discount rate and benefit period of 100 years



- \$6.3 billion associated with lower housing and transport costs associated with lifting building height limits (higher city).

Their analysis of the NPS-UDC shows that policies that enable increased greenfield and infill development (i.e. greater flexibility of supply to meet demand) have the potential to deliver lower housing costs of around \$12 billion<sup>19</sup> in Auckland alone.

In 2020, the National Policy Statement on Urban Development (NPS-UD) came into effect, replacing the NPS-UDC. As part of the approvals process for the NPS-UD, PwC undertook an analysis to model the impacts of achieving policy directives focussing on intensification, relaxing car parking requirements, responsiveness, wider outcomes and strategic planning (refer to legislative and policy context within Part A).

With greater clarity about the types of land use impacts generated by the NPS-UD compared to the NBA Plans and RSSs, PwC was able to model changes in land and dwelling supply to create more intense land use within six major cities – Auckland, Hamilton, Tauranga, Wellington, Christchurch and Queenstown. Across the preferred supply elasticity impact and demand response assumptions, household numbers in these six centres were modelled to increase by around 374,300 to the year 2043 in the Base Case, and by 447,400 in the Project Case. This suggests that the NPS-UD policy will lead to a net increase in around

73,100 households within these urban centres by 2043. Drawing on ‘status quo’ and ‘with policy supply’ elasticities, the modelling showed that a net increase of around 73,100 households will generate a cumulative undiscounted benefit of \$2.296 billion in increased discretionary income for new entrants, which equates to a one-off benefit of around \$31,409 per household added to an urban centre. Most of this benefit, around \$1.817 billion, is captured for new Auckland residents. Refer to Table 11.

PwC note that their model to calculate consumer surplus benefits of lower house values is conservative to capture benefits that have a high degree of confidence. Their report notes:

“The modelled projections for price growth... are well below the observed growth rates from 2007 to 2019... if we adjust demand growth to allow Auckland’s baseline price growth rate to reach 3.5 percent, the modelled consumer surplus benefits surge from \$1.8 billion to \$10 billion, all else equal”.

As with the analysis undertaken for the NPS-UDC, PwC found that the NPS-UD could deliver maximum benefits if the policy enabled concurrent opportunities for infill and greenfield development. In particular, high-quality greenfield developments that improve housing choice and affordability while also encouraging a modal shift away from private vehicle use were modelled to generate net benefits of around \$400 million across the six urban centres.

**TABLE 11: PWC MODELLED CONSUMER SURPLUS BENEFITS TO 2043**

URBAN CENTRE	HOUSEHOLDS ADDED WITH NPS-UD POLICY	CONSUMER SURPLUS BENEFITS OF NPD-UD	AVERAGE BENEFIT PER ADDED HOUSEHOLD
Auckland	51,853	1,817,000,000	35,041
Hamilton	4,392	83,000,000	18,898
Tauranga	6,137	253,000,000	41,714
Wellington	2,397	21,000,000	8,761
Christchurch	7,187	73,000,000	10,157
Queenstown	1,134	46,000,000	40,564
<b>Total</b>	<b>73,100</b>	<b>2,296,000,000</b>	<b>31,409</b>

Source: PwC, 2020. Note: the consumer surplus benefit shown above is for intensification policies only; it does not account for greenfield expansion benefits, which, as described below, have been modelled to increase consumer benefits by around \$400 million across the urban regions.

<sup>19</sup> This assumes lower transport costs are marginal to housing supply costs, which is consistent with most analysis of urban densification

Although it is too early to demonstrate empirically, the benefits modelled to be delivered by the NPS-UDC and NPS-UD were unlikely to be fully realised because of the undue complexity of the current resource management system.

By better enabling development within environmental limits, the NBA based resource management system aims to tackle the nation's housing problem and resolve the above issues to better serve New Zealand's growing population.

The SPA and RSSs will provide a greater level of assurance of achieving reform objectives by facilitating comparatively rapid and thorough regional level delineation of areas available for residential, industrial and commercial development, as well as the transport and supporting infrastructure required to promote these development areas.

### SGS's approach

While population growth in New Zealand is effectively certain<sup>20</sup>, the approach to and design of urban development to accommodate this growth is uncertain. As it is unclear what form the NBA Plans and RSSs will take,

SGS was unable to distinctly model changes to urban form and associated benefits, as per the analysis undertaken in respect of the NPS-UDC and NPS-UD. However, the work completed on the NPS-UDC and NPS-UD, along with theoretical and empirical evidence, suggests that policies enabling more intensive development within the urbanised area and increased supply of land on the urban fringe is the optimum approach to matching demand and supply. This drives down land and dwelling prices and, therefore, improves housing affordability.

Reflecting uncertainty and consistent with our approach to economic analysis, SGS has quantified benefits associated with greater assurance about improved housing supply as envisaged by the NPS-UD. This is a suitable methodology, as the NPS-UD will be embedded within the NPF and remain a central policy within the reformed resource management system. That is, the 14 NBA Plans and RSSs will need to give effect to the NPS-UD.

The approach to valuing greater assurance of delivering NPS-UD benefits is provided in Table 12, and the annual consumer surplus benefits of greater housing supply and choice calculated using PwC's analysis and projected beyond 2043 in line with New Zealand's population is shown in Figure 13 on the following page.

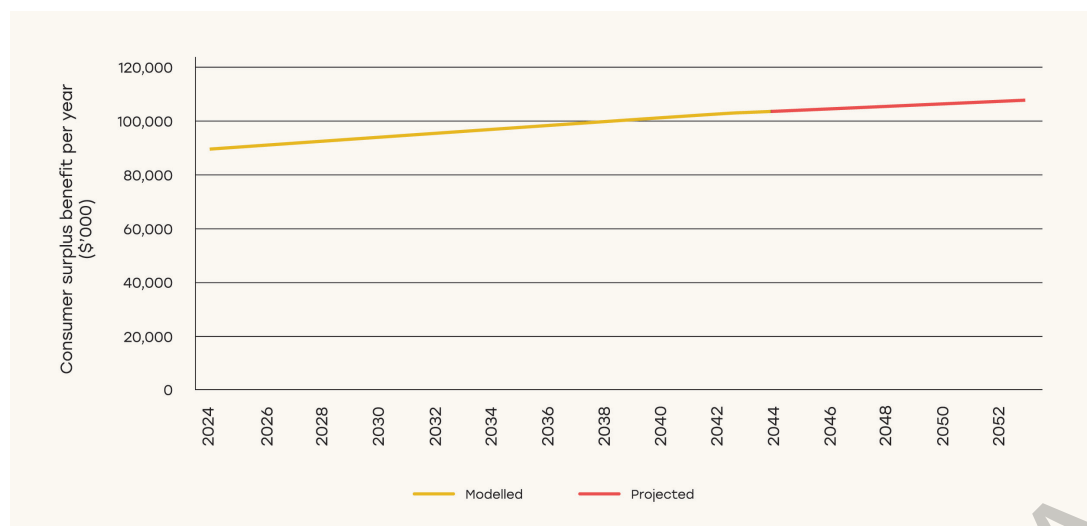
**TABLE 12: GREATER ASSURANCE ABOUT IMPROVED HOUSING SUPPLY - PARAMETERS**

MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Total consumer surplus benefit of intensification policies to 2043	\$2,296,000,000	Refer Table 11. This is the cumulative, undiscounted benefit of intensification only. It omits benefits of concurrently enabling greenfield expansion, thus is likely to be conservative
Consumer surplus growth beyond 2043	In line with population	This reflects that the annual consumer surplus is approximately proportionate to the number of urban dwellings
WTP for greater assurance of achieving outcomes modelled in the NPS-UD	1% of annual benefit	This is assumed and reflects that the NBA Plans developed in the Base Case could generate significant benefits in their own right. However, the SPA and RSSs will provide greater assurance of benefit realisation

Source: SGS Economics and Planning, 2021

<sup>20</sup> Stats NZ projects New Zealand's population to increase from around 5.094 million in 2020 to 6.353 million in 2053. Based on these figures, it is considered extremely unlikely that New Zealand's population would decline over the period.

**FIGURE 13: CONSUMER SURPLUS BENEFITS OF GREATER HOUSING SUPPLY AND CHOICE (INFILL ONLY)**



Source: SGS Economics and Planning, 2021

The modelled consumer surplus values reflect a constant annual growth rate of housing supply from 2021-2043, to deliver 73,100 additional dwellings beyond what would be delivered in the NPS-UD Base Case by 2043. The value of each added dwelling has been ascribed a consumer surplus benefit of \$31,409 (refer to Table 11). Benefits for current land and homeowners have not been modelled as they acquired property prior to implementation of the NPS-UD and they would sell and buy in the same market in the future.

## Findings and implications

The analysis is conservative as the reformed resource management system reflects the single largest step-change in how cities are planned in New Zealand since the inception of the RMA. The reformed resource management system, therefore, has the potential to facilitate significantly greater consumer surplus benefits than those envisioned by the NPS-UD.

As shown in Figure 13, consumer surplus benefits sum to around \$100 million each year. This equates to a present value benefit of around \$1.36 billion over a 30-year appraisal period. However, the WTP for greater assurance of achieving this outcome is one per cent of total benefits (see Table 12); hence, the present value benefit of the SPA and RSSs is around \$13.6 million. The narrow, strategic and comprehensive options would impact this figure marginally, with optimum outcomes potentially delivered through each option, depending upon the degree to which they enable and/or restrict development in particular areas.

There are large distributional consequences to the NPS-UD and, thus, the benefit modelled for the SPA and RSSs. On balance, the transfers are from existing land and property owners to renters and new home buyers. The magnitude of transfers is demonstrated in Table 12. These are total transfer values, i.e., not one per cent of the value of the transfers.

**TABLE 13: ESTIMATED BENEFIT TRANSFERS**

TRANSFER TYPE	TRANSFER VALUE (\$M)
Transfers between households, inc. from existing homeowners to first home buyers	49,921
Transfers to renters of new and existing units	26,078
Transfers between developers and households	22,527

Source: SGS Economics and Planning, 2021. Note: this draws upon transfer values calculated by PwC, 2020



### Benefit 3 - Better coordinated infrastructure planning and delivery

#### Background and context

The NBA will provide a clearer policy setting that provides a greater supply of development capacity within environmental biophysical limits. This will improve development across a range of features, such as housing supply, affordability and choice (see benefit 2), and timely provision of supporting infrastructure.

The NBA will lead to less ad-hoc, sporadic development, and it may provide an opportunity to deliver more consolidated settlement plans (although there is no explicit direction on this latter point). These outcomes would result in greater integration of land use and infrastructure investment, with efficient sequencing of infrastructure being a key benefit.

It is expected that the NBA based resource management system will better support corridor protection for linear infrastructure projects (e.g. roads, railways, energy networks, and water infrastructure). That is, central and local governments will be able to effectively plan for regional level infrastructure over the medium to long-term and will, subject to funding, consequently be able to acquire land required for those projects collectively.

Early acquisition of land within infrastructure corridors would limit government exposure to 'real' increases to land costs, whereby land prices grow faster than inflation or government revenues. As land acquisition is often a major cost of delivering infrastructure projects (or high costs are associated with limiting land acquisition – e.g. tunnelling), early acquisition can secure the future viability of regionally or nationally significant infrastructure projects and ensure their delivery to support the wellbeing of future populations.

It must be recognised that the early acquisition of land for major infrastructure corridors does have an opportunity cost. While early acquisition mitigates government exposure to 'real' increases to land costs, holding land is generally an unproductive activity. Money put towards land acquisition prevents that money from going towards other productive means, such as fixing immediate transport issues (e.g. localised congestion) or delivering other infrastructure that generates welfare gains for communities.

The benefit of protecting infrastructure corridors, an opportunity present under the Base Case and strengthened under the Project Case, has not been quantified within the CBA. However, it is a significant benefit. For example, Infrastructure Australia modelled that the protection of seven transport corridors across Australia's east coast could save Australian governments around AUD \$10.8 billion<sup>21</sup>.

The NBA is expected to feature price-efficient indicators to support the responsive supply of land. Better monitoring of local data would ensure councils are practical with planning efforts and aware of potential shortfalls that may arise. This has the potential to avoid an over-investment in development capacity to a level beyond what growth pressures and development markets require<sup>22</sup>.

Figure 14 on the following page shows the modelled effects of where the NBA may utilise land-use measures to reduce the shortfalls in competitive lands.

<sup>21</sup> Infrastructure Australia: Corridor Protection (2017). Note, this is in 2016 dollars and discounted at seven percent

<sup>22</sup> PwC NPS UD (2020)

In contrast to a sprawl scenario with ad hoc sequencing and development forms currently delivered under the RMA, the NBA based resource management system is expected to produce better-designed suburban environments with optimal infrastructure delivery sequencing. NBA Plans have the potential to consolidate land development, permitting efficient extension of private or social infrastructure. This will see a lower average infrastructure cost per household – this assumption is consistent with Kinhill analysis which found infrastructure provision in greenfield lots cost approximately two to four times more than infill locations in building developments with the same form<sup>23</sup>. The substantial variation is contingent on the existing infrastructure's capacity to support additional people. It is noted that there are some exceptions where infill development is associated with higher infrastructure costs than greenfield development.

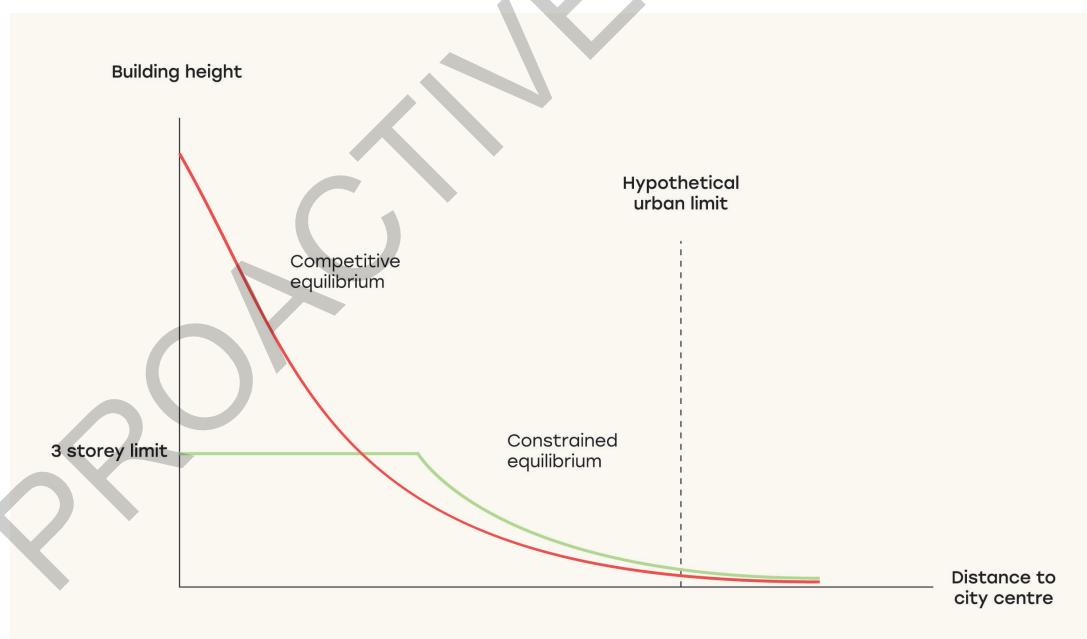
The NBA will contribute to better and more coordinated infrastructure planning, with more robust corridor protection and increased infrastructure savings per dwelling. However, the full benefits of integrated, longer-term planning may not be realised entirely across all the regions under the Base Case. The SPA and RSSs will support the NBA in its delivery of coordinated plans and, as such, provide a greater level of assurance in capturing these benefits.

## SGS's approach

Previous evaluations of the NPS-UD and wider evidence through the literature indicate that coordinated policy and plans can lead to cost savings on infrastructure delivery. As land-use options are maximised, costs from over-investment in less suited lands are mitigated while investment in more productive areas is facilitated<sup>24</sup>.

This benefit is explored throughout academic and professional literature, including previous SGS analysis within Australia and other consultancies focussing on New Zealand. This benefit can be monetised to capture the benefit of better coordination through delivering on the same infrastructure form. To recognise the uncertainty of the RSSs, SGS has applied a conservative approach. We have applied lower end estimates in our benefit transfer methodology and, as with other benefits, we have monetised the value of the SPA and RSSs solely in terms of greater assurance in capturing the cost savings from better coordination of infrastructure planning and delivery.

**FIGURE 14 MODELLED EFFECTS OF THE NBA - BUILDING CONSTRAINTS**



Source: Kulish et al as cited in MRCagney, 2016

<sup>23</sup> Kinhill as cited in SGS Comparative costs of urban development: a literature review (2016).

<sup>24</sup> PwC NPS UD (2020)

The methodology relies on analysis produced by Kinhill Engineers, which compared the infrastructure cost profiles of greenfield development scenarios featuring 12 combinations of density, neighbourhood design, structure planning and development sequencing. The study demonstrates that effective infrastructure sequencing within an urban environment can deliver infrastructure cost savings of around five per cent compared to delivering

the same infrastructure for the same urban environment in an ad-hoc way (an outcome that is inherent under the current resource management system due to poor integration of local authority plans)<sup>25</sup>.

Table 14 outlines the key assumptions in valuing better coordination in infrastructure planning and delivery.

**TABLE 14: BETTER COORDINATED INFRASTRUCTURE PLANNING - PARAMETERS**

MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Cost to deliver infrastructure per greenfield dwelling in the base case	\$88,800 per new dwelling	Source: New Zealand Productivity Commission cites a value of \$80,000 per dwelling in 2015. This has been inflated to \$2021 values within the model.
Cost savings compared to a 'sprawl' scenario	2.5%	As outlined earlier, a better-designed suburban environment has been found to deliver infrastructure cost savings of around 5%, compared to a sprawl scenario. A more conservative value of half this, 2.5%, has been adopted in SGS analysis to capture that the shift in development is not a shift from 'worst case' to 'best case'
Cost to deliver infrastructure per greenfield dwelling in the base case	\$86,573	Calculated using parameter values outlined above. This is a cost saving of \$2,227 per dwelling
Growth of developments	In line with population	This captures the clear link between population growth and dwelling demand
Persons per dwellings	2.7 persons per dwelling	Source: Stats NZ (2020)
Targeted greenfield growth	50% of total dwellings	The infrastructure delivery cost saving is applicable only to greenfield development. Infrastructure cost savings only apply to this proportion of dwellings constructed
WTP for greater assurance of achieving outcomes modelled in the NPS-UD	1% of annual benefit	This is assumed and reflects that the NBA Plans developed in the Base Case will generate significant benefits in isolation

Source: SGS Economics and Planning, 2021

<sup>25</sup> Kinhill as cited in SGS Comparative costs of urban development: a literature review (2016)



Alternatively, while this has not been captured in SGS's this analysis, Nunnes and Dennes have calculated the difference in externality costs between urban intensified and greenfield locations<sup>26</sup>. Refer to Table 15.

**TABLE 15: EXTERNAL INFRASTRUCTURE COSTS THAT ARE NOT BORNE BY USERS (PER DWELLING)**

TYPE OF INFRASTRUCTURE	URBAN INTENSIFICATION		GREENFIELD	
	LOW	HIGH	LOW	HIGH
Transport	\$0	\$0	\$6,787	\$10,298
Water/ wastewater	\$3,240	\$12,740	\$3,240	\$21,432
Stormwater	\$0	\$1,626	\$0	\$1,626
Open space and community facilities	\$0	\$0	\$2,068	\$3,186
<b>Total</b>	<b>\$3,240</b>	<b>\$14,366</b>	<b>\$12,095</b>	<b>\$36,542</b>

Source: MRCagney, 2016

## Findings and implications

Based on the assumptions outlined in Table 14, greater assurance of better-coordinated infrastructure planning and delivery has a present value of \$2.3 million. As noted, this takes a lower-end range of infrastructure cost savings. Previous SGS work on the benefits of compact and efficient city planning has found that infrastructure cost savings may be up to 25 per cent per dwelling. Within New Zealand, this equates to a saving of \$22,200 against an infrastructure cost per dwelling of \$88,800 (refer to Table 14). Adopting this cost saving would increase the present value of benefits of the SPA and RSSs from \$2.3 million to around \$23 million.

The modelled cost saving is initially a benefit to those who fund infrastructure provision, predominantly central and local governments. However, this benefit may be passed onto developers through reduced developer contributions and, in turn, to New Zealanders through lower land and housing prices.

The benefit of \$2.3 million can be understood as the cost savings resulting from systems efficiency, occurring from linear sequencing and planning dwellings more efficiently around shared utilities and spaces. This value would vary slightly across the narrow, strategic and comprehensive options, as land-use controls may either enhance or negate these savings, despite its intent.

As discussed, greater infrastructure planning through corridor protection will reduce the future financial and social cost of delivering infrastructure by facilitating the early acquisition of required land. In light of Australian evidence highlighting the present value benefits of AUD \$10.8 billion, including corridor protection within the CBA, it would increase the modelled benefits significantly.

<sup>26</sup> MRCagney, 2016

## Benefit 4 – Agglomeration economies

### Background and context

Compared to the current resource management system, the NBA based resource management system will establish an improved urban environment where current and future housing is better connected to service and employment centres. This will increase economic density, which has been statistically demonstrated to increase productivity within a region. This higher level of productivity associated with increased economic density, termed agglomeration economies, translates into an increase in gross value added (GVA) per hour worked or per \$ of capital invested. Simply, agglomeration is the return from knowledge transfer that arises from workers interacting in close spaces and facilitated by a more robust and interconnected network.

Agglomeration benefits in production stem from a variety of factors, including:

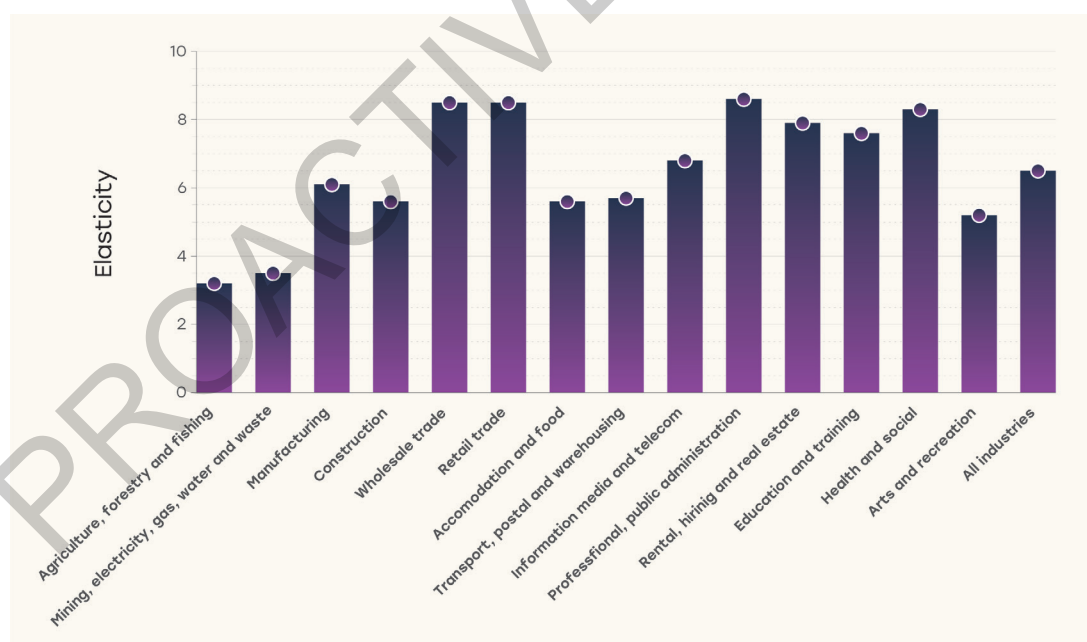
- The ability to achieve economies of scale and scope through specialisation given the large numbers of potential customers that are readily accessible
- The availability of numerous supply sources and potentially specialised infrastructure, and the competitive environment that stems from this

- Access to a deep and diverse pool of skilled labour, often complemented by high levels of technological/ knowledge transfer between firms, which helps bolster innovation, and
- Further opportunities for knowledge spillovers due to local supply linkages, face-to-face contact and trust-based commercial relationships.

Figure 15 shows the relationships between economic density and labour productivity across the major industry groups and aggregated for all industries in New Zealand. In sum, a doubling of economic density leads to a 6.5 per cent increase in overall labour productivity.

While not an exact linear relationship, a proportionate change in economic density is modelled to deliver a corresponding proportionate change in productivity. That is, a 10 per cent increase in economic density within a particular urban region, which hypothetically may be generated through improved integration of transport and land use as a direct impact of the NBA, would generate a 0.65 per cent uplift in productivity within that region. New Zealand case studies show that average agglomeration impacts are in the order of \$7,000 per employee added to an urban environment per year, or around \$10,000 per added household<sup>27</sup>.

FIGURE 15: ELASTICITIES OF ECONOMIC DENSITY BY VARIOUS INDUSTRIES



Source: MRCagney as cited in NZ Transport Agency, 2016

<sup>27</sup> MRCagney, The costs and benefits of urban development, 2019

## SGS's approach

SGS has developed a measure of economic density within a specified geographical region known as Effective Job Density (EJD), and this is frequently adopted to model productivity impacts associated with changes to an urban environment. However, modelling EJD requires granular detail about how legislation, policy or a strategy will affect land use, and MfE has advised that the type of urban form to be delivered by the NBA Plans is unclear, with options ranging from delivering more dense urban environments to delivering more expansive urban environments. This uncertainty prevents modelling forecasts changes to land use (economic density) and associated productivity impacts using SGS's EJD model.

While modelling changes to economic density is not feasible, it is assumed that NBA Plans, together with RSSs, will deliver better planned urban environments with improved connectivity to local jobs and jobs within central business districts. For example, RSSs may facilitate NBA planning to support transit-oriented development and/or contain spatial development to enhance access to jobs and services; such as the creation of 15- or 20-minute neighbourhoods that are targeted within Melbourne<sup>28</sup>, Paris and London<sup>29</sup>. Such strategies would dampen greenfield development that does not also provide ample access to jobs and services, which is a risk under the current resource management system.

In the absence of specific land use changes to model, SGS's methodology draws upon existing literature about agglomeration economies, the findings of which are discussed within the context of the NBA and SPA. As with Benefit 2 (improved housing supply and choice), SGS extends analysis which PwC undertook to inform decision making about the NPS-UD. To reiterate, this is a suitable approach as the NBA Plans and RSSs will need to give effect to the NPS-UD, as this national policy will be incorporated into the NPF.

Agglomeration benefits modelled by PwC in respect of the NPS-UD policy are summarised for six urban centres in Table 16.

Building upon PwC's outputs, the approach to valuing greater assurance of achieving NPS-UD benefits is outlined in Table 17 on the following page.

**TABLE 16: PWC MODELLED AGGLOMERATION BENEFITS TO 2043**

URBAN CENTRE	HOUSEHOLDS ADDED WITH NPS-UD POLICY	AGGLOMERATION BENEFITS OF NPS-UD POLICY
Auckland	51,853	4,766,000,000
Hamilton	4,392	204,000,000
Tauranga	6,137	573,000,000
Wellington	2,397	361,000,000
Christchurch	7,187	462,000,000
Queenstown	1,134	109,000,000
<b>Total</b>	<b>73,100</b>	<b>6,475,000,000</b>

Source: PWC, 2020

<sup>28</sup> DELWP, Plan Melbourne, 2017

<sup>29</sup> Paris (link) and London (link)



**TABLE 17: GREATER ASSURANCE ABOUT AGGLOMERATION BENEFITS - PARAMETERS**

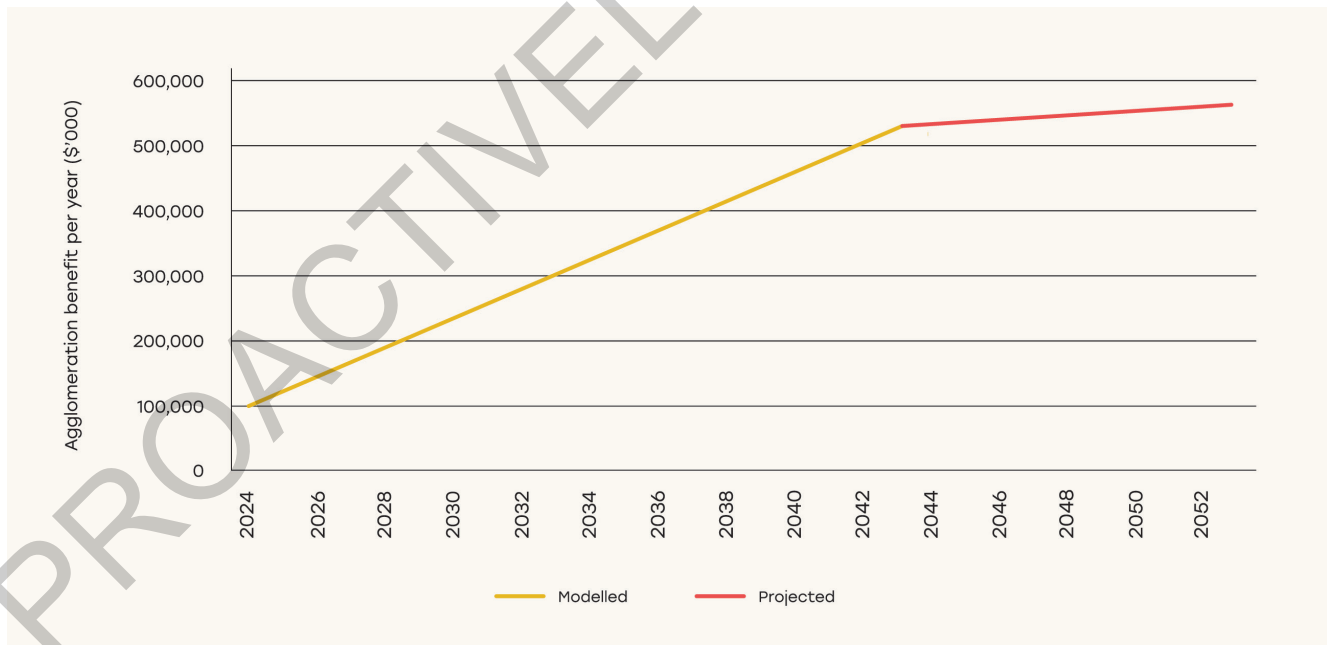
MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Total agglomeration benefit to 2043	\$6,475,000,000	Refer to Table 16: This is the cumulative, undiscounted benefit of agglomeration
Agglomeration benefit growth beyond 2043	In line with population	This reflects that productivity is approximately proportionate to the population or number of urban dwellings. Thus, it does not distinctly capture a step change between the Base Case and Project Case and is, therefore, conservative
WTP for greater assurance of achieving outcomes modelled in the NPS-UD	1% of annual benefit	This is assumed and reflects that the NBA Plans developed in the Base Case will generate significant benefits in isolation

Source: SGS Economics and Planning, 2021

Annual agglomeration benefits using PwC's analysis and projected beyond 2043 in line with New Zealand's population is shown in Figure 16. Note that modelled agglomeration benefits have a steeper growth rate than consumer surplus, as consumer surplus benefits are

largely additive (i.e. the benefit of a new dwelling occurs in the year it is delivered), while agglomeration benefits are cumulative (i.e. workers added to an urban economy in 2024 will still be contributing to and benefiting from agglomeration economies one, ten, and 20 years later.

**FIGURE 16: CONSUMER SURPLUS BENEFITS OF GREATER HOUSING SUPPLY AND CHOICE (INFILL ONLY)**



Source: SGS Economics and Planning, 2021



## Findings and implications

Literature suggests that the marginal economic costs of living in an urban centre compared to a rural area are outweighed by the marginal economic gains. That is, higher housing, congestion and other costs within urban centres are outweighed by higher incomes tied to agglomeration economies, improved social opportunity and other benefits.

Ineffective legislation and policies that have led to the current housing crisis increase the costs of living in an urban centre while simultaneously reducing agglomeration benefits by preventing people from living and working in productive locations. This highlights that significant benefits are on offer in a well-structured and managed resource management system (such as that promised under the NBA based resource management system), while significant direct (reduced consumer surplus) and indirect costs (reduced agglomeration benefits) may accrue under poor policy.

We have leveraged previous studies which have measured the agglomeration benefits flowing from reshaping urban development in New Zealand. On average, the addition of one household to an urban centre generates an annual productivity uplift of around \$7,300.

Compared to a more dispersed settlement pattern, the addition of 73,100 households within urban centres to 2043, and growth thereon in line with population, was modelled to have a net present value benefit of around \$4.58 billion, with most of this benefit (around \$3.37 billion) accruing in Auckland.

Taking the WTP to achieve greater assurance of benefit realisation, these values equate to a present value benefit of around \$45.8 million. The narrow, strategic and comprehensive options would impact these figures marginally, with optimum outcomes potentially delivered through each option, depending upon the degree to which they enable and/or restrict development in particular areas.

# Better recognition of Maori

**Objective 3.** Give proper recognition to the principles of Te Tiriti of Waitangi and provide greater recognition of te ao Māori including mātauranga Māori.

**SPA and RSSs contribution.** RSSs can assist in achieving this objective by making it easier for NBA Plans to factor in cultural landscapes, cultural resources of scale and culturally significant areas that are inappropriate for development

The Panel found the RMA has failed to properly recognise the principles of Te Tiriti of Waitangi<sup>30</sup>, with the following issues prevalent today:

- Lack of recognition and provision for te ao Māori in the purpose and principle of the resource management system
- Limited use of the mechanisms for mana whenua involvement in the RMA
- Māori involvement in the resource management system has tended to be at the later stages of resource management processes, and there is an opportunity in a new system to provide for a greater role for Māori at the strategic end of the system
- Lack of monitoring central and local government Tiriti performance
- Capacity and capability issues for both government (central, regional and local) and Māori to engage on resource management issues, and lack of funding and support to address these issues, and

- Local authorities and applicants for resource consents can find it difficult to know who is mana whenua in an area and, therefore, which mana whenua groups to engage with. This often perpetuates the problems above.

The NBA based resource management system, incorporated in the Base Case, will clarify Māori rights, roles and responsibilities across jurisdictions. As with other objectives, the SPA and RSSs can be expected to improve both the timeliness and quality of NBA Plans in terms of their consideration of Te Tiriti o Waitangi matters. This is because there would be a consistent approach to engagement with Māori interests and the definitive mapping of key assets. However, we have not attempted to estimate the value of this benefit.

We understand that separate analyses have been commissioned in terms of the value of the RMA reform process in respect of Māori. Once these benefits have been estimated, a similar risk mitigation premium approach to measuring the value added by the SPA would, in principle, be warranted.

<sup>30</sup> New directions for resource management in New Zealand: Report of the Resource Management Review Panel (Jun 2020).



# Adapt to and mitigate climate change and hazard risks

**Objective 4.** Better prepare for adapting to climate change and risks from natural hazards, and better mitigate emissions contributing to climate change.

**SPA and RSSs contribution.** RSSs would provide structure, consistency and rigour in the identification of hazard-prone areas within NBA Plans.

**The SPA and RSSs will support the NBA to facilitate better planning to adapt to climate change and hazard risks, with the potential to increase infrastructure resilience and reduce carbon emissions. These benefits are described and quantified below.**

## Benefit 5 – Increased infrastructure resilience

### Background and context

Due to its geography and its location, New Zealand is highly susceptible to natural hazards and disasters, which include geological, climatic and coastal disasters. The nation is particularly prone to flooding incidents, with earthquakes and tsunamis as the most damaging and disruptive. Other natural hazards and disasters include volcanic eruption, erosion, droughts and bushfires. These natural hazards and disasters affect land-use decisions, including where and how communities utilise the environment.

Climate change will substantially increase the severity and frequency of climatic events – climate projections suggest that New Zealand will experience higher temperatures, rising sea levels, more frequent extreme weather events, changes to rainfall and wind patterns, more drought and increased fire risk<sup>31</sup>.

Under the Base Case, the NBA would better prepare the nation to adapt to and mitigate some natural hazards and disasters. Legislation will align with reformed objectives. This should lead to greater clarity on climate risk decision-making. The NBA will also provide decision-makers with the appropriate authorisation to make regulatory changes to prepare for climate risks and undertake planning that effectively improves outcomes. This may see planning decisions including land-use controls around hazardous areas, either by decreasing development in risk-exposed areas or raising infrastructure resilience to climate risks.

<sup>31</sup> NINWA: 'Seven station' series temperature data (2021)

Good planning through the NBA may allow for:

- Embedding resilience across all aspects of policy and decision-making by increasing coordination and mainstreaming resilience policy and planning
- Prioritising resilience investment through smarter planning and infrastructure projects to deliver co-benefits
- Improving understanding of disaster risks and costs to society, and
- Collaborating and coordinating to build resilience and address the long-term cost of disasters<sup>32</sup>.

Under the Project Case, the SPA would provide a more structured approach to identifying and mitigating natural hazards and disasters. This would support clear NBA Plan regulations and guidance towards resilient infrastructure and settlement patterns.

Resilient infrastructure plays a critical role in supporting communities to withstand, respond to and recover from natural hazards and disasters. This investment in infrastructure resilience can take several forms and can be categorised under:

- Reducing infrastructure exposure to disaster hazards, including reduced construction in hazard-prone

locations and relocating infrastructure away from areas susceptible to hazards

- Reducing infrastructure vulnerability to disaster hazards, including changing infrastructure design or materials to reduce the impact, and
- Reducing the impact of disaster hazards on infrastructure, including early warning, evacuation, and contingency systems<sup>33</sup>.

Effective implementation of such strategies through NBA Plans and associated regulations and guidance can lead to significant cost savings. However, the economic cost of natural disasters is difficult to quantify. Table 18 provides an overview of the major disasters in New Zealand and their range of impacts.

### SGS's approach

The Bureau of Transport Economics outlines a framework for conceptualising the benefits of infrastructure resilience in terms of avoided costs. The framework comprises:

- **Tangible Costs**, which include:
  - **Direct costs:** Costs incurred resulting from a disaster and has a market value, such as costs of replacing damaged assets. This is estimated in terms of asset replacement costs or increased maintenance costs.

TABLE 18: IMPACTS OF MAJOR NATURAL DISASTERS IN NEW ZEALAND (POST - 1985)

DISASTER EVENT	YEAR	FATALITIES	PEOPLE AFFECTED	ECONOMIC DAMAGE (USD)
Kaikoura Earthquake	2016	2	N/A	\$3.9 billion
2012/13 drought	2012/2013	0	N/A	\$823 million
Canterbury earthquake	2011	181	301,500	\$15-30 billion
Canterbury earthquake	2010	0	300,002	\$650 million
February 2004 storm (flood)	2004	4	5,350	\$275 million
1997/98 El Nino drought	1998	0	Not available	\$544 million

Source: EM-DAT 2017; ODESC, 2017; Parliament New Zealand, 2011

<sup>32</sup> Deloitte Access Economics: Building resilience in our states and regions (2017)

<sup>33</sup> Building resilient infrastructure

- **Indirect costs:** Costs that arise from the consequence of damages and destruction from a natural disaster. These impacts differ between types of infrastructure and can be grouped into broad categories that include network disruption, clean-up, and disruption of public services.
- **Intangible Costs:** These include direct and indirect damages that cannot be readily priced, such as social impacts. These include health and community connectedness, employment and educational impacts. The value of these adverse effects can be estimated by the opportunity cost of expending resources. For example, the avoided cost of injury caused by natural disasters can be calculated by the next best alternative, which may be gained leisure time or wages from working.

While there is an established framework, the complete value of infrastructure resilience is difficult to quantify. The discrepancy of estimated costs of a disaster are large and understood only after a disaster occurs<sup>34</sup>. SGS has taken a conservative approach and has only considered the direct cost savings arising from preventing or reducing development in hazard-prone areas.

As a direct result of the NBA Plans, fewer future dwellings will be exposed to severe environmental hazards compared to current business as usual because of better planning, hazard mapping and clearer regulations. The SPA is expected to facilitate timely and systematic mapping of these hazards for incorporation into NBA Plans, thereby improving their efficacy.

Based on the literature, it is understood that the estimated annual loss of climate-related disasters in New Zealand was valued at around USD \$832 million in 2017, or 0.47 per cent of New Zealand's GDP<sup>35</sup>. This number appears low in the context of major earthquakes in New Zealand. For example, the 2011 Canterbury earthquake has estimated damages of \$15 billion, with total economic impacts totalling around \$30 billion if business disruption, insurance administration and changes to construction standards are accounted for<sup>36</sup>.

More people will become affected by natural disasters and extreme weather events due to the growth in the intensity and frequency of these events<sup>37</sup>. Deloitte estimates the economic cost to be growing at 2.8 per cent per annum<sup>38</sup>.

Under the Base Case, the NBA intends to limit development occurring in hazard-prone areas. This aims to mitigate and limit the increased economic cost that is linked to natural disasters. The approach to valuing this cost-saving is shown in table 19 below.

## Findings and implications

It is anticipated that the NBA and NBA Plans will limit development in high climate risk areas as well as contain measures to limit the impact of climate events in current urban areas. Based on parameters outlined in Table 19, the present value of benefits of preventing development is \$9.4 billion. This translates to a willingness to pay \$94 million. This value could vary significantly across the narrow, strategic and comprehensive options. However, this has not been monetised.

**TABLE 19: GREATER ASSURANCE ABOUT INFRASTRUCTURE RESILIENCE BENEFITS - PARAMETERS**

MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Estimated annual loss from disasters	\$1,216 million	Adjusted to 2021 NZD. <small>Source: OECD, 2017</small>
Growing risk of natural hazards	2.8% p.a.	Increased economic cost per annum, adjusted for inflation <small>Source: Deloitte, 2016</small>
WTP for greater assurance of achieving outcomes modelled in the NPS-UD	1% of annual benefit	This is assumed and reflects that the NBA Plans developed in the Base Case will generate significant benefits in isolation

Source: SGS Economics and Planning, 2021

<sup>34</sup> Ladds & et al (2017)

<sup>35</sup> OECD: Fiscal Resilience to Natural Disasters (2019)

<sup>36</sup> Parliament New Zealand, 2011

<sup>37</sup> OECD: Fiscal Resilience to Natural Disasters (2019)

<sup>38</sup> Deloitte Access Economics: The economic cost of the social impact of natural disasters (2016)



## Benefit 6 – Reduced transport carbon emissions

### Background and context

New Zealand has recognised the climate change emergency and has committed to a carbon-neutral government by 2025<sup>39</sup>. The nation has also set targets to reduce emissions to 50 per cent below 1990 levels by 2050. It is expected that the CCAA, if implemented, will advance more aspirational emissions reduction targets.

New Zealand's most significant source of carbon dioxide emissions is from road transport, making up 39.1 per cent of total CO<sub>2</sub> in 2016. It is well-recognised that urban form and city layout are critical in energy demand and greenhouse gas emissions and are especially influential on transportation patterns. If policy stays unchanged, annual CO<sub>2</sub> emissions are projected to increase, resulting from a growing population. For Auckland, road transport emissions are projected to increase by seven per cent to 2050 relative to a 2018 baseline<sup>40</sup>.

Under the Base Case, the NBA will target climate change mitigation and provide the regulatory scope to better prepare and plan for these future risks. This legislation will involve a more integrated and coordinated approach.

The SPA is expected to provide greater certainty that the NPA Plans will perform well in this respect. With a more systematic approach to regional priorities, good planning can reduce the level of carbon emissions through actions including:

- All tiers of government collaborating to deliver infrastructure priorities
- Public transport is promoted and endorsed through investments
- Reforming land use to encourage its optimal form by reducing urban sprawl, and
- Densification strategies.

<sup>39</sup> NZ FAT: Out climate change targets (2020)

<sup>40</sup> OECD: Decarbonising Urban Mobility with Land Use and Transport Policies (2020)



## SGS's approach

SGS has assumed that the NBA Plans will effectively mitigate unstructured urban sprawl partly by reducing the current constraints to intensification. This, in turn, will reduce the number of households effectively forced to live in car-dependent areas and/or areas poorly linked to job and service opportunities.

The NBA Plans will therefore leverage the commonly observed inverse relationship between population density and per capita CO<sub>2</sub> emissions<sup>41</sup>.

The cost of carbon dioxide on a per metric tonne basis has been calculated and applied to a scenario of more compact and connected urban development in New Zealand compared to current business as usual.

Table 20 summarises the key assumptions used to calculate the benefit of greater assurance of reduced carbon emissions.

**TABLE 20: GREATER ASSURANCE ABOUT REDUCED CARBON EMISSIONS BENEFITS - PARAMETERS**

MODELLING ASPECT	VALUE OR PARAMETER	NOTE
Emissions volume from road transport	In line with annual volume	Source: MfE Emissions Tracker, 2019
Value of one tonne of CO <sub>2</sub>	\$71	Adjusted to 2021 dollars. Source: NZ Transport Agency, 2020
Change in Transport Demand in Base Case	5.6%	Source: MRCagney, 2016
Ramp up period	10 years	SGS has modelled the 5.6% shift in transport demand to be achieved 10 years following reform, and remain stable thereafter for the remaining 20 years of the appraisal period
WTP for greater assurance of achieving outcomes modelled in the NPS-UD	1%	This is the adopted risk based WTP

Source: SGS Economics and Planning, 2021

<sup>41</sup> OECD: Green growth in cities (2013)

It should be noted that the NBA and SPA have the potential to achieve beyond the 5.6 per cent cut in travel emissions shown in the table. The literature suggests that policy can contribute somewhere from 5.6 to 91 per cent reduction of carbon emissions. Table 21 highlights the potential of good planning for mitigating carbon emissions.

## Findings and implications

This value of greater assurance of delivering reduced carbon emissions under NBA Plans is estimated to be worth approximately \$960,000 in present value terms. This is a highly conservative estimate as it derives from very modest assumed shifts in travel behaviour.

**TABLE 21: REDUCED CARBON EMISSIONS BENEFITS FROM RESHAPED URBAN DEVELOPMENT**

POLICY FOCUS	IMPACT	SOURCE
Targeted investment in cycleways and walkways in New Zealand	1.2% reduction in Vehicle Kilometres Travelled	Howden Chapman et al (2018). A Cost Benefit Analysis of an Active Travel Intervention with Health and Carbon Emission Reduction Benefits
“Promote public transport” policy package in Auckland, which incentivises a switch to bus and rail transport through road pricing mechanisms and fare subsidies	40% reduction in CO2 by 2050	OECD (2020). Decarbonising Urban Mobility with Land Use and Transport Policies: The Case of Auckland, New Zealand
“Promote public transport” policy package with targeted density, increasing residential density around the largest employment hubs in New Zealand	50% reduction in CO2 by 2050	OECD (2020). Decarbonising Urban Mobility with Land Use and Transport Policies: The Case of Auckland, New Zealand
A combination of pricing, non-motorised and public transport investment, and compactification with assertive freight transport measures in New Zealand	30% reduction in CO2 by 2030	Chapman, R. & Howden-Chapman, P. (2020). Transforming transport and cities in NZ
Comprises of both technical and non-technical measures. The focus is on new emission limits for the rail, road, air and water transport modes, plus an increase in biofuels. Spatial planning measures determine a change in demand and occupancy factors, co/modality and modal shift, as well as speed measures and fuel-efficient driver training	91% reduction in CO2 by 2050	Nocera, S., Tonin, S., & Cavallaro, F. (2015). The economic impact of greenhouse gas abatement through a meta-analysis: Valuation, consequences and implications in terms of transport policy.

Source: SGS Economics and Planning, 2021

# Improved system efficiency and effectiveness

**Objective 5.** Improve system efficiency and effectiveness, and reduce complexity while retaining appropriate local democratic input.

**SPA and RSSs contribution.** As argued in ‘the cost of reform’ section, the cost of producing the SPA and RSSs may be partially, wholly or more than offset by cost savings associated with producing the NBA and NBA Plans.

The RMA based resource management system is unnecessarily complex. Lack of clarity in the purpose of the system has hampered the establishment of efficient practices to progress and monitor good urban and natural environment outcomes. Key inefficiencies are associated with establishing evidence to make informed decisions and

“Decision-making processes and practices are time consuming and costly. Broad-based merits appeals in the Environment Court have added cost and caused delay... reducing complexity requires a systematic approach” – Panel report, Transforming the resource management system: opportunities for change, Nov 2019

As previously articulated, the SPA and RSSs is the mechanism by which a consistent and systematic approach to planning can be adopted. Although there will be a resource cost in establishing and maintaining the SPA and RSSs, they have the potential to improve the evidence upon which decisions can be made. This will generate faster and better decision making practices compared to the Base Case (which in itself will provide substantial benefits compared to the RMA based resource management system), thereby contributing to improved system efficiency and effectiveness. SGS has not attempted to quantify this benefit, as the magnitude of benefit will vary depending on the structure of the NBA and NBA Plans, including how they link to the SPA and RSSs. This detail is currently being developed.



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## Part C

## Conclusion

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Resource management reform is the pursuit of a better environment and better functioning cities where productivity and social capital are fostered.

“When cities function well, they provide greater access to and choices of housing, and better protection of the natural environment and cultural values. They also provide greater choices of employment and higher wages, a wider pool of labour for firms, and more opportunities for specialisation, innovation and easier transfer of ideas – the engine of economic prosperity. Work and commerce aside, well-functioning cities are attractive spaces where people consume goods and services, play, and are creative.” – *New Zealand Productivity Commission, 2017*



The NBA and NBA Plans have great potential to elevate the functionality of cities in New Zealand and concurrently preserve and restore the natural environment. The SPA will provide greater assurance of these outcomes statutorily enforcing consistent development of evidence-based RSSs. This will provide a framework to make better decisions more efficiently within the reformed NBA based resource management system.

The contribution of the SPA and RSSs to reform objectives is outlined on the following page.

### Objective 1. Protect and restore the environment and its capacity to provide for the wellbeing of present and future generations.

Objective 1 will largely be achieved via the NBA and NBA Plans, which will define environmental limits and targets as per national direction within the NPF. However, the SPA and RSSs would support this objective by accounting for environmental limits spatially and delineating areas that are inappropriate for development.

Modelling outputs suggest that greater assurance of environmental protection (Benefit 1) via the inclusion of the SPA and RSSs within the broader planning framework has a present value of around \$100 million. This is a benefit for New Zealand's broader economy and the wellbeing of its citizens.

The present value benefit of \$100 million would vary slightly across the narrow, strategic and comprehensive options, with the potential for greater delineation of build and no-build areas as options progress to more extensive, detailed prescription of land use.

### Objective 2. Better enable development within environmental biophysical limits including a significant improvement in housing supply, affordability and choice, and timely provision of appropriate infrastructure, including social infrastructure.

New Zealand's housing crisis is affecting the nation's productivity and socio-economic equality. NBA Plans have the potential to improve housing supply and lead to better coordination of infrastructure planning and delivery. The NBA will also build agglomeration economies through more intensive development and better-connected places. The modelled willingness to pay for these outcomes is summarised as follows:

- Improved housing supply and choice (Benefit 2). A present value of \$1.4 billion through the NBA indicates a WTP of \$14 million. There are large distributional impacts of this benefit. On balance, beneficiaries are new home buyers and renters.

- Better coordinated infrastructure planning (Benefit 3). Benefit of \$232 million indicates a WTP of \$2.3 million. This is firstly a benefit to those who pay for infrastructure delivery, mainly central and local governments. Part or all of these benefits may flow on to developers through reduced developer contributions (if realised). In turn, this will flow to New Zealand citizens in the form of lower land and house prices. This would be an additional benefit above and beyond that modelled for benefit 2.
- Agglomeration economies (Benefit 4). Benefit of \$4.6 billion through the NBA indicates a WTP of \$46 million. This is a benefit to New Zealand's urban economies and citizens.

The total willingness to pay for these outcomes is \$62 million.

### Objective 3. Give proper recognition to the principles of Te Tiriti of Waitangi and provide greater recognition of te ao Māori including mātauranga Māori.

Māori participation in matters of regional importance could be substantially achieved via NBA Planning, with points of emphasis or focus provided by the NPF. SGS has not modelled benefits against this objective. However, it is understood that a separate analysis has been commissioned as part of the RMA reform process. Once these benefits have been estimated, a similar risk mitigation premium approach to measuring the value added by the SPA would, in principle, be warranted.



#### Objective 4. Better prepare for adapting to climate change and risks from natural hazards, and better mitigate emissions contributing to climate change.

New Zealand is highly susceptible to natural hazards and disasters, including those associated with climate change. Most of the population resides in urban centres just above sea level and/or located within regions prone to flooding or earthquakes.

RSSs have the potential to form a central role in focussing future development in lower-risk areas. The RSSs have additional capabilities to spatially define infrastructure provision to mitigate adverse impacts of climate events for existing urban areas. Importantly, RSSs will cover a 100+ year timeframe for climate response, ensuring that potential risks are accounted for over the long term. The WTP for benefits that contribute to this objective is summarised below:

- Increased infrastructure resilience (Benefit 5). Benefit of \$9.3 billion through the NBA indicates a WTP of \$93 million. This benefit results from focusing all future development in low-risk areas; it does not account for potential benefits of better protecting established urban areas. This is a significant benefit and will provide increased welfare for future owners of developed land. There is potential for significant variation of this benefit under the SPA's three project options, however, this is difficult to quantify without clarity of New Zealand's reformed no-build zones.

- Reduced transport carbon emissions (Benefit 6). Benefit of \$960 million through the NBA indicates a WTP of \$0.96 million. This benefit captures reduced vehicle kilometres travelled as a result of better planned urban environments. It will benefit all of New Zealand and contribute towards New Zealand emissions targets.

#### Objective 5. Improve system efficiency and effectiveness and reduce complexity while retaining appropriate local democratic input.

In the absence of RSSs, planning will be regarded more ad-hoc with variation in quality across the regions. This will largely result from inconsistent approaches to strategic planning and the limits to which relevant planning instruments are integrated within NBA Plans. There will be no common platform for long-term interregional planning and collaboration, although this could be partly achieved through NBA Plans. Resource consenting will take longer, and litigation will be more significant without clear limits or constraints set in advance. Public participation in matters of regional importance could still be achieved at the level of NBA Plans and via RSSs where these are applied voluntarily.

SGS has not attempted to quantify this benefit, as the magnitude of the benefit will vary depending on the structure of the NBA and NBA Plans, including how they link to the SPA and RSSs. This detail is currently being developed.



## Overall findings

SGS's approach models the welfare gain of the SPA and RSSs at one per cent of the present value of substantive benefits of better planning. Collectively, this generates current value benefits of \$257 million. The cost to implement the SPA and RSSs generates a present value of \$81 million. This generates a net present value (NPV) of \$176 million. A BCR of 3.2 implies that the SPA and RSSs produce a welfare gain of \$3.2 to New Zealand for every dollar of costs.



Applying a one per cent assurance factor is sourced from literature and refers to the WTP to mitigate risk within a market. The strength of this approach is that risk likelihood and severity is subjected to actuarial analysis to determine appropriate risk premiums in the market. However, the clear drawback of the method is selecting a reasonable rate to model WTP for greater assurance of planning based outcomes – including those relating to preservation and restoration of the natural environment – as these outcomes are inherently not traded in an open market. While the benefits have been calculated at a WTP rate of one per cent, modelling indicates that an annual WTP of 0.32 per cent of substantive benefits would generate a BCR of 1.00. Any WTP above this rate would, therefore, generate increasing benefits relative to the costs and increase the economic viability of the SPA and RSSs. For example, a WTP rate of 2.5 per cent has been shown to generate a BCR of 7.9, and a WTP rate of five per cent has been shown to generate a BCR of 15.9.

We conclude that the SPA is an economically warranted element of resource management reform in New Zealand. It will ensure national policies, standards, and infrastructure priorities are systematically and thoroughly factored into NBA Plans. This, in turn, will provide greater assurance for the New Zealand community that the NBA Plans will deliver the considerable value expected of them. The SPA will offer an extra level of support to achieve environmental safeguarding, housing affordability, urban productivity, efficient infrastructure provision, climate-resilient urban development and reduced emissions, amongst other benefits.



# Appendix A: Existing legislation, policies and plans relevant to the SPA and RSSs

It is crucial that decision makers understand the existing legislative and policy context in order to make appropriate decisions about the SPA and RSSs. Key legislation and policies that will remain and/or evolve in the new resource management system are summarised below.

## Local Government Act

The Local Government Act (2002) aims to provide for democratic and effective local government that recognises the diversity of New Zealand communities. It states the purpose of local government, provides a framework and powers for local authorities to make decisions, and provides for local authorities to play a broad role in promoting the social, economic, environmental and cultural wellbeing of New Zealand communities.

Under the Local Government Act, long-term plans must be created to an extent determined appropriate by the local authority. Long-term plans may comprise detail about community outcomes, capital expenditure for groups of activities, development of Māori capacity to contribute to decision making, financial strategy, forecasting assumptions and other detail. Within a reformed resource management system, it is expected that local authority long-term plans will need to strictly align with relevant RSSs.

## Land Transport Management Act

The Land Transport Management Act (2003) provides the legal framework for managing and funding land transport activities. The purpose of the Land Transport Management Act is to contribute to the aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system. The Act defines the various roles of key stakeholders within the transport system, including regional councils. It is envisioned that the Act improves long-term planning and investment in land transport and enables the efficient provision of funding. The reformed resource management system including the SPA and RSSs will provide opportunities to spatially integrate land and

transport across multiple government jurisdictions, thereby supporting the ideals of the Land Transport Management Act.

## Urban Development Act

The Urban Development Act 2020 was created to respond to unprecedented pressure within New Zealand's urban environments, including unaffordable housing, rising urban land prices, increasing greenhouse gas emissions, lack of transport choice, flattening productivity, and other issues. The Urban Development Act provides guidance to transform urban areas to improve connectivity between housing, jobs and services. As with the RMA reform, it seeks to deliver outcomes that promote inclusive communities, as well as environmental, social, cultural and economic wellbeing. Additionally, the Act contains specific provisions to protect Māori aspirations in urban development.

## Infrastructure Funding and Financing Act

The Infrastructure Funding and Financing Act 2020 established a new funding and financing model to enable private capital to support the provision of new infrastructure for housing and urban development. The Act provides opportunities for local councils, Māori and iwi, and developers to partner and deliver infrastructure, free of the council's debt limits or from charging high upfront costs to developers.

## National direction and National Policy on Urban Development

National direction is currently delivered via separate statutory documents under the RMA. Under the MfE's recommended NBA based resource management system, national direction would be re-established as the NPF, enabling national direction to be delivered via a single statutory document.

The major national policy statement relevant to the SPA and RSSs which will remain within the new resource management system is the National Policy Statement on Urban Development 2020 (NPS-UD), which was gazetted in July 2020 and took effect from August 2020.

The NPS-UD aims to ensure that New Zealand's towns and cities are well-functioning urban environments that meet the changing needs of diverse communities. It directs local authorities to enable greater development supply, as well as to remove overly restrictive rules that affect urban development outcomes in cities. Under the NPS-UD, councils must monitor housing indicators and the uptake of medium and high-density zones. Where uptake is not meeting development outcomes, local authorities must evaluate zone rules to optimise development. These requirements have spatial implications, both upon the existing urban environment and also peri-urban growth areas. The NPS-UD contains policies that are designed to achieve similar outcomes as the SPA and RSSs. NPS-UD policies include:

- **Intensification.** Councils plans need to enable (but not require) greater height and density, particularly in areas of high demand.
- **Car parking.** Councils will no longer be able to require developers to provide car parking, with car parking provision driven by the market.
- **Responsiveness.** Councils must consider private plan changes where they would add significantly to development capacity.
- **Wider outcomes.** Councils are required to give greater consideration to ensuring that cities work for all people and communities, particularly in relation to access, climate change and housing affordability.

- **Strategic planning.** Councils are required to work together to produce 'future development strategies', which set out the long-term strategic vision for accommodating urban growth.
- **Evidence and argument.** Councils must use a strong evidence base for their decision making and ensure they engage with Māori, developers and infrastructure providers.

The NPS-UD will be incorporated into the NPF and will sit above RSSs within the legislative hierarchy. RSSs will, therefore, need to respond to the NPS-UD, and may provide an opportunity to map NPS-UD policy aspirations spatially.

## Urban Growth Agenda

The Urban Growth Agenda (UGA) aims to improve housing affordability, underpinned by affordable urban land. Focus areas of the Urban Growth Agenda are detailed below<sup>42</sup>.

- **Infrastructure funding and financing.** Enabling a more responsive supply of infrastructure and appropriate cost allocation.
- **Urban planning.** To allow for cities to make room for growth, support quality-built environments and enable strategic integrated planning.
- **Spatial planning (initially focused on Auckland and the Auckland-Hamilton corridor).** To build a stronger partnership with local government as a means of developing integrated spatial planning.
- **Transport pricing.** To ensure the price of transport infrastructure promotes efficient use of the network.
- **Legislative reform.** To ensure that regulatory, institutional and funding settings are collectively supporting UGA objectives.

The Urban Growth Agenda is delivered through partnerships between Central Government, local government, iwi and local communities. As with the NPS-UD, the Urban Growth Agenda will sit above the RSSs within the legislative hierarchy, meaning the RSSs will need to align with and contribute to delivering the focus areas listed above.

<sup>42</sup> Ministry of Housing and Urban Development website, accessed 2021

## Existing spatial strategies

Under the current resource management system, Auckland, which accounts for around one third of New Zealand's total population, is the only council that is required to develop a spatial plan. Other councils may choose to develop spatial plans, however, these plans do not carry statutory weight.

Section 79 of the Local Government (Auckland Council) Act specifies that Auckland Council must prepare and adopt a spatial plan for Auckland, the purpose of which is to contribute to Auckland's social, economic, environmental and cultural well-being through a comprehensive and effective 20-30-year strategy. Among other things, this plan is intended to determine the future location and timing of critical infrastructure (covering transport, social infrastructure, open space, water supply, wastewater, and others), services and investment within Auckland in accordance with the strategy. It must also identify the current and future mix of residential, agricultural, and commercial land use within specific geographic areas. As required by the Local Government (Auckland Council) Act, decisions must be driven by an empirical evidence base, and the Auckland Council must involve Central Government and key infrastructure providers.

The current plan, Auckland Plan 2050, identifies six outcomes that will deliver a better Auckland; belonging and participation, Māori identity and wellbeing, homes and places, transport and access, environment and cultural heritage, and opportunity and prosperity.

It is expected that the SPA and RSSs will necessitate the replacement of current spatial strategies, such as the Auckland Plan 2050. The marginal benefit that the RSSs will deliver under the reformed NBA based resource management system is currently unclear.

# Appendix B: Base Case and Project Case cost allocation

COST FUNCTIONS (& ACTION)	STAKEHOLDER	TOTAL COSTS (UN-DISCOUNTED)	BASE CASE	PROJECT CASE	BASE CASE SPLIT	PROJECT CASE SPLIT
<b>1. OBJECTIVE-SETTING FUNCTION</b>						
<b>Developing new legislation</b>	Central government	\$21,000,000	Y	N	100%	0%
	Local government	\$1,310,000	Y	N	100%	0%
	Maori	\$753,000	Y	N	100%	0%
	RM Users	\$315,000	Y	N	100%	0%
<b>Defining environmental limits</b>	Central government	\$32,500,000	Y	N	100%	0%
<b>New national directions</b>	Central government	\$91,650,000	Y	N	100%	0%
	Local government	\$187,605,001	Y	N	100%	0%
	RM Users	\$6,863,675	Y	N	100%	0%
	Maori	\$1,365,000	Y	N	100%	0%
<b>Coherence across all national directions</b>	Central government	\$3,600,000	Y	N	100%	0%
<b>2. INSTITUTIONAL AND RULE-SETTING FUNCTION</b>						
<b>Implementation agreement on regional spatial plans</b>	Central government	\$5,892,354	N	Y	0%	100%



	Local government	\$5,892,354	N	Y	0%	100%
<b>Development of regional spatial plans</b>	Central government	\$35,711,236	N	Y	0%	100%
	Local government	\$71,422,472	N	Y	0%	100%
	Maori	\$24,000,000	N	Y	0%	100%
	RM Users	\$12,840,000	N	Y	0%	100%
<b>New combined plans</b>	Central government	\$30,000,000	Y	N	100%	0%
	Local government	\$132,323,799	Y	N	100%	0%
	Maori	\$48,000,000	Y	N	100%	0%
	RM Users	\$12,840,000	Y	N	100%	0%
<b>Establishing National Planning independent expert panel</b>	Central government	\$500,000	Y	N	100%	0%
<b>Establishing National Maori Advisory Board</b>	Central government	\$500,000	Y	N	100%	0%
<b>Establish Regional Hubs</b>	Central government	\$3,200,000	Y	N	100%	0%
	Local Government	\$12,800,000	Y	N	100%	0%
<b>Establish Joint Committees for creating combined plans</b>	Local Government	\$8,000,000	Y	N	100%	0%
<b>3. RESOURCE ALLOCATION FUNCTION</b>						
<b>Climate change adaptation fund</b>	Central government	\$105,000,000	Y	N	100%	0%

#### 4. Regulatory Support Function

<b>Designing economic instruments</b>	Central Government	\$4,500,000	Y	N	100%	0
<b>Regional Spatial Planning ICT Infrastructure</b>	Central Government	\$12,000,000	N	Y	0%	100%
	Local Government	\$12,000,000	N	Y	0%	100%
<b>Investment in ICT Infrastructure to support environmental monitoring and system links</b>	Central Government	\$61,350,000	Y	N	100%	0
	Local Government	\$61,350,000	Y	N	100%	0
<b>New open portal for consent applications</b>	Central Government	\$4,000,000	Y	N	100%	0
	Local Government	\$3,900,000	Y	N	100%	0
<b>Establish new consent and approval dispute process</b>	Central Government	\$3,000,000	Y	N	100%	0
<b>Model plans to aid the transition to the new system</b>	Central Government	\$8,000,000	Y	N	100%	0
	Local Government	\$3,000,000	Y	N	100%	0
	Maori	\$1,200,000	Y	N	100%	0

## Ongoing costs

TABLE 23: ONGOING COSTS

COST FUNCTIONS (& ACTION)	STAKEHOLDER	TOTAL COSTS (UNDISCOUNTED)	BASE CASE	PROJECT CASE	BASE CASE SPLIT	PROJECT CASE SPLIT
<b>1. OBJECTIVE-SETTING FUNCTION</b>						
<b>Review of national directions</b>	Central government	\$161,837,500	Y	N	100%	0%
	Local government	\$520,564,553	Y	N	100%	0%
	Maori	\$31,942,488	Y	N	100%	0%
	RM Users	\$6,352,500	Y	N	100%	0%
<b>2. Institutional and rule-setting function</b>						
<b>Review of combined plans</b>	Local government	\$105,859,039	Y	N	100%	0%
	RM Users	\$34,240,000	Y	N	100%	0%
<b>Support for Maori in resource management duties</b>	Central government	\$165,000,000	Y	N	100%	0%
<b>Operating costs of the National Planning expert advisory group</b>	Central government	\$31,000,000	Y	N	100%	0%
	Central government	\$31,000,000	Y	N	100%	0%
<b>Increased cooperation between iwi and local government</b>	Local government	\$154,440,000	Y	N	0%	100%
<b>Review of spatial strategies</b>	Local government	\$138,083,445	N	Y	0%	100%
	RM Users	\$41,373,333	N	Y	0%	100%

### 3. Resource Allocation Function

New allocation mechanisms	Local Government	\$386,100,000	Y	N	100%	0%
	Central Government	\$46,200,000	Y	N	100%	0%
New powers to review and modify consents	Local Government	\$714,285,000	Y	N	100%	0%
	RM Users	\$820,389,188	Y	N	100%	0%
Shorter permit durations (with long term permits for major infrastructure)	Local Government	\$238,095,000	Y	N	100%	0%
	RM Users	\$820,389,188	Y	N	100%	0%
Increase in Environment Court activity	Central Government	\$112,200,000	Y	N	100%	0%
	RM Users	\$297,000,000	Y	N	100%	0%

### 4. Regulatory Support Function

Monitoring environmental limits and NBEA targets	Central Government	\$148,500,000	Y	N	100%	0%
Implementing and monitoring economic instruments	Local Government	\$1,768,800,000	Y	N	100%	0%
Operating the new consent and approval dispute process	Central Government	\$62,000,000	Y	N	100%	0%
PCE expanded functions	Central Government	\$25,575,000	Y	N	100%	0%
IT infrastructure: open portal and system links	Local Government	\$179,800,000	Y	N	100%	0%
IT infrastructure: National Environmental Management System	Central Government	\$58,000,000	Y	N	100%	0%



<b>Expanded monitoring and enforcement activity</b>	Local Government	\$595,980,000	Y	N	100%	0%
	RM Users	\$1,306,800,000	Y	N	100%	0%
<b>Administer climate change adaptation fund</b>	Central Government	\$155,000,000	Y	N	100%	0%

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