



Ministry for the
Environment
Manatū Mō Te Taiao

National Policy Statement on Electricity Transmission

**Evaluation under Section 32 of the
Resource Management Act 1991**

This document contains the evaluation of the Minister for the Environment required under section 32(2) of the Resource Management Act 1991 (RMA) on the National Policy Statement on Electricity Transmission. A section 32 evaluation considers the appropriateness, alternatives, costs and benefits of a national policy statement, and its objectives and policies.

This evaluation report is substantially based on an evaluation carried out by independent consultants, the New Zealand Institute of Economic Research (NZIER) and Harrison Grierson Consultants, who were commissioned by the Ministry for the Environment.

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National Policy Statement on Electricity Transmission

Preamble

This national policy statement sets out the objective and policies to enable the management of the effects of the electricity transmission network under the Resource Management Act 1991.

In accordance with section 55(2A)(a) of the Act, and within four years of approval of this national policy statement, local authorities are to notify and process under the First Schedule to the Act a plan change or review to give effect as appropriate to the provisions of this national policy statement.

The efficient transmission of electricity on the national grid plays a vital role in the well-being of New Zealand, its people and the environment. Electricity transmission has special characteristics that create challenges for its management under the Act. These include:

- Transporting electricity efficiently over long distances requires support structures (towers or poles), conductors, wires and cables, and sub-stations and switching stations.
- These facilities can create environmental effects of a local, regional and national scale. Some of these effects can be significant.
- The transmission network is an extensive and linear system which makes it important that there are consistent policy and regulatory approaches by local authorities.
- Technical, operational and security requirements associated with the transmission network can limit the extent to which it is feasible to avoid or mitigate all adverse environmental effects.
- The operation, maintenance and future development of the transmission network can be significantly constrained by the adverse environmental impact of third-party activities and development.
- The adverse environmental effects of the transmission network are often local – while the benefits may be in a different locality and/or extend beyond the local to the regional and national – making it important that those exercising powers and functions under the Act balance local, regional and national environmental effects (positive and negative).
- Ongoing investment in the transmission network and significant upgrades are expected to be required to meet the demand for electricity and to meet the government’s objective for a renewable energy future, therefore strategic planning to provide for transmission infrastructure is required.

The national policy statement is to be applied by decision-makers under the Act. The objective and policies are intended to guide decision-makers in drafting plan rules, in making decisions on the notification of the resource consents and in the determination of resource consent applications, and in considering notices of requirement for designations for transmission activities.

However, the national policy statement is not meant to be a substitute for, or prevail over, the Act's statutory purpose or the statutory tests already in existence. Further, the national policy statement is subject to Part 2 of the Act.

For decision-makers under the Act, the national policy statement is intended to be a relevant consideration to be weighed along with other considerations in achieving the sustainable management purpose of the Act.

This preamble may assist the interpretation of the national policy statement, where this is needed to resolve uncertainty.

1 TITLE

This national policy statement is the National Policy Statement on Electricity Transmission 2008.

2 COMMENCEMENT

This national policy statement comes into force on the 28th day after the date on which it is notified in the Gazette.

3 INTERPRETATION

In this national policy statement, unless the context otherwise requires:

Act means the Resource Management Act 1991.

Decision-makers means all persons exercising functions and powers under the Act.

Electricity transmission network, electricity transmission and transmission activities/assets/infrastructure/resources/system all mean part of the national grid of transmission lines and cables (aerial, underground and undersea, including the high-voltage direct current link), stations and sub-stations and other works used to connect grid injection points and grid exit points to convey electricity throughout the North and South Islands of New Zealand.

National environmental standard means a standard prescribed by regulations made under the Act.

National grid means the assets used or owned by Transpower NZ Limited.

Sensitive activities includes schools, residential buildings and hospitals.

4 Matter of national significance

The matter of national significance to which this national policy statement applies is the need to operate, maintain, develop and upgrade the electricity transmission network.

5 Objective

To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:

- managing the adverse environmental effects of the network; and
- managing the adverse effects of other activities on the network.

6 Recognition of the national benefits of transmission

Policy 1

In achieving the purpose of the Act, decision-makers must recognise and provide for the national, regional and local benefits of sustainable, secure and efficient electricity transmission. The benefits relevant to any particular project or development of the electricity transmission network may include:

- i. maintained or improved security of supply of electricity; or
- ii. efficient transfer of energy through a reduction of transmission losses; or
- iii. the facilitation of the use and development of new electricity generation, including renewable generation which assists in the management of the effects of climate change; or
- iv. enhanced supply of electricity through the removal of points of congestion.

The above list of benefits is not intended to be exhaustive and a particular policy, plan, project or development may have or recognise other benefits.

7 Managing the environmental effects of transmission

Policy 2

In achieving the purpose of the Act, decision-makers must recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network.

Policy 3

When considering measures to avoid, remedy or mitigate adverse environmental effects of transmission activities, decision-makers must consider the constraints imposed on achieving those measures by the technical and operational requirements of the network.

Policy 4

When considering the environmental effects of new transmission infrastructure or major upgrades of existing transmission infrastructure, decision-makers must have regard to the extent to which any adverse effects have been avoided, remedied or mitigated by the route, site and method selection.

Policy 5

When considering the environmental effects of transmission activities associated with transmission assets, decision-makers must enable the reasonable operational, maintenance and minor upgrade requirements of established electricity transmission assets.

Policy 6

Substantial upgrades of transmission infrastructure should be used as an opportunity to reduce existing adverse effects of transmission including such effects on sensitive activities where appropriate.

Policy 7

Planning and development of the transmission system should minimise adverse effects on urban amenity and avoid adverse effects on town centres and areas of high recreational value or amenity and existing sensitive activities.

Policy 8

In rural environments, planning and development of the transmission system should seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character and areas of high recreation value and amenity and existing sensitive activities.

Policy 9

Provisions dealing with electric and magnetic fields associated with the electricity transmission network must be based on the International Commission on Non-Ionising Radiation Protection. *Guidelines for limiting exposure to time varying electric magnetic and electromagnetic fields (up to 300 GHz)* (Health Physics, 1998, 74(4): 494–522) and recommendations from the World Health Organisation monograph *Environmental Health Criteria* (No 328, June 2007) or revisions thereof and any applicable New Zealand standards or national environmental standards.

8 Managing the adverse effects of third parties on the transmission network

Policy 10

In achieving the purpose of the Act, decision-makers must to the extent reasonably possible manage activities to avoid reverse sensitivity effects on the electricity transmission network and

to ensure that operation, maintenance, upgrading, and development of the electricity transmission network is not compromised.

Policy 11

Local authorities must consult with the operator of the national grid, to identify an appropriate buffer corridor within which it can be expected that sensitive activities will generally not be provided for in plans and/or given resource consent. To assist local authorities to identify these corridors, they may request the operator of the national grid to provide local authorities with its medium to long-term plans for the alteration or upgrading of each affected section of the national grid (so as to facilitate the long-term strategic planning of the grid).

9 Maps

Policy 12

Territorial authorities must identify the electricity transmission network on their relevant planning maps whether or not the network is designated.

10 Long-term strategic planning for transmission assets

Policy 13

Decision-makers must recognise that the designation process can facilitate long-term planning for the development, operation and maintenance of electricity transmission infrastructure.

Policy 14

Regional councils must include objectives, policies and methods to facilitate long-term planning for investment in transmission infrastructure and its integration with land uses.

Explanatory note

This note is not part of the national policy statement but is intended to indicate its general effect.

This national policy statement comes into force 28 days after the date of its notification in the Gazette. It provides that electricity transmission is a matter of national significance under the Resource Management Act 1991 and prescribes an objective and policies to guide the making of resource management decisions.

The national policy statement requires local authorities to give effect to its provisions in plans made under the Resource Management Act 1991 by initiating a plan change or review within four years of its approval.

Executive Summary

Demand for electricity is increasing with population growth, rising incomes and new technology powered by electricity. The combination of growing demand and the need to provide electricity in environmentally sustainable ways gives increased importance to the improvement, upgrade and extension of the New Zealand electricity transmission network, or national grid.

The main issue confronting development of the national grid is the lack of appropriate recognition/consideration of the national benefits of electricity transmission. This creates inconsistent cross border treatment that impacts on the efficiency of the grid. In particular, the elongated and cross-boundary characteristics of the network mean there is a high potential for externality effects, ie, actions in one locality having implications elsewhere.

This report examines alternatives to the status quo and concludes that, in order to fully address this problem, a national policy statement (NPS) on electricity transmission is required. It is recognised that other mechanisms, such as further use of Ministerial ‘call-ins’ and ‘all-of-government’ submissions would complement and assist the NPS to resolve this problem. The NPS is intended to provide national direction on the sustainable management of the electricity transmission network and, in particular, to raise the status of electricity transmission to one of national significance when considering resource management proposals.

This report evaluates the National Policy Statement on Electricity Transmission in accordance with section 32(2) of the Resource Management Act 1991 (RMA). A section 32 evaluation requires four inter-related examinations:

- the extent to which each objective is the most appropriate way to achieve the purpose of the RMA¹
- whether, having regard to their efficiency and effectiveness, the policies, rules or other methods are the most appropriate for achieving the objectives
- the benefits and costs of policies, rules or other methods
- the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules or other methods.

To follow is a summary of the section 32 evaluation.

¹ (1) The **purpose** of this Act [the RMA] is... to promote the sustainable management of natural and physical resources.

(2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

To what extent is the objective the most appropriate way to achieve the purpose of the RMA?

The objective of the NPS is:

To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:

- *managing the adverse environmental effects of the network; and*
- *managing the adverse effects of other activities on the network.*

The objective has been found to be generally appropriate in fulfilling the purpose of the RMA. In particular, the objective acknowledges that electricity supply, through the electricity transmission network, is nationally significant and a beneficial physical resource. When evaluated against potential alternatives, the NPS objective offers a complete response and efficient solution.

Are the policies proposed the most appropriate for achieving the objective?

Based on the considerations outlined below, it is concluded that the policies represent the most appropriate means of achieving the objective of the NPS. In particular, it is considered that policies will be effective and efficient in achieving the objective and that while there is some risk associated with uncertainties this will be mitigated by the established processes for the implementation of the NPS.

Effectiveness

Table ES.1 summarises each policy's effectiveness in relation to the objective.

It is considered that, overall, the policies will be effective in achieving the objective. In particular, it is noted that the three key outcomes sought by the objective are well addressed in the policies. Specifically, the national benefits of transmission are addressed by Policies 1, 2 and 3, adverse effects of transmission on the environment by Policies 7, 8 and 9, and managing the effects of others on the grid by Policies 10 and 11.

Table ES.1: Summary of effectiveness

Policy	Elements of the objective			Effect on	
	Recognition of national benefit	Manages effects of the grid on the environment	Manages effects of others on the grid	Impacts on council plans	Impacts on resource consents and designations
1	✓	–	½ ✓	✓	✓
2	✓	–	½ ✓	✓	✓
3	✓ (indirect)	½ ✓	–	✓	✓
4	–	✓	–	✓	✓
5	✓	–	–	✓	✓
6	–	✓	–	–	✓
7	–	✓	–	–	✓ (indirect)
8	–	✓	–	–	✓ (indirect)
9	½ ✓ (indirect)	✓	–	✓	–
10	✓ (indirect)	–	✓	✓	✓
11	✓ (indirect)	–	✓	✓	–
12	✓ (indirect)	–	–	✓	½ ✓
13	½ ✓	–	½ ✓	–	✓
14	½ ✓	–	–	✓	½ ✓ (indirect)

Source: NZIER

What are the benefits and costs of the proposed policies?

The costs and benefits are summarised in Table ES.2.

The quantifiable benefits of the NPS and its policies stem largely from cost savings for Transpower in relation to what it currently spends on plan advocacy, RMA appeals, dealing with third-party activities and applications each year. Dealing with third-party activities is the main cost saving.

Benefits could also accrue nationally if grid capacity improvements, facilitated by the NPS, encouraged the development of more renewable energy generation, subject to the grid improvement itself passing a benefit–cost test. Another benefit may be a more secure national grid. Some of these benefits may also accrue from improvements in network security and operation.

The costs of the status quo are likely to escalate as demands on the electricity system grow and require further upgrades and extensions of the transmission network. The benefits of ironing out any undue impediments and costs from the environmental management issues around the transmission grid will increase in future years.

Costs are likely to stem largely from costs to local government in changing plans to recognise the NPS, increased transaction costs with land owners and increased appeals; to some land owners adjoining the transmission network who may have their future activities further curtailed; and to government in implementing the NPS.

Table ES.2: Summary of costs and benefits

Group/resource	Explanation	Cost/benefit
<i>Benefits</i>		
Environment	Potentially a small benefit. Safeguards in place that reduce risk of substantial environmental losses, particularly from policies	Potential benefits cannot be properly costed, but will be small
Grid operator (Transpower)	Large benefits because of NPS guidance particularly for third-party activities	Potential benefits of \$10.0 million
Government	Some benefits will accrue to government, through security of supply and as owner of Transpower and claimant on its profits	Potential benefits cannot be properly costed, but will be small
Consumers	Some benefit from increased security of supply	Potential benefits cannot be properly costed, but will be small
Others/generators	Some benefit from more timely connection and increased security of supply	Potential benefits cannot be properly costed, but will be small
<i>Costs</i>		
Local government	Increase in costs, particularly for those who have to change their plans because of the NPS. There will be increases in transaction costs with land owners. Also there will be Environmental Court costs	Potential costs of \$4.0 million
Land owners	Major costs on some land owners. The shift in policy/regulations means that all face transaction costs and some will be required to change behaviour around transmission lines. The costs will mainly fall in the short term	Potential costs of \$2.7 million
Government	Minor costs associated with managing the transition process	Potential costs of \$0.16 million
<i>Net benefit</i>		<i>Potential net benefit of approximately \$3.0 million</i>

Source: NZIER

What are the risks of acting or not acting if there is uncertain or insufficient information about the subject matter of the proposed policies?

It is considered that there are four key areas of uncertainty or insufficient information, the implications of which warrant consideration as part of this evaluation. These are:

- how local authorities will give effect to the NPS, and how land owners will respond, ie, in several instances, local authorities would retain significant discretion in relation to how they give effect to the NPS in its current form, and if land owners resist the introduction of the NPS by taking large numbers of cases to the Environment Court, then the costs to all parties will increase
- the potential costs to third parties from the implementation of Policy 11 for both land owners and councils
- the uncertainty of some of the definitions, such as ‘minor upgrades’ and ‘operational requirements’, since they have a bearing on how the costs and benefits fall

- a detailed assessment of the environmental effects associated with electricity transmission, including the identification of appropriate and practical mitigation methods.

While each of these points presents a risk in relation to the implementation of an NPS on electricity transmission and to the costs and benefits of the NPS, it is considered that this risk is adequately mitigated for the reasons described in section 5.

The key area of uncertainty or limited information has been identified as the potential cost to third parties from implementing the NPS. The risks of acting or not acting on this uncertainty, where more or better information might become available, are indeterminate but are expected to be low rather than high.

1. Introduction

1.1 Overview and background

Electricity is vital for modern lifestyles, commerce and industry. In many of its applications there is no substitute. Demand for electricity is increasing with population growth, rising incomes and new technologies powered by electricity.

The electrical power infrastructure comprises three systems: generation, transmission and distribution. The subject of this report is electricity transmission or the ‘national grid’, which supplies and transfers electricity around the country.

Debate on how best to develop major infrastructure projects is not new. Major infrastructure is typically resource intensive, performs vital services and is highly noticeable. Since the 1950s and 1960s – when the bulk of the electricity transmission network was established – environmental values have changed. The passing of the Resource Management Act (RMA) in 1991 was instrumental in altering the debate, thinking and responses relating to the imperative to sustainably manage the environment. Making an effort to strike a balance between social, cultural, ecological and economic values has now become the norm for most people.

This process is complicated by the increasing demand for electricity. Most recent electricity demand forecasts are based on the Electricity Commission’s national demand forecast from the Initial Statement of Opportunities dated July 2005.¹ This forecasts that national electricity demand will grow on average at 2.3 percent over the next 10 years. This means that additional network investments (including new transmission lines and/or upgrading of existing lines) will be required.

Transpower has, until 2010, committed to a significant number of projects involving incremental enhancements, such as the thermal upgrade of several existing transmission lines, and installation of static and dynamic voltage support.

The projected growth in electricity demand gives Transpower strong incentives to increase 1) their existing network capacity and 2) build new lines. This is necessary, since supply of electricity must run in front of demand to meet electricity requirements. Therefore, Transpower places strong emphasis on increasing the capacity of the existing network by up-rating, duplexing and triplexing lines, and adding additional circuits.

Responding to concerns about timely upgrade of transmission, the government established a reference group to advise on the feasibility and merits of a national policy statement (NPS) and/or national environmental standards (NESs)² to address issues associated with the management of electricity transmission under the RMA.

¹ The latest Statement of Opportunity was due to be released in late 2007, but has been delayed.

² One or more NESs may also be developed in addition to the NPS to add certainty on some resource management matters relating to the electricity transmission network.

Following public consultation, the Reference Group³ produced a report entitled: *The Merits and Potential Scope of National Guidance on the Management of Electricity Transmission under the RMA* (April 2006).⁴ The Reference Group's report identified three main electricity transmission policy areas that national guidance (an NPS and/or national environmental standards) could address:

- the positive effects of transmission
- managing adverse effects **on** transmission
- managing adverse effects **of** transmission.

The Reference Group considered that “there are likely to be net benefits” in developing an NPS.

Demands on the electricity system are growing. The need for upgrades and extensions of the transmission network are likely to escalate in future, as will the costs of the current situation or ‘status quo’ (ie, no action). Therefore, to an extent, national guidance would anticipate this development.

The NPS is intended to provide national direction on the sustainable management of the electricity transmission network, and in particular to raise the status of electricity transmission to one of national significance when considering resource management proposals.

This NPS evaluation is based on the report from the independent Board of Inquiry,⁵ which undertook public consultation and public hearings. The evaluation examines the recommended changes made by the Board of Inquiry, and evaluates the effect of these changes in terms of their efficiency and effectiveness in achieving the NPS objective.

Despite the government's attempts to draw attention to and debate the merits of ensuring that the benefits of transmission receive national recognition, the development of new lines and the route selection process has hardened the attitudes of councils and land owners who are opposed to this development. Therefore, the development of new lines is likely to face opposition with or without an NPS. This makes it difficult to ascertain the status quo costs since these are higher than they were five years ago. This is solely due to the hardening of attitudes.

1.2 Section 32 and methodology

Section 32(3) of the RMA requires that an evaluation must examine:

- (a) the extent to which each objective is the most appropriate way to achieve the purpose of this Act; and
- (b) whether, having regard to their efficiency and effectiveness, the policies, rules, or other methods are the most appropriate for achieving the objectives.

³ The Electricity Transmission Reference Group comprised representatives of agencies, industries and organisations with a specific interest in electricity transmission. See the Glossary for further detail.

⁴ The Reference Group's report can be located at: www.med.govt.nz/energy/nps/transmission/.

⁵ A board of inquiry is an independent body established by the Minister, under section 47 of the RMA, to inquire into and report on a proposed NPS.

Section 32(4) of the RMA requires that the evaluation take account of:

- (a) the benefits and costs of policies, rules or other methods; and
- (b) the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods.

1.2.1 Methodology

Section 32 of the RMA does not explicitly require an evaluation of whether the NPS is ‘desirable’. This assessment is required separately under section 45 of the RMA. In completing an evaluation in accordance with section 32 there is, however, an implicit requirement to assess alternative approaches to the NPS.

A clear and existing alternative to the NPS is the status quo, which therefore serves as the baseline for this evaluation. The relevance of the non-RMA elements, and their relevance to costs and benefits of the RMA elements are considered as part of this evaluation.

In considering the appropriateness of the objective of the NPS, consideration is given to:

- the purpose of the objective, which is to state the outcome sought from the resolution of a resource management issue
- whether, through the resolution of an identified resource management issue, the objective will help achieve the purpose of the RMA, being the promotion of the sustainable management of natural and physical resources.

Having considered the appropriateness of the objective, the related policies are then evaluated, including the assessment of alternative approaches to achieving the objective. In evaluating the policies, consideration is given to:

- the costs and benefits of each policy, the risk of acting or not acting where there is insufficient information or uncertainties and, having considered these matters, how *efficient* the policy would be in achieving the objective
- how *effective*, or successful, the policies would be in achieving the objective and thereby resolving the relevant issue.

Note that for the purposes of a section 32 evaluation under the RMA, the terms ‘costs’ and ‘benefits’ take broad meanings and include environmental, social and economic matters.

2. Status Quo

The ‘status quo’ relates to how the national electricity transmission grid is established and managed – with specific reference to RMA documents and processes. The status quo also includes reference to documents and processes outside the RMA umbrella, where the associated issues have a link to RMA issues.

The transmission network is not ‘static’, but is subject to continual maintenance and upgrading. Transpower’s committed or proposed work over the next 10 years includes 18 ‘backbone’ grid projects and 22 regional projects. This compares with a period of no major upgrades within the recent past.

2.1 Planning documents (Resource Management Act)

Most of the transmission network was established prior to the implementation of the RMA in 1991. Therefore, the basic existence of much of the network relies on ‘existing use rights’ (section 10 of the Act). Extensions, alterations and maintenance of the network are managed through a variety of provisions including designation, resource consents, certificates of compliance and existing use rights certificates.

District (including city) councils, regional councils and Transpower (as a requiring authority) are responsible for making decisions on applications for works under the provisions referred to above. The decisions of these bodies are guided by the content of 71 district and 64 regional plans, and 16 regional policy statements – the transmission network extends into all jurisdictions.⁶

Within their planning documents, each local authority has its own set of objectives, policies and rules – although Transpower has sought to introduce some commonality by engaging in advocacy on plan development. For instance, there are some district councils that share the same or similar provisions relating to ‘minor works’ for maintenance or upgrading.⁷ Transpower also advocates network-friendly provisions in a range of other (non-RMA) documents produced by local and central government agencies.

However, Transpower’s advocacy has had uneven success, and it considers the majority of current district plans contain unacceptable provisions. Related issues are the perceived clarity of provisions, the consistency of interpretation by local authorities and the variability of provisions across local authority boundaries.

The Ministry of Economic Development has found that no district or regional plans make specific reference to the national benefits of electricity transmission.⁸ Conversely, a Transpower

⁶ With the exception of the Chatham Islands.

⁷ Transpower has sought a consistent definition of minor upgrading in district plans since 1997, so some of the variability in plans is due to earlier versions of the definition that it advocated.

⁸ Stocktake and Analysis of Regional and District Plans and Policy Statement, by Beca for the Ministry of Economic Development, June 2005.

study has found that most district plans deal with the adverse effects of infrastructure on other activities.⁹ Therefore, a central element of the status quo is that, in most planning documents, Transpower's activities are *prima facie* considered as having adverse effects – without much balancing recognition of the transmission network's national benefits.

Transpower also seeks to protect the network from the effects of other activities. It does this in two ways. One is via the use of negotiated easements on some lines, but this only covers a small part of the network. The other way is via monitoring and responding to resource consent applications, but this is limited to situations where the consent is notified or the local authority requires the applicant to obtain Transpower's written approval.

In summary, Transpower engages in RMA processes in three ways, as an:

- *Advocate* – seeking network-friendly provisions in local authority planning documents that will either:
 - make the planning processes for future Transpower works easier and/or clearer; or
 - protect the network from the potential adverse effects of other activities.
- *Applicant* – seeking approval for proposed physical works (new, upgrading, or maintenance) via:
 - existing use certificate
 - certificate of compliance
 - resource consent
 - designation and outline plan (note: this also links to acquisition/compensation provisions under the Public Works Act 1981).
- *Opponent* – seeking control over the outcomes of proposed third-party activities, where those are notified or a local authority requires an applicant to gain Transpower's written approval.

The ongoing costs of dealing with transmission network issues under RMA processes are borne by Transpower, local authorities, land owners and the general public. Much of the cost, and the key issue for Transpower, relates to the need to minimise the uncertainty of outcomes. In part, that uncertainty is a consequence of the variable approaches to policy and regulation adopted by local authority planning documents. Transpower therefore engages as an advocate to reduce variation and enhance certainty. The remaining costs relate to Transpower as an applicant, or as an opponent to third-party development. In both cases, the need for Transpower to engage in the process can be related to whether the relevant planning document has network-friendly provisions (which links back to the success of advocacy). For local authorities, land owners and the public in general, costs arise from responding to Transpower's ongoing engagement in planning processes.

The benefits of the status quo, in relation to the sustainable management of the transmission network, appear limited. Transpower, as the authority responsible for the management of the network, has been unable to achieve network-friendly provisions in the majority of planning documents. Even where there are such provisions, there is still some uncertainty that the provisions will remain unchanged over time, or that they will be interpreted consistently over time. For local authorities and land owners, the main benefit of the status quo is that transmission network issues are addressed via local responses – providing the ability to take account of local concerns.

⁹ District Plan Stocktake Report, for Transpower by Burton Consultants, May 2006.

There is significant public interest in the exercise of control over future development of the transmission network. To some degree, communities have been ‘sensitised’ by the publicity surrounding proposed major grid projects and by Transpower’s day-to-day interaction with land owners over general access and maintenance issues. The economic consequence is that transmission work is likely to be costly, without necessarily any commensurate benefit, as processes in a ‘sensitised’ setting are likely to be subject to a degree of ‘scope creep’ and incur increased transaction costs in their resolution.

2.1.1 Ministerial ‘call-in’ option

An option open under the RMA is a Ministerial ‘call-in’. In a recent example, the Minister for the Environment used his discretionary power to issue a call-in for the notices of requirement and applications for resource consent involved in the proposal by Transpower to develop a new national grid electricity transmission line from Whakamaru to Otahuhu and Pakuranga.¹⁰

A call-in allows a board of inquiry, or the Environment Court, to examine resource consents required for a particular project. It ensures consistency in decision-making and matters considered in the RMA process across district boundaries, although it does not provide a policy framework within which decisions on the transmission network can be made.

2.2 Network mandate (Electricity Act 1992 and 2001)

The Electricity Act 1992 provides the mandate for the construction and operation of a national transmission network. Most of the network was constructed pre-1988, and the Act maintains the right to occupy private land without the need for land owner agreements. Lines built from 1988 onwards require negotiated agreements with land owners. The 2001 amendment to the Act established the role of the Electricity Commission. Transpower must submit grid investment proposals to the Commission, and can recover the costs of the investment from customers if the Commission approves the investment.

There is limited interaction between RMA processes (planning documents, resource consents and so on) and activities under the direction of the Electricity Act 1992. The links between the two include:

- the nature of restrictions on Transpower/land owner activities via negotiated agreements will differ from restrictions imposed by district and regional plans, even though both may seek to control the same activity
- the Electricity Commission considers the cost of complying with the RMA as part of its grid investment test.

There is therefore potential for confusion in the community where agreement restrictions differ from district/regional plan provisions. In the absence of knowledge about land owner agreements, local authorities may issue certificates of compliance/existing use certificates that are inconsistent with land owner agreements, but this does not affect land owners’ ability to enforce such agreements.

¹⁰ This is in accordance with sections 140 to 150 of the RMA.

Existing district/regional plan objectives and policies on infrastructure or transmission will have some effect on the ease or difficulty of establishing new grid investment. To the extent that the status quo lacks clarity and recognition of the national benefits of transmission, RMA processes will be relatively costly. The Electricity Act 1992 (via the Commission) allows Transpower to pass those costs onto its customers. The status quo may therefore impose an unnecessary level of costs on Transpower customers.

Transpower is required to negotiate easements with land owners where its actions would cause 'injurious affection'. At the same time, existing district/regional plan objectives and policies often seek to control adverse effects arising from transmission infrastructure. Under the status quo, there is therefore an issue of consistency between RMA plan provisions and Electricity Act easement requirements, but there is also an associated question of whether the inconsistencies have any material effect.

2.3 Other regulations and guidelines

A number of other regulations and guidelines influence the physical environment of the transmission network. Those provisions include: NZECP 34;¹¹ Trees regulations; Building Act 2004; RMA regulations; ICNIRP¹² guidelines.

These provisions relate to a level of detail that is generally not addressed by objectives and policies in planning documents. To the extent that they are not addressed by existing district/regional plan objectives and policies, the status quo represents a lack of integration of transmission-related matters.

¹¹ New Zealand Electrical Code of Practice for Electrical Safe Distance.

¹² International Committee on Non-Ionizing Radiation Protection.

3. Problem Statement

3.1 Problem definition

Based on this assessment of the status quo, it is considered that the problem confronting development of the transmission network has three components.

The first is the national significance of the network as a physical resource. The second is inconsistent cross border treatment under the RMA that impacts on the efficiency of the grid. The third is the lack of consideration given to the specific resource management issues associated with the network within RMA plans and policy statements. These are addressed in turn.

3.1.1 National significance

The transmission network's national significance as a physical resource stems from it being an attenuated network of infrastructure that traverses all of New Zealand's local council territories,¹³ connecting areas of growing electricity demand (mostly in the North Island) with areas of excess electricity supply and hydro-storage capacity (mostly in the South Island). It provides a vital link that smoothes out variations in availability and the price of electricity in different parts of the country that would occur with less inter-connected systems, benefiting all localities.

Demand for electricity is increasing with population growth, rising incomes and new technology powered by electricity. Electricity is subject to variation and demand peaking that can only be met by providing excess local capacity in generation that gets utilised infrequently, or by utilising spare capacity nationwide through effective transmission.

A further factor in the significance of the network is that New Zealand's ratification of the Kyoto Protocol¹⁴ and international commitment to restrain carbon emissions have increased interest in new kinds of power generation from renewable sources (hydro, wind, geothermal). These sources of generation are often located a long way from metropolitan areas. In many cases, these necessitate new lines and connections to the transmission grid.

The combination of growing demand and the need to provide electricity in environmentally sustainable ways gives increased importance to the improvement, upgrade and extension of the transmission system.

¹³ Except for the Chatham Islands.

¹⁴ The Kyoto Protocol to the United Nations Framework Convention on Climate Change is an amendment to the international treaty on climate change, assigning mandatory targets for the reduction of greenhouse gas emissions (including those produced by burning fossil fuels) to signatory nations.

3.1.2 Inconsistent resource management

The transmission grid is subject to inconsistent treatment under the RMA. While such inconsistency is not uncommon under the RMA, and is an appropriate outcome of the principles of devolution included in the Act, the characteristics of the transmission network mean that the implications on the efficiency of this important physical resource are significant. In particular, the elongated and cross-boundary characteristics of the network mean there is a high potential for externality effects, ie, actions in one locality having implications elsewhere. This can arise from:

- hold ups of process in one location prolonging the interval before realisation of benefits from improved transmission elsewhere
- network effects, whereby the integrity of aspects of network operation are only as strong as those in the weakest link in the network, (eg, failure to manage third-party effects on the network in one district may effect security of supply in another)
- cost shifting, because time and costs required to resolve planning processes in one district are spread over power consumers in all other districts through the charging regime, which averages system-wide costs across all electricity users
- transmission system failures caused by planning-induced delay in making necessary adjustments that can have high costs for consumers outside the district: the default value for lost load is \$20,000 per MWh in the Electricity Commission's Grid Investment Test, but this is an average value and, for some users, the value of losing power for even a short period is much higher.

The potential losses from transmission failures may be large, but the probability is very low, so the expected value of such losses in any one year is low, but not zero.

It is considered that the inconsistent treatment of the network results from the following limitations:

- variable recognition/consideration of the national benefits of transmission
- the lack of recognition/consideration of the significance of the externalities caused by inconsistent treatment of the network
- ultimately, the lack of national level direction regarding the sustainable management of the network.

3.1.3 Variable consideration

With regard to the consideration of the network, the Reference Group report (2006) identified the following issues as being central to the current 'problem':

- the consideration given to the national benefits of transmission in RMA decision-making (in addition to local costs)
- the management of the effects of activities on the transmission network
- provision for the efficient operation and maintenance of the existing network
- the management of certain adverse effects of transmission.

With respect to these issues, the evaluation of the status quo above finds the following:

- A central element of the status quo is that in most planning documents the transmission network is *prima facie* considered as having adverse effects – without any balancing recognition of its national benefits. There is therefore a question of balance in the status quo.
- Currently, Transpower’s ability to protect the transmission network from the effects of third-party activities is limited to situations where the consent is notified or the local authority requires the applicant to obtain Transpower’s written approval.
- There is significant variation in relation to how different district plans provide for the operation, maintenance, and upgrade of the existing network.
- There is significant material already included in policy statements and plans regarding the potential adverse effects of the transmission network.

4 Alternatives to the Status Quo

While it is not explicitly required within section 32, it is considered that it is relevant to evaluate the alternative means of resolving the problem identified with the status quo.

In this section, various policy and non-policy options are considered where these might provide appropriate alternatives to the status quo that could fully address the problem stated in section 3. The alternatives considered are:

- amendment of the RMA
- Ministerial call-in of transmission proposals
- all-of-government submissions on transmission proposals
- enhancing the status quo
- easements over the entire transmission network
- designations over the entire transmission network
- a national environmental standard
- a national policy statement.

Table 1 summarises these alternatives.

Note that there is currently no accepted alternative to the ICNIRP guidelines as the basis for dealing with electric and magnetic field (EMF) issues associated with the electricity transmission network (Policy 9).

The criteria used for this assessment are:

- establish the national significance of electricity transmission
- establish a national policy framework
- establish a consistent policy framework
- be implemented in a reasonable timeframe and at reasonable cost.

4.1 Amendments to the Resource Management Act

Amendments could be made to the RMA so that Part 2 explicitly recognises the importance of the transmission network to the country. Upon enactment, such changes would have an immediate effect on decision-making on policy statements, plans, notices of requirement and resource consent applications.

However, while amendment to the RMA would enable the national benefit of the network to be recognised, it would not adequately resolve the current problem. The main reason for this is that amendments to the Act do not offer the detailed policy guidance required to establish a consistent policy framework nor afford the opportunity to adequately address all elements of the problem.

Table 1: Alternatives to the status quo

Alternative to the status quo	Main effect on electricity transmission	Main weakness
'Call in'	Would fully explore the national implications of a proposal in addition to local considerations.	Would not provide a policy framework within which decisions on transmission proposals could be made.
All-of-government submissions	Would set out the government's position, including national policy considerations, on a proposal.	Would not provide a policy framework within which decisions on transmission proposals could be made.
Changes to the RMA	Could provide a clear signal on the importance of transmission to decision-makers.	Would not provide a detailed policy framework within which decisions on transmission could be made.
Enhanced status quo: NPS Policy 5 (maps) and NZECP 34	Would increase awareness, and increase protection.	NZECP 34 will only address a limited range of activities that create risk. Better enforcement of the NZECP 34 would cost more.
Negotiation of easements over the entire existing network	Would enable Transpower to incorporate restrictions on activities adjoining the network.	Would only address activities on land directly affected by the network, not the effects of activities on nearby properties. Could have significant costs due to compensation associated with the easements, and significant time requirements in negotiating such easements. Would represent a re-litigation of matters considered for the Electricity Act 1992.
Deemed designations over the existing network	Would confirm the right of the existing network as a legally established activity. Would enable maintenance and some upgrades of the existing network without further resource consent requirements under district plans.	Would not provide for new lines in new locations, and would not provide a policy framework within which decisions on new transmission could be made. Would not remove the need for resource consent under regional plans. Would have significant costs and delays because of Transpower's need to purchase land or compensate land owners for the interest taken by the designation. Would significantly reduce participation rights.
Transpower requiring designations over the existing network	Would confirm the right of the existing network as a legally established activity.	Would not provide a policy framework within which decisions on new transmission could be made. Would not remove the need for resource consent under regional plans. Would significantly increase costs and delays because of Transpower's need to purchase land or compensate land owners for the interest taken by the designation, and the designation process.
National environmental standard	Provides a single consistent set of regulatory rules.	Not a full policy framework allowing some continuing inconsistency, and some costs in implementation.
National policy statement	Establishes national significance of transmission and provides a national policy framework within a defined timeframe.	Does not prescribe rules that ensure consistency, but courts and common practice will establish accepted approaches and increase consistency over time.

Source: NZIER

4.2 Ministerial ‘call-in’ and all-of-government submissions

The use of Ministerial call-in powers (under sections 140 to 150AA of the RMA) would enable nationally significant resource consent or notice of requirement proceedings associated with the transmission network to consider the national interest, as well as local interests and environmental values, and would therefore enhance the likelihood that national interest would be applied consistently throughout the country.

As identified under the discussion on the status quo, this is already possible under the RMA and has been recently used. However, the opportunity exists to use these powers more frequently. The preparation of all-of-government submissions presents another option by which to ensure the national interest is considered during RMA proceedings. This would require all government agencies with an interest in a proposal to coordinate their views and present a single and consistent position on the overall national interest. In doing so, this would avoid local authorities needing to make a determination on the national interest.

Despite the apparent benefits of these options, none would appropriately resolve the status quo. In particular, use of these two options would not create a national policy framework for the management of the network. Without such a framework, mechanisms such as the Ministerial call-in powers would need to be exercised within a vacuum of accepted policy on the benefits of transmission, and would therefore be less effective.

4.3 Enhanced status quo and easements over the network

If achievable, the easement option would enable Transpower to effectively manage nearby land-use activities that could affect the operation of the network. However, this alternative would not enable the management of activities on adjoining properties. Also, the likely transaction costs incurred by Transpower and others in determining the value loss and due compensation, and the negotiation of agreements with individual land owners, would be substantial. These costs would ultimately be passed on to electricity consumers, with further consequences for their decisions on the use of electricity. Finally, the requirement for easements associated with the transmission network was resolved as part of the Electricity Act 1992.

The enhanced status quo alternative would rely on including the transmission network on plan maps and improved enforcement of NZECP 34:2001 to minimise the effect of land-use activities on the transmission network. As discussed below, including the transmission network on plan maps should increase awareness of its presence among council resource consent and building consent processing officers and potential purchasers of land. Improved enforcement of NZECP 34 would reduce the risk of disruption to the transmission network from some of the land-use activities that the policy options seek to address.

In the Reference Group report, improved enforcement of NZECP 34 is considered, among other mechanisms, in some detail. The discussion identifies significant limitations in terms of the mechanics of enforcing NZECP 34 and also the scope of the Code. Based on this discussion, it appears that significant costs would be incurred in attempting to implement the Code, and also that the effectiveness of this mechanism would be limited.

It is therefore considered that these alternatives do not represent the most appropriate means to resolve the current problem.

4.4 Designations over the network

A further alternative is for designations that provide for works to be created for the entire transmission network. These designations could be achieved in two ways.

- Transpower, as a requiring authority, could issue notices of requirement to all local authorities traversed by the network.
- legislation could be introduced which deems a designation to exist over the network, and which defines those works covered by that designation.

The first option (notices of requirement) could only be achieved at significant cost to Transpower, because of the requirement for Transpower to ‘take an interest’ and pay compensation for loss of land value to land owners affected by the designation. The Reference Group report notes that many thousands of land owners would be affected by such designations. The transaction costs of determining lost value, negotiating with each land owner and paying the compensation due would be substantial, and would probably be disproportionate to the benefit obtained (ie, the avoided costs of going through current RMA procedures).

In addition, Transpower would face the cost of obtaining the designation. It is likely that Transpower would need to submit notices of requirement in all districts, and each notice of requirement would need to be accompanied by a specific assessment of environmental effects.

Post-notification, some cost savings may be able to be obtained through joint hearings, or a Ministerial call-in, that incorporate notices of requirement across multiple local authorities. However, the hearing costs would still be significant. It is also difficult to see how the matters of detail likely to be raised during such a process could be addressed at anything above a regional level. Consequently, the use of joint hearings would only have a limited effect in terms of being able to reduce the costs of the process to Transpower.

Given the standard of information required, consultation expectations and the controversy that is likely to be associated with each notice of requirement, the cost of obtaining each notice of requirement could be in the vicinity of \$500,000, and possibly more. Furthermore, achieving designations across the country could take in the vicinity of 10 to 15 years. This timeframe is based on the expectation that it would involve multiple projects that could not be resourced concurrently.

Such a timeframe would cause significant delays for Transpower in relation to its ongoing maintenance needs and planned network upgrade. Plus, there would be no guarantee that all notices of requirement would be confirmed, or that for those that are confirmed the conditions imposed on each would be consistent. Consequently, in addition to a significant cost, it is unlikely that this approach would be effective in resolving the current inconsistencies.

The second option (legislation that deems designations to exist over the network) was considered by the Reference Group, which concluded that it was not appropriate. The reasons for this finding were, among other things, the:

- potential cost of the requirement to take an interest in the designated land
- loss of participation rights.

Although the transaction cost of achieving the designation would be greatly reduced, the cost of compensating for the interest taken in land alongside the network and the significant loss of participation rights mean that such an approach would not be appropriate. Also, the loss of participation rights could have significant follow-on implications in relation to the willingness of land owners to cooperate with Transpower, government and local authorities on other matters.

4.5 Non-statutory guidance

In an attempt to resolve the current problem, non-statutory guidance could be provided by the Ministry in relation to:

- the national benefits of the transmission network, and how these should be considered as part of RMA-based decision-making
- model policy statement and plan provisions
- appropriate methods for mitigating the adverse effects of the transmission network, including model consent conditions.

Such guidance might be provided by way of publications and a series of workshops for practitioners held across the country. The guidance material could be developed in consultation with not only Transpower, but also local government and land owner representatives.

The benefits of this approach would be to increase awareness of the issues associated with the transmission network and of best practice in relation to the management of these issues. However, the translation of this guidance into policy and plan provisions, and its use in consent conditions, would be voluntary. It is likely that the uptake of the guidance would be influenced by the level of sensitivity of the local community to the transmission network. In those areas where the local community has become sensitised to the transmission network, the political will to implement the guidance material may be less than in other locations. These areas are also likely to be those within which the need for ongoing maintenance and upgrade of the network is of higher priority.

For this reason, the effectiveness of the guidance could not be assured. Given the national importance of the network, a guidance approach would not represent the most appropriate way to resolve the current problem.

4.6 National environmental standard

An NES could be prepared to establish a consistent regulatory framework for network activities and for third-party activities within close vicinity of the network.

The benefits of this approach would be a single set of nationally consistent rules under which the maintenance, upgrade and development of the network would occur.

An NES would not provide a full policy framework within which resource consents for the upgrade of the network, or resource consents for third-party activities, would be considered. As a result, the national benefits of the network are likely to continue to be considered in an inconsistent manner, and decisions to grant or refuse such consents would reflect this

inconsistency and be influenced by local interests and sensitivities. Further, conditions on such consents are likely to retain a degree of inconsistency. An NES may also involve appreciable costs in implementation, particularly for local authorities and land owners.

It is therefore considered that an NES would not be the most appropriate way to resolve the current problem.

4.7 National policy statement

An NPS provides a policy framework which must be given effect to in regional policy statements, regional plans and district plans and which must be considered as part of decisions on resource consent applications and notices of requirements (designations).

Therefore, while an NPS does not establish rules associated with the management of the network or the management of third-party activities near the network, it offers the opportunity to set a policy framework which directs both:

- the content of plans and policy statements below it on the RMA hierarchy
- the nature and content of resource consent/designation decisions.

As an NPS leaves discretion for local councils regarding how they give effect to it, it is not likely an NPS will result in 100 percent consistency between districts. However, it is considered that, through the process of council and Environment Court hearings, accepted approaches to the implementation of an NPS would be developed which will ensure a relatively high level of consistency is achieved.

Given these points, it is considered that an NPS would be the most appropriate means of resolving the current problem.

4.8 Summary of alternatives

In this section, we have considered a list of alternatives to the status quo.

It is considered that, of the options presented, the NPS would most fully address the problem of recognising the national benefits of transmission in a way that creates consistent cross border treatment of transmission. Notwithstanding this, it is recognised that the several alternatives could be appropriate complementary measures to the NPS. In particular, actions such as a Ministerial call-in, all-of-government submissions and non-statutory guidance would be beneficial.

Overall, however, the development of an NPS is seen as the most appropriate approach to dealing with the problem stated in section 3. We now turn to the evaluation of the objective and policies of the NPS. A summary of the alternatives against the common criteria for comparison is presented in Table 2.

Table 2: Summary of alternatives against criteria

	Establishes national significance of transmission	Establishes national policy framework	Establishes consistent policy framework	Implementable at reasonable cost and timeframe
Non-statutory guidance	X	X	X	√
Easements	X	X	X	X
RMA amendment	√	√	X	X
Designations	X	X	X	X
Ministerial call-in	√1/2	X	X	√
All-of-government submissions	X	X	X	√
National environmental standard	X	X	X	√
National policy statement	√	√	√	√

Source: NZIER

5. National Policy Statement Evaluation

The following evaluation is broken into two sections corresponding with the evaluation of the objective and the evaluation of the policies included in the NPS. For the purposes of a section 32 evaluation under the RMA, the terms ‘costs’ and ‘benefits’ take broad meanings and include environmental, social and economic matters.

5.1 Objective evaluation

5.1.1 Introduction

Section 32 requires that the evaluation must examine the extent to which the objective included in the NPS is the most appropriate way to achieve the purpose of the RMA.

The purpose of the RMA is to promote the sustainable management of natural and physical resources, which means:

... managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

The objective of the NPS seeks the following outcome:

To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:

- managing the adverse environmental effects of the network; and*
- managing the adverse effects of other activities on the network.*

The objective seeks outcomes in relation to three elements: the national significance of transmission; management of adverse environmental effects on the network; and managing the adverse effects of other activities on the network. The following evaluation considers each of these elements in turn, against the purpose of the RMA.

Based on the evaluation included in these three sections, it is considered that the objective represents the most appropriate way to achieve the purpose of the RMA. Broadly, it is considered that the objective appropriately reflects the balance contained within the Act’s purpose between enabling the use and development of resources, in this case a nationally

significant resource, and managing the adverse environmental effects of this use and development.

5.1.2 Recognising the national significance of the network

Given the value of the network to the nation, see section 3.1.1 above, seeking recognition of it through the facilitation of the use, maintenance, upgrade and development is an appropriate objective in terms of the purpose of the RMA.

This component of the objective clearly relates to the first portion of the purpose of the Act, which seeks to enable the use and development of resources, including physical resources such as the network, so that people and communities can meet their needs. The first element of the objective serves to build upon this broad intent within the Act's purpose by setting specific direction in relation to the nationally significant network.

5.1.3 Managing the adverse environmental effects of the network

There is a significant body of policy material in existence which addresses the adverse environmental effects of activities, including those of the transmission network and which covers a broad range of environmental issues. This body of policy material is provided through the various district and regional plans and regional policy statements that exist across the country, for example, the Greater Wellington Regional Council points out that all chapters of the Wellington Regional Policy Statement address the adverse environmental effects of activities.¹⁵

To date, local authorities have not identified significant gaps in the current policy framework, nor that such gaps are creating difficulty for local authorities as they seek to manage the adverse effects of the transmission network. Thus, it appears questionable whether a significant resource management issue exists in relation to the management of the adverse effects of electricity transmission.

Notwithstanding this, the general intent of the statement within the objective offers a degree of appropriateness in relation to the purpose of the RMA because it provides a balance to recognising the importance of the transmission network. The statement in the objective recognises both the potential of the transmission network to create adverse environmental effects and the need to balance these with recognition and provision for its benefits. The Environment Court has, in the past, placed "great weight" on the only existing national policy statement, the New Zealand Coastal Policy Statement. Assuming that such weight will be placed on this NPS should it be adopted, then it would seem appropriate that it provides a balanced direction for decision-makers and does not rely on documents lower in the RMA hierarchy, or the RMA itself, to achieve this.

A second point that would lend support to the appropriateness of the statement in the objective would be if it, and its related policies, offered specific national guidance as to how the adverse environmental effects of electricity transmission are best managed. At present, most of the

¹⁵ NZIER (2006), Transmission Line Evaluation and Economic Appraisal: Evaluation of proposed National Policy Statement on Electricity Transmission. Report to Ministry for the Environment, 20 October 2006.

RMA-based policy framework under which the adverse effects of electricity transmission are addressed is generic to infrastructure, or even more broadly, to all activities. If the NPS was able to offer specific guidance in relation to electricity transmission, recognising the particular characteristics of the network and its national benefits, then such guidance would add value to the current policy framework rather than just adding a further layer to it.

While the statement on managing the adverse environmental effects is general and, to an extent, simply repeats the requirements of the Act, the policies add further specificity in relation to the environmental values which need to be addressed and to how adverse effects on these values should be managed.

5.1.4 Managing the adverse effects of others' activities on the network

This statement on managing the adverse effects of others' activities in the objective is appropriate in terms of the purpose of the RMA, which refers, among other things, to "avoiding, remedying, or mitigating any adverse effects of activities on the environment". As the environment is defined to include physical resources, and the transmission network is a physical resource, seeking to manage the effects of activities that could disrupt its efficient and reliable operation is entirely appropriate. Furthermore, section 7(b) of the RMA states that those exercising functions under the Act shall have particular regard to "the efficient use and development of natural and physical resources". Again, in this context, the statement made in the objective is entirely appropriate.

In respect of both sections 5 and 7 of the RMA, it is noted that there are a large number of potential sources of adverse effects on transmission operations. These involve high transaction costs in managing them individually and/or in seeking remedies after problems have arisen. Such costs would be avoided or reduced by a preventative approach as proposed in the objective.

5.2 Evaluation of policies

The evaluation of the appropriateness of the 14 policies considers the efficiency and effectiveness of each policy individually. Criteria for this evaluation are set out in sections 5.2.1 and 5.2.2 below.

The evaluation of policies then concludes with a summary of all 14 policies to assess how they fit together as a package under the NPS objective. The assessment of the overall appropriateness of the package of policies includes consideration of the uncertainties and information limitations inherent in the proposed policies. Consideration of the appropriateness of the package of policies is necessary as it is recognised that while each policy will go some way to fulfilling the objective, and must do so to be considered appropriate, no one policy will be fully effective in achieving the objective. In other words, it is very unlikely that a single policy could be considered the 'most appropriate' way to achieve the objective.

5.2.1 Effectiveness

For the purposes of evaluating ‘effectiveness’, two elements are considered. The first is whether the policies address the full scope of matters covered in the objective. In this regard, it is noted that the objective seeks outcomes in relation to three key matters:

- recognition of the benefit of the grid through the facilitation of its operation, maintenance, upgrade and development
- management of adverse environmental effects of the grid
- management of adverse effects of activities on the grid.

The second element of effectiveness is how successful the policies are likely to be in achieving the outcomes sought in the objective. In order to determine this, the range of policy approaches included in the NPS is evaluated against the range of policy approaches available. In completing this part of the evaluation, it is recognised that a more limited range of policy approaches is available for use in an NPS than in other RMA policy statements or plans. The policy approaches considered to be available to an NPS are:

- plan/policy statement changes – policies that require regional policy statements and district or regional plans to address specific matters
- resource consent/notice of requirement guidance – policies that provide guidance on matters that need to be considered as part of resource consent applications and notice of requirement considerations.

5.2.2 Efficiency

When considering the efficiency of each policy, we examined the costs and benefits associated with:

- the environment
- land owners
- the grid operator (Transpower)
- local government (district, city and regional councils)
- government
- consumers
- others/generators.

It is hard to avoid some overlap in an assessment disaggregated across so many different parties. For instance, things that directly affect Transpower as grid operator also indirectly affect electricity consumers, to the extent that its costs and savings are passed on through the transmission pricing mechanism into the cost of electricity to consumers. They also affect the government as Transpower’s shareholder, and also affect the risk of government involvement in the event of consequences arising from failings in the transmission network. In a quantified analysis, these overlaps would need to be netted off carefully to avoid double-counting, but in a qualitative analysis, such precision is less critical, and it can still be informative to look at the distribution of effects across different parties.

For evaluating ‘efficiency’ it is necessary to be satisfied that the NPS achieves a net benefit or, at the least, that it is effective at minimal cost. With a change in policy there are two sorts of costs to be considered. ‘Transaction costs’ are incurred by all parties in familiarising themselves with the new rules and in complying with them (eg, in gathering information for application for consents or consultation with other parties). ‘Consequential costs’ are incurred by parties if the rules require them to appreciably change behaviour or activities over what they would otherwise have done without the NPS (eg, re-routing or modifying grid design, delays and so on). The sum of transaction and consequential costs should be less than the value of benefits obtained for the NPS to be efficient.

To the extent that the NPS clarifies meaning and reduces differences in interpretation between the parties, it can be expected to reduce such transaction costs, although in some circumstances it may just redirect transaction cost generation into new areas. The second category of costs are what might be termed consequential costs, the use of resources in new ways as a result of the NPS. For instance, a policy that required the grid operator to consider further route options for its grid upgrades could result in both increased transaction costs (from the enhanced consideration of options) and increased consequential costs if it resulted in a longer or more difficult route being chosen as a means of managing the environmental effects.

The precise extent of transaction and consequential costs is indeterminate, because local authorities retain discretion in how they implement an NPS. But transaction costs are somewhat more tangible and ‘certain’ than consequential cost effects which depend on the discretionary responses of many other parties and external factors.

In the framework of analysis used here, benefits are primarily the avoidance of costs that would otherwise be expected to occur in continuation of the status quo. Other benefits are considered, including potential environmental or health benefits. Costs are additions to the transaction or real costs, relative to the status quo. As with benefits, other costs, such as adverse environmental impacts, are considered. The general effects on the parties are expected to be along the lines listed below.

A positive benefit for the grid operator would:

- benefit the grid’s customers to some degree, including both electricity consumers and generators (including prospective owners of new generation)
- benefit the government as owner of the grid operator and risk-bearer of last resort for failures in the transmission system

but

- effects on the environment around the grid could be unchanged or negative to some degree
- effects on adjoining land owners could also be neutral or negative, but with a heavier tendency to negative because of the perceptions of encroachment on rights and uses of land
- effects on local councils could be difficult to determine, as there may be savings in transaction costs from clarification of entitlements, as well as some loss in local discretion over the relative weighting given to national and local issues.

There can be exceptions to this general pattern, as is apparent in consideration of the separate policies in the NPS.

We have also indicated whether a cost or benefit is large, medium or small. The rule we have used is that:

- large costs or benefits are over \$1.5 million
- medium costs or benefits are between \$0.5 and \$1.5 million
- small costs and benefits are below \$0.5 million.

5.2.3 Policy 1

In achieving the purpose of the Act, decision-makers must recognise and provide for the national, regional and local benefits of sustainable, secure and efficient electricity transmission. The benefits relevant to any particular project or development of the electricity transmission network may include:

- maintained or improved security of supply of electricity*
- efficient transfer of energy through a reduction of transmission losses*
- the facilitation of the use and development of new electricity generation, including renewable generation which assists in the management of the effects of climate change*
- enhanced supply of electricity through the removal of points of congestion.*

The above list of benefits is not intended to be exhaustive and a particular policy, plan, project or development may have or recognise other benefits.

Overall, it is considered that Policy 1 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

In Table 3 the effectiveness of Policy 1 is shown by placing ticks alongside the parts of the objective that Policy 1 covers. Policy 1 is effective in terms of recognising the national benefit, particularly the specific reference to the national benefits of transmission. The policy will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities have regard to the benefits of electricity transmission in their decision-making.

It also partly assists managing effects of others on the grid (½ tick).

b. Efficiency

Policy 1 is expected to efficiently achieve the outcome sought in the objective. With the recognition of the national benefits of transmission, Policy 1 gives the grid operator (Transpower) assistance in its quest to have consistent rules across all councils; however, it also allows councils discretion as to how they go about complying with the NPS. Table 3 shows the efficiency (costs and benefits) associated with Policy 1.

Policy 1 will have a neutral effect on the environment since Transpower is currently able to achieve most of its network objectives. Under the guidance of Policy 1, the same outcome could be achieved at less cost.

For land owners, Policy 1, in conjunction with Policies 2, 10 and 11 will have a negative impact on the way they can utilise their land and other assets close to transmission lines. This is

because these policies require the introduction of district and regional plan rules, which means that land owners will have less discretion about what they can and cannot do. This creates a potential consequential cost on their operations, which will vary across districts, but it is likely to increase their transaction costs in dealing with district, city and/or regional councils as they become familiar with the NPS and the intent of Policy 1.

The benefits of Policy 1 will result from the increased certainty for transmission arising from its benefits being taken into account by local authorities as part of decision-making under the RMA. Transpower currently spends significant time advocating for plan provisions that provide for and recognise the benefit of the transmission network. Equally, Transpower spends significant time challenging plan provisions which take a very localised view of the transmission network, eg, provisions which require lines to be under-grounded. The cost of Transpower's plan advocacy activities is likely to be reduced by the introduction of Policy 1, which will legitimise the arguments currently being made.

Table 3: Summary of effectiveness and efficiency of Policy 1

Effectiveness	
Recognition of national benefit	✓
Manages effects of the grid on the environment	–
Manages effects of others on the grid	½ ✓
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Neutral
Land owners	Medium cost. Increase transaction costs
Grid operator (Transpower)	Small benefit. Decrease transaction costs (less advocacy)
Local government	Medium cost. Decreased transaction costs with Transpower, increased transaction costs with land owners
Government	Small benefit. Reduced risks associated with the network
Consumers	Small benefit. Reduced risks associated with the network
Others/generators	Small benefit. Favourable (particularly for new projects such as renewables)

Source: NZIER

In relation to specific proposals, it is noted that the benefit of Policy 1 is likely to be increasingly important over the next 10 years as Transpower seeks to undertake the major works necessary to provide for the nation's growing energy demands.

The costs and benefits of Policy 1, which seeks to direct the content of district/regional plans, will also occur for local authorities and their ratepayers, and will be associated with the amendments to those plans necessary to give effect to the policy. On the benefit side, transaction costs in dealing with Transpower will be reduced since clear instructions are given in Policy 1 on the importance of the national benefits of transmission. On the cost side, transaction costs are likely to rise because land owners will be constrained by what they can and cannot do around transmission lines.

The costs of policy and plan changes giving effect to Policy 1 will be significant if local authorities are challenged through the Environment Court with regard to how they choose to give effect to the policy. For this reason, explicitly referring to ‘national benefits’ in Policy 1 helps clarify that local authorities need to explicitly provide for such benefits in their plans and policy statements. Notwithstanding this, the relatively broad nature of the policy allows implementation discretion. It is noted that discretion by councils on how they implement Policy 1 could lead to some uncertainty. This is because how councils will give effect to it is still uncertain. Further, costs are likely to be higher for those councils that will be first to incorporate the NPS in their plans (first cab off the rank effect) and for those that are required, by the four-year implementation timeframe, to make the changes outside of their normal plan review cycle or plan change process.

For government and consumers, the national recognition of the benefits of transmission will reduce the risks associated with the network since Transpower’s transaction costs will be reduced and approval times shortened.

Policy 1 is also likely to be favourable to generators, particularly those dependent on new or upgraded lines. Since many renewable energy resources are remote from the national grid, the recognition of the national benefit of electricity is likely to assist new renewable energy connections with the national grid.

5.2.4 Policy 2

In achieving the purpose of the Act, decision-makers must recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network.

Overall, it is considered that Policy 2 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 2 builds on Policy 1, and its role is more procedural and directional. The use of the words “... shall recognise and provide for ...” give strong signals to decision-makers, reinforcing the intent of Policy 1. Therefore, it is effective in achieving the outcome sought in the objective – particularly the first paragraph.

Policy 2 is effective in recognising the national benefit (particularly the first paragraph) since it reinforces Policy 1 and provides specific direction (see Table 4). The policy will influence the full range of functions exercised by local authorities under the RMA (plans, policy, resource consents and designations) and, by doing so, should ensure that local authorities have regard to the operational aspects of grid maintenance, upgrading and development.

Further, Policy 2 is partly effective in recognising and managing the effects of others on the grid.

Table 4: Summary of effectiveness and efficiency of Policy 2

Effectiveness	
Recognition of national benefit	✓
Manages effects of the grid on the environment	–
Manages effects of others on the grid	½ ✓
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Medium cost. Operational effects with possible costs to the environment
Land owners	Medium cost. Increase transaction costs (less discretion)
Grid operator (Transpower)	Small benefit. Decrease transaction costs (less advocacy)
Local government	Medium cost. Decreased transaction costs with Transpower, increased transaction costs with land owners
Government	Small benefit. Reduced risks associated with the network
Consumers	Small benefit. Reduced risks associated with the network
Others/generators	Small benefit. Favourable (particularly for new projects such as renewables)

Source: NZIER

b. Efficiency

In this regard, the policy's costs and benefits are similar to Policy 1 (see Table 4).

Policy 2, because of the strong direction, may have some impact on the environment. It goes further than Policy 1, specifically directing councils to recognise and provide for not only the maintenance and upgrading of the grid, but also grid development. This suggests possibly a higher environmental cost could be incurred relative to the status quo.

For land owners, Policy 2 reinforces the change in the way they can utilise their land and other assets close to transmission lines implied in Policy 1 and explicit in Policies 10 and 11. Therefore, it is likely to increase their transaction costs in dealing with district, city and/or regional councils, as well as potentially incurring consequential costs if they have to change or halt activities around transmission lines.

Transpower is assisted by Policy 2. The cost of Transpower's plan advocacy activities is likely to be reduced by the introduction of Policy 2, which will legitimise its arguments currently being made under the status quo.

Policy 2 is likely to generate a mixture of costs and benefits for local councils. On the benefit side, transaction costs in dealing with Transpower will be reduced since clear instructions are given on how local councils should approach the operation, maintenance, upgrade and development of the grid. On the cost side, transaction costs are likely to rise because land owners will be constrained by what they can and cannot do around transmission lines.

For government, consumers and others/generators, the directional nature of Policy 2 is likely be favourable since it reduces Transpower's transaction costs.

5.2.5 Policy 3

When considering measures to avoid, remedy or mitigate adverse environmental effects of transmission activities, decision-makers must consider the constraints imposed on achieving those measures by the technical and operational requirements of the network.

Overall, it is considered that Policy 3 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 3 is specific in its requirement for decision-makers to take into consideration the technical and operational requirements of the grid. It gives unclear direction in relation to the first paragraph of the objective, and is partly effective in managing the effects of the grid on the environment (see Table 5).

The policy will influence the full range of functions exercised by local authorities under the RMA (plans, policy, resource consents and designations) and, by doing so, should ensure that local authorities have regard to the technical and operational grid requirements.

b. Efficiency

Policy 3 costs and benefits are also detailed in Table 5.

Policy 3, because of its specific reference to technical and operational requirements, may have some detrimental impacts on the environmental outcomes relative to the status quo. The explicit reference to technical and operational requirements justifies/suggests that some environmental losses will be realised because of grid requirements.

Table 5: Summary of effectiveness and efficiency of Policy 3

Effectiveness	
Recognition of national benefit	✓ (indirect)
Manages effects of the grid on the environment	½ ✓
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Medium cost. Implies that technical and operational requirements can override environmental considerations.
Land owners	Medium cost. Increase transaction and consequential costs
Grid operator (Transpower)	Small benefit. Decrease transaction and consequential costs
Local government	Medium cost. Decreased transaction costs with Transpower, increased transaction costs with land owners
Government	Small benefit. Improved efficiency of the network benefits government
Consumers	Small benefit. Improved efficiency of the network benefits consumers
Others/generators	Small benefit. Improved efficiency of the network benefits others/generators

Source: NZIER

For land owners, Policy 3 has the possibility of incurring both transaction and consequential costs, again because of the reference to technical and operational requirements. As well as

increased transaction costs in dealing with district, city and/or regional councils, land owners could face consequential costs (ie, shifting or curtailing activities close to transmission lines).

Transpower is assisted by Policy 3. The cost of Transpower's plan advocacy activities is likely to be reduced by the introduction of Policy 3 which will legitimise some of its arguments currently being made under the status quo. Not only will transaction costs be saved, there is also a possibility that consequential costs might be saved because of the weight given in Policy 3 to the importance of technical and operational costs. It is noted that 'operational requirements' have the potential to cover a wide range of grid operating situations, and there is some uncertainty as to how widely this could be applied by Transpower.

Policy 3 is likely to generate a mixture of costs and benefits for local councils. On the benefit side, transaction costs in dealing with Transpower will be reduced since clear instructions are given on how local councils should approach technical and operational requirements. On the cost side, transaction costs are likely to rise because land owners will be constrained by what they can and cannot do around transmission lines.

For government, consumers and others/generators, Policy 3 is likely improve efficiency of the network and network security, generating a small benefit.

5.2.6 Policy 4

When considering the environmental effects of new transmission infrastructure or major upgrades of existing transmission infrastructure, decision-makers must have regard to the extent to which any adverse effects have been avoided, remedied or mitigated by the route, site and method selection.

Overall, it is considered that Policy 4 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 4 will be effective in achieving the outcome sought in the objective, particularly the first bullet point since it reinforces the intent of the objective and gives consideration to environmental outcomes (see Table 6). In particular it is noted that, indirectly, Policy 4 requires Transpower to evaluate the relative environmental merits of alternative routes, sites and methods for major upgrades. It is considered that this requirement will have a significant influence in relation to the management of the environmental effects of the network.

In relation to effectiveness, it is also noted that Policy 4 will influence the full range of functions exercised by local authorities under the RMA (plans, policy, resource consents and designations) and, by doing so, should ensure that local authorities have regard to, and have the ability to require recognition of, alternatives when managing environmental outcomes.

b. Efficiency

For the environment (see Table 6), the use of the words "which any adverse effects have been avoided, remedied or mitigated" in Policy 4 introduces possible net benefits for the environment. While the development of new transmission lines may have some environmental losses, the importance of considering improved (environmental) site and line placement has the potential for net environmental gains relative to the status quo.

Policy 4 is likely to have net benefits for land owners since planned grid developments are required to consider environmental outcomes. It is possible that this will benefit land owners since environmental outcomes will be considered when route selection occurs. Some of this will be a transfer effect of no consequence for cost–benefit assessments – one landholder’s gain is another’s loss in route selection – but on the assumption that environmental effects along each route are assessed correctly and factored into route selection, there should be a net reduction in adverse environmental effects.

For Transpower, Policy 4 could increase transaction and consequential costs since indirectly it has to consider how best to avoid, mitigate or remedy environmental issues through route, site and method selection. Environmental considerations may increase transactions costs (dealing with councils) and consequential costs (re-routing or considering alternative routes for transmission lines).

Policy 4 may be a net benefit for government, despite the possible increased costs associated with Transpower’s considering alternative site and route selections. The social benefit, because of improved environmental outcomes, may outweigh costs associated with considering alternative routes or site placement.

Policy 4 is a potential cost for consumers and others/generators since it is likely to increase costs for Transpower and therefore increase the price paid for power.

Table 6: Summary of effectiveness and efficiency of Policy 4

Effectiveness	
Recognition of national benefit	–
Manages effects of the grid on the environment	✓
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Medium benefit
Land owners	Possible net benefit
Grid operator (Transpower)	Medium cost. Possible increase in transaction and consequential costs
Local government	Small benefit. Possible reduction in transaction costs
Government	Some net benefit since it gives protection to the environment
Consumers	Small net loss
Others/generators	Small net loss

Source: NZIER

5.2.7 Policy 5

When considering the environmental effects of transmission activities associated with transmission assets, decision-makers must enable the reasonable operational, maintenance and minor upgrade requirements of established electricity transmission assets.

Overall, it is considered that Policy 5 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 5 will be effective in achieving the outcome sought in the objective since it addresses the first paragraph and the first bullet point (of the objective). In particular, it does so by requiring decision-makers to enable operation, maintenance and minor upgrade of the network. However, Policy 5 does not give unqualified approval to maintenance and minor upgrade requirements since it acknowledges, through the inclusion of the word 'reasonable', the importance of environmental effects. Policy 5 will have only small costs for the environment since it is unlikely to change environmental outcomes relative to the status quo (see Table 7).

The policy will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities enable the operation, maintenance and minor upgrade of the network through plan provisions or decisions on resource consent applications.

b. Efficiency

There may be some adverse impact on the environment as result of Policy 5, as it is likely to result in more permissive plan provisions relating to the operation, maintenance and minor upgrade of the network. However, these impacts should be minor (small cost) given the minor nature of the transmission activities involved and the reasonably high number of councils that already enable these activities through their plans.

For land owners, Policy 5 represents a small change to the status quo and therefore transaction costs are likely to be small.

Table 7: Summary of effectiveness and efficiency of Policy 5

Effectiveness	
Recognition of national benefit	✓
Manages effects of the grid on the environment	–
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Small costs
Land owners	Small transaction costs
Grid operator (Transpower)	Medium benefit. Transaction costs reduced
Local government	Small benefit. Decreased transaction costs with Transpower, increased transaction costs with land owners (both relatively small)
Government	Small benefit
Consumers	Small benefit
Others/generators	Small benefit

Source: NZIER

Transpower will gain a medium benefit from Policy 5 since transaction costs are likely to be reduced as minor upgrades, maintenance and operational requirements no longer incur potentially large transaction costs. Under the status quo, councils do not provide for minor upgrades, maintenance and operational requirements in their plans. It can be expected that most, if not all, of these councils will alter their plans as a result of Policy 5 in a manner that reduces the transaction costs to Transpower.

There will be a mixture of costs and benefits associated with Policy 5 for local authorities. On the benefit side, transaction costs in dealing with Transpower will be reduced slightly since direction has been given on minor upgrades and maintenance. On the cost side, transaction costs may rise because land owners may challenge plan provisions intended to give effect to the policy because of perceived implications for their ability to obtain compensation from Transpower. Overall, a small benefit is expected.

Notwithstanding this conclusion with regard to local authority costs and benefits, one uncertainty is noted around the word ‘minor’. How this is defined will have a major bearing on costs and benefits. In this regard, if the term is defined through plan provisions so that it does not include a broad enough range of activities, Transpower is likely to challenge the plan provisions. Conversely, if local authorities define the term too broadly, greater land owner resistance can be expected.

For government, consumers and others/generators, small benefits are likely to accrue since security of the network will be enhanced slightly.

5.2.8 Policy 6

Substantial upgrades of transmission infrastructure should be used as an opportunity to reduce existing adverse effects of transmission including such effects on sensitive activities¹⁶ where appropriate.

Overall, it is considered that Policy 6 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 6 will be effective in achieving the outcome sought in the objective. This conclusion is reached since, by encouraging the reduction of existing adverse effects, it addresses the first bullet point, but, by the inclusion of the phrase ‘where appropriate’, does not disregard the first paragraph of the objective. Policy 6 is somewhat opportunistic in that it directs those planning upgrades to consider taking advantage of ways to mitigate impacts on sensitive activities.

The policy will influence the full range of functions exercised by local authorities under the RMA (plans, policy, resource consents and designations) and, by doing so, should ensure that local authorities, and Transpower, consider opportunities to reduce environmental effects when substantial upgrades are undertaken.

b. Efficiency

Policy 6 is likely to have a positive effect on the environment because, if mitigation of environmental effects is possible and feasible, it should then be undertaken (see Table 8).

For land owners, Policy 6 represents a small positive change to the status quo and therefore it should reduce transaction costs incurred since some of the impacts on land near transmission lines will be mitigated.

Transpower could possibly incur transaction and consequential costs from Policy 6. Transpower will be required to document its rationale for selecting particular routes and detail/consider the

¹⁶ Sensitive activities includes schools, residential buildings and hospitals.

effect on the environment (increase in transaction costs). This may mean that it incurs consequential costs as well as transaction costs since the final route selection may be influenced by environmental considerations.

This process will potentially add costs for local authorities, particularly in their dealings with Transpower, especially if Transpower's preferred option does not align with council interpretation of Policy 6. In particular, it is noted that the policy includes words and phrases, such as 'substantial upgrade' and 'where appropriate', which imply discretion and therefore are likely to be the subject of debate through RMA decision-making processes.

For government, consumers and others/generators, Policy 6 is likely to increase costs slightly because grid security might be slightly compromised.

Table 8: Summary of effectiveness and efficiency of Policy 6

Effectiveness	
Recognition of national benefit	–
Manages effects of the grid on the environment	✓
Manages effects of others on the grid	–
Impacts on council plans	–
Impacts on resource consents & designations	✓
Efficiency	
Environment	Medium benefit
Land owners	Small benefits. Less transaction costs with councils
Grid operator (Transpower)	Medium costs. Transaction and consequential costs
Local government	Small cost. Increased transaction costs with Transpower
Government	Small cost
Consumers	Small cost
Others/generators	Small cost

Source: NZIER

5.2.9 Policy 7

Planning and development of the transmission system should minimise adverse effects on urban amenity and avoid adverse effects on town centres and areas of high recreational value or amenity and existing sensitive activities.¹⁷

Overall, it is considered that Policy 7 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 7 will be effective in achieving the outcome sought in the objective since it addresses the first objective bullet point. Policy 7 specifically points to a wide range of urban environments where adverse effects should be minimised or avoided. Therefore, the direction to decision-makers of Policy 7 is relatively strong (see Table 9).

¹⁷ Ibid.

Like all policies within the NPS which seek to address the adverse effects of transmission activities, a key element in determining the effectiveness of Policy 7 is whether it provides clear and specific policy guidance which adds value to the existing extensive body of RMA policy material addressing the adverse effects of activities. It is clear that Policy 7 represents an attempt to do this by recognising urban amenity concerns and thereby reflecting recent national efforts in relation to good urban design.

The policy will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities and Transpower have regard to environmental outcomes in the urban setting when making decisions in relation to the planning and development of the transmission system.

b. Efficiency

Policy 7 is likely to have a positive effect on the environment since, for many urban environments, it sets the relatively high threshold of avoiding environmental effects (see Table 9). The urban environments included within the 'avoid' part of the policy are broad, excluding only areas with relatively low amenity, such as industrial areas.

For land owners, Policy 7 represents a positive change to the status quo and therefore it should reduce transaction costs incurred since some of the environmental impacts on land near transmission lines in urban areas could be mitigated.

Table 9: Summary of effectiveness and efficiency of Policy 7

Effectiveness	
Recognition of national benefit	–
Manages effects of the grid on the environment	✓
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Medium benefit
Land owners	Medium benefits. Less transaction costs with councils
Grid operator (Transpower)	Medium costs. Transaction and consequential costs
Local government	Small cost. Increased transaction costs with Transpower
Government	Small cost
Consumers	Small cost
Others/generators	Small cost

Source: NZIER

Because Policy 7 implies a requirement upon Transpower to consider in some detail how it will minimise or avoid the adverse impacts of the transmission system in urban areas, Transpower could incur increased transaction costs and possibly increased consequential costs in changing its proposals and overall planning. Transpower will be required to document its rationale for selecting particular routes and detail how these minimise or avoid adverse effects on the environment (increase in transaction costs). This may mean that it incurs consequential costs as well as transaction costs since the final route selection in urban areas is likely to need to avoid certain areas.

This process set out by Policy 7 gives clear guidance to local government; however, it could increase its transaction costs with Transpower.

For government, consumers and others/generators, Policy 7 is likely to add costs since grid efficiency and security might be slightly compromised.

5.2.10 Policy 8

In rural environments, planning and development of the transmission system should seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character and areas of high recreation value and amenity and existing sensitive activities.¹⁸

Overall, it is considered that Policy 8 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 8 will be effective in achieving the outcome sought in the objective since it addresses the first objective bullet point (see Table 10). Policy 8 points to a range of rural environments where adverse effects should be minimised. It should be noted that the use of the words “*seek to avoid adverse ...*”, while not as strong as protection afforded urban environments in Policy 7, still present a relatively strong direction to those involved in the planning and development of the transmission system. It is noted that while the policy is relatively broad in relation to the rural environments covered, it does not cover rural environments valued only for their economic activity (ie, areas which do not have high natural value), such as those used for farming or farm-based tourism.

The policy will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities have regard to environmental outcomes on specified rural amenities and sensitive activities in their decision-making.

Table 10: Summary of effectiveness and efficiency of Policy 8

Effectiveness	
Recognition of national benefit	–
Manages effects of the grid on the environment	✓
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Medium benefit
Land owners	Medium benefit. Less transaction costs with councils
Grid operator (Transpower)	Medium costs. Transaction and consequential costs
Local government	Small cost. Increased transaction costs with Transpower
Government	Small cost
Consumers	Small cost
Others/generators	Small cost

¹⁸ Ibid.

Source: NZIER

a. Efficiency

Policy 8, which is similar to Policy 7, is likely to have a positive effect on the environment, relative to the status quo, since it sets the relatively high threshold of seeking to avoid environmental effects (see Table 10).

For land owners, Policy 8 represents a positive change to the status quo and therefore it should reduce transaction costs incurred since some of the impacts on land near transmission lines in rural areas could be mitigated.

Because Policy 8 implies a requirement upon Transpower to consider in some detail how it will seek to avoid the adverse impacts of the transmission system on valued rural environments, Transpower could incur increased transaction costs and possibly increased consequential costs in changing its proposals. Transpower will be required to document its rationale for selecting particular routes and detail how these avoid adverse effects on the environment (increase in transaction costs). This may mean that it incurs consequential costs as well as transaction costs since planning and decision-making around upgrades and new routes in rural areas may need to avoid certain areas.

The process set out by Policy 8 gives clear guidance to local government; however, it could reduce its transaction costs with Transpower since it is expected that Transpower will contest its meaning.

For government, consumers and others/generators, Policy 8 is likely to add costs because of the increased costs to Transpower.

5.2.11 Policy 9

Provisions dealing with electric and magnetic fields (EMF) associated with the electricity transmission network must be based on the ICNIRP¹⁹ guidelines and recommendations from WHO²⁰ or revisions thereof and any applicable New Zealand standards or national environmental standards.

Overall it is considered that Policy 8 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 9 is likely to be effective in relation to the objective, particularly in relation to the second bullet point (in the objective – see Table 11). Policy 9 represents an appropriate response to known medical risks. Policy 9 acknowledges that standards are based on a current scientific knowledge, and should be adjusted as our scientific knowledge improves.

¹⁹ ICNIRP means International Commission on Non-Ionising Radiation Protection. Guidelines for limiting exposure to time varying electric magnetic and electromagnetic fields (up to 300 GHz). *Health Physics*, 1998, 74(4): 494–522.

²⁰ WHO means World Health Organization monograph *Environmental Health Criteria*, No 328, June 2007.

Table 11: Summary of effectiveness and efficiency of Policy 9

Effectiveness	
Recognition of national benefit	½ ✓ (indirect)
Manages effects of the grid on the environment	✓
Manages effects of others on the grid	–
Impacts on council plans	✓
Impacts on resource consents and designations	–
Efficiency	
Environment	Neutral
Land owners	Neutral
Grid operator (Transpower)	Small benefit. Reduce transaction cost
Local government	Small benefit. Reduce transaction cost
Government	Small benefit
Consumers	Small benefit
Others/generators	Small benefit

Source: NZIER

b. Efficiency

For the environment and for land owners, Policy 9 has no environmental benefit or cost implications relative to the status quo (see Table 11). This conclusion is reached given the already relatively high level of acceptance and application of such standards.

For Transpower and local government, there is a possibility that transaction costs can be reduced since they can refer directly to clearly defined international standards.

This may have some benefit for government, consumers and other/generators since the use of clearly defined international standards could reduce uncertainty, local variability and enhance grid security.

5.2.12 Policy 10

In achieving the purpose of the Act, decision-makers must to the extent reasonably possible manage activities to avoid reverse sensitivity effects on the electricity transmission network and to ensure that operation, maintenance, upgrading, and development of the electricity transmission network is not compromised.

Overall, it is considered that Policy 10 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 10 is likely to be effective in relation to the objective, particularly to the first paragraph (indirectly) and the second bullet point (see Table 12). Policy 10 is directed at third-party activity – in proximity to transmission lines – reinforcing/recognising the importance of maintaining the integrity of the grid.

The policy will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities have regard to the benefits of protecting the integrity of the grid.

b. Efficiency

Policy 10 is not likely to have an effect on the environment, since it does not change environmental outcomes from the status quo (see Table 12).

For land owners, Policy 10 could have major transaction and consequential cost implications since its implementation by local authorities is likely to explicitly require them to carefully consider their activities near transmission lines (relative to the status quo). Similar to Policies 1, 2 and 11, this may require land owners to change their behaviour and possibly curtail some activities.

For Transpower, there is potential for both consequential and transaction costs to decline since Policy 10 gives clear direction for protection of the grid from third-party activity.²¹ Over time, the clear direction of Policy 10 could increase awareness of what activities could compromise grid integrity relative to what occurs currently.

Table 12: Summary of effectiveness and efficiency of Policy 10

Effectiveness	
Recognition of national benefit	✓ (indirect)
Manages effects of the grid on the environment	–
Manages effects of others on the grid	✓
Impacts on council plans	✓
Impacts on resource consents and designations	✓
Efficiency	
Environment	Neutral
Land owners	Large cost. Increase transaction and consequential costs
Grid operator (Transpower)	Large benefit. Decrease transaction and consequential costs
Local government	Medium cost. Net increase in transaction costs
Government	Small benefit
Consumers	Small benefit
Others/generators	Small benefit

Source: NZIER

While Policy 10 will potentially reduce costs for local councils when dealing with Transpower, it could add costs for their dealings with land owners. Despite the clear intent of Policy 10, land owners are likely to oppose plan changes which seek to give effect to the policy, and ongoing monitoring and enforcement of activities within the vicinity of transmission lines is likely to be required – particularly in the short to medium term. This is partly due to the lack of awareness of the importance of transmission, a situation that Policy 10 specifically addresses.

For government, consumers and others/generators, Policy 10 could have benefits since it will enhance grid security.

²¹ Transpower spends approximately \$5.5 million per year on enforcing third-party requirements.

5.2.13 Policy 11

Local authorities must consult with the operator of the national grid, to identify an appropriate buffer corridor within which it can be expected that sensitive activities will generally not be provided for in plans and/or given resource consent. To assist local authorities to identify these corridors, they may request the operator of the national grid to provide local authorities with its medium to long-term plans for the alteration or upgrading of each affected section of the national grid (so as to facilitate the long-term strategic planning of the grid).

Overall, it is considered that Policy 11 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 11 will be effective in achieving the outcome sought in the objective since it addresses the first paragraph and the second bullet point of the objective (see Table 13). Policy 11 is directed at third-party activity – within an appropriate buffer corridor of transmission lines. This reinforces and recognises the importance of the need to maintain the integrity of the grid.

The policy is directive and will influence the full range of functions exercised by local authorities under the RMA and, by doing so, should ensure that local authorities have regard to the benefits of maintaining the integrity of the national grid. One point of concern is the ability of Transpower to provide local councils with long-term plans. While investments made by Transpower are long term in nature, the plans can change relatively quickly. This could be a point of uncertainty.

Policy 11 will have an impact on council plans since it specifically mentions the grid operator providing its development plans to councils so that they can assist in transmission corridor planning.

b. Efficiency

Policy 11 may have some environmental benefit because it is specifically aimed at preventing activities that may harm those who are engaged in those activities (see Table 13).

For land owners, Policy 11 will increase transaction and consequential costs since it explicitly requires them to carefully consider their activities within a buffer corridor. This could not only increase transaction costs with councils (since they will seek further clarification and even challenge the intent of Policy 11) but also it could entail consequential costs as land owners have to modify or even stop activities in the buffer corridor.

For Transpower, there is potential for both consequential and transaction costs to decline significantly, since Policy 11 gives clear direction for protection of the grid from third-party activity in the buffer corridor. Transaction costs (in the form of advocacy to councils) and consequential costs (caused by third parties compromising the network) may be substantially reduced.

Table 13: Summary of effectiveness and efficiency of Policy 11

Effectiveness	
Recognition of national benefit	✓ (indirect)
Manages effects of the grid on the environment	–
Manages effects of others on the grid	✓
Impacts on council plans	✓
Impacts on resource consents and designations	–
Efficiency	
Environment	Small benefit
Land owners	Large cost. Increase in consequential and transaction costs
Grid operator (Transpower)	Large benefit. Decrease in consequential and transaction costs
Local government	Medium cost. Net increase in transaction costs
Government	Small benefit
Consumers	Small benefit
Others/generators	Small benefit

Source: NZIER

Policy 11 will potentially increase costs for local councils since they will have to deal with, and modify, land owner activities within a buffer corridor. While transactions costs in dealing with Transpower could reduce, the corresponding increase in costs of dealing with land owners could be large. How quickly land owners adapt to Policy 11 will have major implications for ongoing costs associated with the NPS. Equally, how quickly all parties reach an ‘accepted’ position on the appropriate width of the buffer and of which activities should be controlled within it, will also have major implications for the costs of the policy.

Government, consumers and others/generators are likely to benefit from Policy 11 since it will improve efficiency and security of grid operations.

5.2.14 Policy 12

Territorial authorities must identify the electricity transmission network on their relevant planning maps whether or not the network is designated.

Overall, it is considered that Policy 12 is appropriate in relation to the objective. The reasons for this conclusion are outlined in the following two sections.

a. Effectiveness

Policy 12 will be effective in achieving the outcome sought in the objective since it addresses the first paragraph and the second bullet point (see Table 14). Policy 12 is directed at councils and land owners to ensure that they take account of the importance of the national grid and ensure third-party activities are compatible with grid operations.

Policy 12 will impact on district plans and will have an indirect effect on resource consents (and designations) associated with both transmission activities and, in particular, third-party activities since councils will be more aware of where the transmission corridors are located.

b. Efficiency

Policy 12 is unlikely to have an impact on the environment or land owner costs. It may result in a small decrease in transaction costs for Transpower since councils are directed to include the transmission lines on their plans and should consequently be well aware of where the transmission lines are located in their district, and take this into account within their resource consent decision-making process. Both outcomes should have a small benefit for Transpower in terms of reduced advocacy (transaction) costs (see Table 14).

Councils will face transaction costs associated with the inclusion of the transmission lines in their plans.

Very small benefits (in terms of transmission line security) are expected.

Table 14: Summary of effectiveness and efficiency of Policy 12

Effectiveness	
Recognition of national benefit	✓ (indirect)
Manages effects of the grid on the environment	–
Manages effects of others on the grid	✓
Impacts on council plans	✓
Impacts on resource consents and designations	½ ✓
Efficiency	
Environment	Neutral
Land owners	Neutral
Grid operator (Transpower)	Small benefit. Small decrease in transaction costs
Local government	Small cost. Increase in transaction costs
Government	Very small benefit
Consumers	Very small benefit
Others/generators	Very small benefit

Source: NZIER

5.2.15 Policy 13

Decision-makers must recognise that the designation process can facilitate long-term planning for the development, full operation and maintenance of electricity transmission infrastructure.

Policy 13 may be appropriate as part of a wider package of policies, however, on its own, it states the status quo. Therefore, for each of the affected parties there is no difference from the status quo.

5.2.16 Policy 14

Regional councils must include objectives, policies and methods to facilitate long-term planning for investment in transmission infrastructure and its integration with land uses.

Policy 14 is similar to Policy 13 and could be considered appropriate with a wider package of policies. It is very similar to the status quo apart from the following points:

- there are potential costs for land owners if land is subject to restrictions because it may be used for transmission lines;
- a minor benefit might accrue to Transpower if plans for transmission lines are carried through;
- there will be an increase in transaction costs for regional councils because they have to implement the policy in their plans.

It should also be noted that if land is earmarked for transmission lines, the opportunity costs associated with that land increase the longer the land is subject to restrictions.

The effects of this policy are difficult to ascertain because it is specifically directed at regional councils which are primarily concerned with effects on resources other than land and land uses. The methods that local government can use to facilitate long-term planning for investment in transmission fall more in the ambit of territorial authorities than regional councils.

5.3 Summary of policies and effect on the Objective

This section considers the overall effect and appropriateness of the policies in relation to the objective. A summary of the policies' effectiveness (Table 15) and efficiency (Table 16), and the risks associated with them is set out below.

Based on these considerations, it is concluded that the policies represent the most appropriate means of achieving the objective of the NPS. In particular, it is considered that policies will be effective and efficient in achieving the objective, and that while there is some risk associated with uncertainties this will be mitigated through the established processes for the implementation of the NPS.

a. Effectiveness

Table 15 summarises policy effectiveness by placing ticks in the boxes where the policies appropriately deal with one or more of the three key areas of the objective and, also, whether or not the policies will have an effect on (1) council plans and (2) resource consents and designations. Also gauged and noted are the strengths of policy effectiveness (some boxes have ½ a tick) and whether the effect is indirect or not.

Table 15: Summary of effectiveness

Policy	Elements of the objective			Effect on	
	Recognition of national benefit	Manages effects of the grid on the environment	Manages effects of others on the grid	Impacts on council plans	Impacts on resource consents and designations
1	✓	–	½ ✓	✓	✓
2	✓	–	½ ✓	✓	✓
3	✓ (indirect)	½ ✓	–	✓	✓
4	–	✓	–	✓	✓
5	✓	–	–	✓	✓
6	–	✓	–	–	✓
7	–	✓	–	–	✓ (indirect)
8	–	✓	–	–	✓ (indirect)
9	½ ✓ (indirect)	✓	–	✓	–
10	✓ (indirect)	–	✓	✓	✓
11	✓ (indirect)	–	✓	✓	–
12	✓ (indirect)	–	–	✓	½ ✓
13	½ ✓	–	½ ✓	–	✓
14	½ ✓	–	–	✓	½ ✓ (indirect)

Source: NZIER

Notwithstanding specific comments made earlier regarding individual policies, it is considered that, overall, the policies will be effective in achieving the objective. In particular, it is noted that all three key elements of the scope of the objective are well addressed in the policies. Specifically, the national benefits of transmission are addressed by Policies 1, 2 and 3, adverse effects of transmission on the environment by Policies 7, 8 and 9, and managing the effects of others on the grid by Policies 10 and 11.

It is noted that the objective seeks to manage the adverse environmental effects of the grid generally, while the policies only address specifically identified effects. This difference is unlikely to undermine the effectiveness of the policies as the specific effects identified are considered to be the most significant potential effects of the grid.

With regard to the approaches of the policies included in the NPS, it is considered that policies will effectively influence both plan/policy statement decisions and those related to resource consents/notices of requirements.

b. Efficiency

Benefits

In regard to the efficiency of the policies in relation to the objective, there is a potential net benefit of approximately \$3.0 million (Table 16). It is of note that the costs associated with the policies are substantial, immediate and mainly occur in the short term to medium term as councils and land owners become familiar with the regulations associated with the NPS (first 10 years). The benefits, while being more substantial, last over the lifetime of the transmission assets – although they do taper off towards the end of the 30-year period.

It is important to note that the size of the benefits/costs is highly dependent on the attitude of land owners and councils to the NPS. Transaction costs represent friction in the move to a new policy and can have an important bearing on whether policies are efficient.

While, on their own, some policies may generate costs to the environment, overall, there will be a small net benefit since adequate protection has been built in to safeguard and even improve environmental outcomes, particularly in Policies 4, 6, 7 and 8.

Transpower will benefit most from the introduction of the NPS. The benefit to the nation of national transmission is recognised (Policies 1, 2 and 3), while activities of third parties around transmission lines are restricted (Policies 10 and 11). The restriction of third-party activity is likely to have significant benefits for Transpower and accounts for the bulk of its approximate \$10.0 million benefit.

Government, consumers and others/generators are also likely to experience a small benefit since security of electricity supply will be enhanced with the NPS. This benefit has not been quantified. Existing generators may benefit from insecurity of supply, as this enables higher prices and cost generation to be used, but new generators (especially renewables) should benefit from more timely grid connections to the market.

Costs

The main costs will fall on land owners and councils. Local councils will face substantial costs associated with the NPS. They will have to become familiar with its intent, and explain its provisions, despite the likely drop in transaction costs with Transpower. This will be difficult in the short term because it requires a behavioural change from land owners who potentially will be against the introduction of the NPS. Council costs are potentially \$4.0 million, with the main costs being associated with plan changes, consenting around third-party issues and appeals.

Land owners will also experience major costs because they will be expected to change their behaviour (and economic activity) around transmission lines. Their losses will be consequential costs (associated with changing or curtailing their behaviour/activities) and transaction costs associated with dealing with councils that will enforce changes in activity/behaviour (possibly through the consenting process). Potentially, the costs to land owners will be approximately \$2.7 million.

The costs to land owners is mitigated somewhat because the land surrounding transmission lines is valued less than land nearby. The lower price of land, particularly in urban areas, means that under the status quo the market has already priced in the perceived disadvantages or constraints on the use of that land. The cost to land owners identified above is therefore only the additional land value that will be lost as a result of the NPS further tightening constraints on land use and value.

Table 16: Summary of costs and benefits

Group/resource	Explanation	Cost/benefit
<i>Benefits</i>		
Environment	Potentially a small benefit. Safeguards in place that reduce risk of substantial environmental losses, particularly from policies	Potential benefits cannot be properly costed, but will be small
Grid operator (Transpower)	Large benefits because of NPS guidance particularly for third-party activities	Potential benefits of \$10.0 million
Government	Some benefits will accrue to government, through security of supply and as owner of Transpower and claimant on its profits	Potential benefits cannot be properly costed, but will be small
Consumers	Some benefit from increased security of supply	Potential benefits cannot be properly costed, but will be small
Others/generators	Some benefit from more timely connection and increased security of supply	Potential benefits cannot be properly costed, but will be small
<i>Costs</i>		
Local government	Increase in costs, particularly for those who have to change their plans because of the NPS. There will be increases in transaction costs with land owners. Also there will be Environment Court costs	Potential costs of \$4.0 million
Land owners	Major costs on some land owners. The shift in policy/regulations means that all face transaction costs and some will be required to change behaviour around transmission lines. The costs will mainly fall in the short term	Potential costs of \$2.7 million
Government	Minor costs associated with managing the transition process	Potential costs of \$0.16 million
<i>Net result</i>		<i>Potential net benefit of approximately \$3.0 million</i>

Source: NZIER

c. Risk of acting and areas of uncertainty

Section 32(4)(b) of the RMA requires an evaluation to take account of the risk of acting or not acting if there is uncertain or insufficient information about the subject matter.

Throughout the discussion above, four key areas of uncertainty or limited information have been identified. These relate to:

- how local authorities will give effect to the NPS, and how land owners will respond, ie, in several instances, local authorities would retain significant discretion in relation to how they give effect to the NPS in its current form, and if land owners resist the introduction of the NPS by taking large numbers of cases to the Environment Court, then the costs to all parties will increase;
- the potential costs to third parties from the implementation of Policy 11 for both land owners and councils;
- the uncertainty of some of the definitions, such as ‘minor upgrades’ and ‘operational requirements’, since they have a bearing on how the costs and benefits fall;
- a detailed assessment of the environmental effects associated with electricity transmission, including the identification of appropriate and practical mitigation methods.

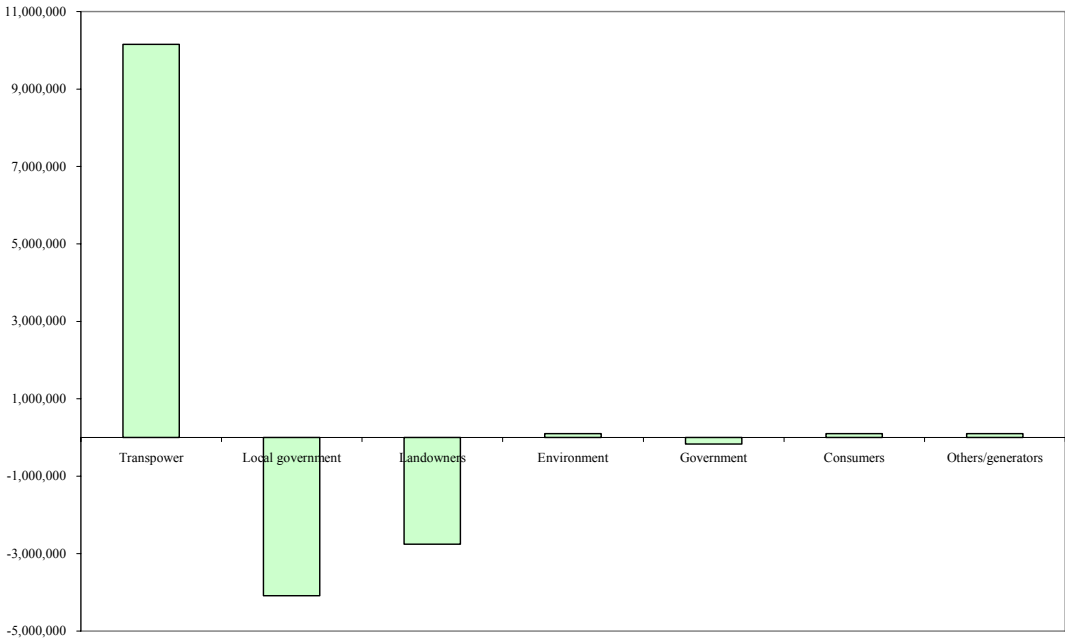
Each of these points presents a risk in relation to the implementation of an NPS on electricity transmission.

In relation to points two to four, it is considered that these areas of uncertainty and limited information do not undermine the appropriateness of the policies. In particular, it is noted that while transaction costs will be high initially as accepted methods of implementing the NPS are ‘tested’, the costs associated with uncertainties in the wording of the policies will reduce significantly thereafter. Equally, in relation to potential risks associated with the lack of a detailed environmental effects assessment, it is noted that councils will be required to consider environmental effects when setting policies, rules and standards in their plans. It is therefore considered that any limitations of information will be overcome by the detailed and locality specific considerations undertaken by local councils.

d. Risk/uncertainty associated with the implementation of the NPS

It is considered that how council’s implement the NPS, and how land owners respond (bullet 1), has the greatest potential to affect the efficiency of the NPS. Three scenarios are possible. The central scenario (preferred) is shown in Figure 1.

Figure 1: Central scenario: costs and benefits of the NPS

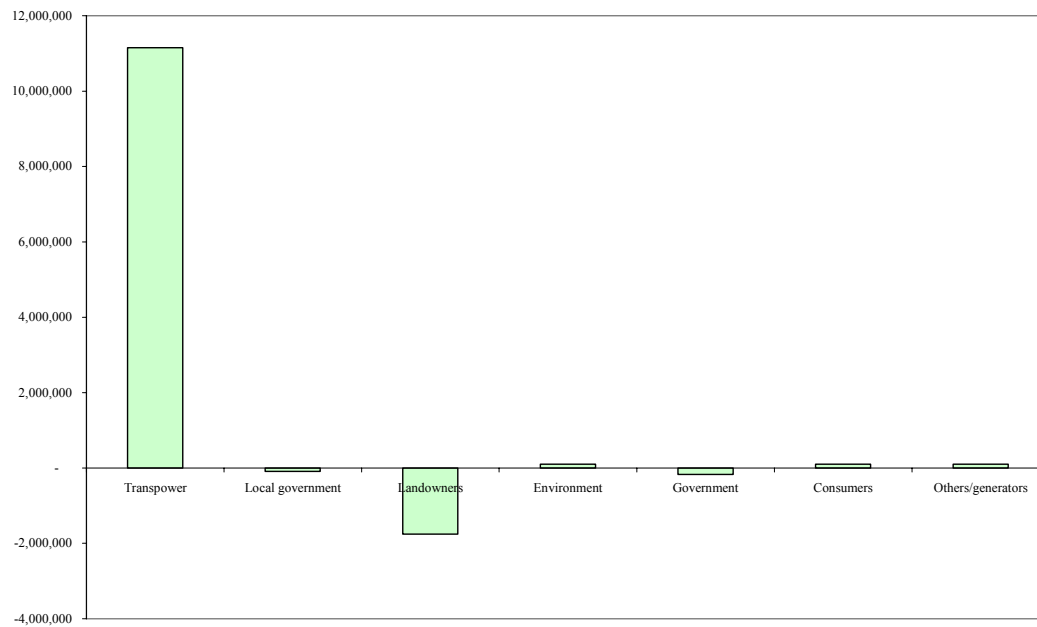


Source: NZIER

In this scenario, there is a net benefit to the nation since Transpower’s benefits outweigh costs to land owners and councils (by \$3.0 million).

In a more favourable scenario shown in Figure 2, there could be a relatively small loss to councils if land owners comply with, and do not challenge, the implementation of the NPS. Further, over the life of the grid, particularly in the medium to long term, transaction costs with both Transpower and land owners reduce. Potentially, the net benefits could rise \$9.0 million.

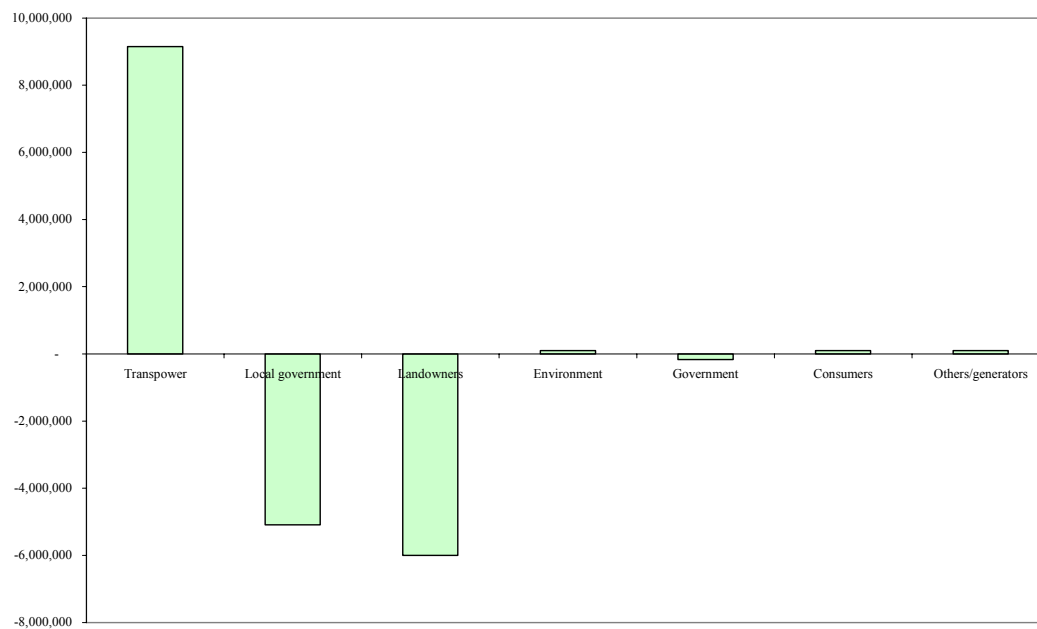
Figure 2: Favourable scenario: costs and benefits of the NPS



Source: NZIER

However, if land owners and councils react in a negative way towards the NPS and challenge its intent, costs could be large for land owners and councils. Not only will their direct and transaction costs increase, but Transpower's benefits will also reduce because of the extra resources needed to ensure the intent of the NPS is followed through. Potentially, this could erode all of the benefits of the NPS.

Figure 3: Unfavourable scenario: costs and benefits of the NPS



Source: NZIER

It is considered that the first scenario is the most likely given that the impact of Transpower, councils and land owners on transaction costs should be mitigated by Environment Court decisions which in effect set 'accepted' approaches to the implementation of the NPS. As noted previously, while this is likely to mean high initial costs, such costs will diminish in the medium to long term.

There is also uncertainty over how large the costs and benefits are likely to be given the initial variation in provision for transmission activities across different local authorities. Transpower has indicated that a proportion of councils already make provision in their plans for all the things they seek, a proportion make provision for most things and a proportion make very little provision for transmission needs. The beneficial impact of the NPS will be greatest on the last group (the sparse providers), least for the first group, but in some cases the first group (the ample providers) may be required to incur costs for no appreciable benefit for the grid or the surrounding environment.

6 Conclusions

This report provides an assessment of the Board of Inquiry's report on a proposed national policy statement on electricity transmission consistent with section 32 of the RMA. Because of the high level guidance given by such an NPS, it is not feasible to quantify its costs and benefits with precision, but broad conclusions can be drawn.

The evaluation of the status quo confirms that the first three issues identified in the Reference Group report:

- the national benefits of transmission
- the effects of activities on the transmission network
- the efficient operation and maintenance of the existing network

are undoubtedly resource management issues for which consideration of alternatives to the status quo is warranted.

The costs of the status quo are likely to escalate in future years as demands on the electricity system grow and require further upgrades and extensions of the transmission network. Pressures arise from the growth in population, economic activity, and demand for electricity, the need to find new sources of electricity generation and connect them to their markets, and the increased interest in renewable generation arising from international commitments over greenhouse gas emissions. The benefits of ironing out any undue impediments and costs from the environmental management issues around the transmission grid will increase in future years and remain over the life of the grid.

The benefits of the NPS stem largely from the long-term cost savings for Transpower, which should avoid some of its current costs of plan advocacy and, in the longer term, reduce conflicts with other activities. Some of this benefit may be passed on to electricity consumers as improved efficiency and improvements in network security and operation. Benefits could also accrue nationally if grid capacity improvements facilitated by the NPS also encouraged the development of low-cost renewable energy generation, subject to the grid improvement itself passing a benefit–cost test.

Costs are likely to stem largely from the costs for local government in changing plans to recognise the NPS and ensuring that NPS provisions are carried out, central government in implementing the NPS, and land owners adjoining the transmission network who may have their activities curtailed by Policies 1, 2, 3, 5, 10 and 11.

The effectiveness of the objective in the NPS appears largely appropriate, particularly since it recognises the importance of dealing with *national* benefits.

Further, the two bullets points in the objective managing:

- the adverse environmental effects of the network and
- the adverse effects of other activities on the network
- give adequate protection against substantial environmental losses (Policies 4, 6, 7 and 8) and for maintaining the integrity of the electricity transmission network (Policies 10 and 11).

With regard to the efficiency of the policies in relation to the objective, there is a potential net benefit of approximately \$3.0 million (Table 16). The costs associated with the policies are substantial, immediate and mainly occur in the short term to medium term as councils and land owners become familiar with the regulations associated with the NPS (first 10 years). The benefits, while being substantial, last over the lifetime of the transmission assets – although they do taper off towards the end of the 30-year period.

The important costs and benefits are:

- the large (transaction and consequential) costs incurred by land owners as they are required to change their behaviour and types of activities around transmission lines (Policies 10 and 11)
- the gains (transaction and real costs) to Transpower with the recognition of electricity transmission as a national benefit (Policies 1, 2 and 3), and further protection of transmission grid assets (Policies 10, 11 and 12)
- the large net losses to local councils (transaction costs) because of their increased role in administering policies and particularly the costs associated with plan changes.

Areas of uncertainty or limited information have also been identified during the evaluations. There are:

- the potential costs to third parties from the implementation of Policy 11 for both land owners and local councils
- how local authorities will give effect to the NPS, ie, in several instances, local authorities would retain significant discretion in relation to how they give effect to the NPS
- the uncertainty of some of the definitions, such as ‘minor upgrades’ and ‘operational requirements’, since they have a potentially large bearing on how the costs and benefits fall
- a detailed assessment of the environmental effects associated with electricity transmission, including the identification of appropriate and practical mitigation methods.

While each of these points presents a risk in relation to the implementation of the NPS on electricity transmission and to the costs and benefits of the NPS, it is considered that this risk is adequately mitigated.

Appendix A: Estimates of Costs

With an NPS that affects the plans of 73 territorial authorities and 12 regional councils, it is not feasible to provide a detailed cost–benefit analysis. The following tables simply illustrate estimates of the sort of resource costs incurred under the current status quo, and how they might be expected to change under the objective and policies of the NPS. Where able, approximate costs/benefits have been estimated, where not, the costs/benefits are described in terms of small, medium and large.

A.1 Summary of quantifiable costs and benefits

The main features of the quantifiable costs and benefits are:

- the 10 percent Net Present Value is applied as a discount rate
- the costs are mainly over 10 years or less, reflecting the time taken to change plans and behaviour in line with the intent of the NPS
- the benefits are expected over the life of network (30 years) although they taper off after year 10.

Table A.1 below details those quantifiable costs and benefits, while the remaining parts of the appendix examine quantifiable and unquantifiable costs and benefits in relation to the main stakeholders.

Table A.1: Approximate quantifiable costs and benefits (\$ millions, NPV 10%)

	Costs	Benefits
Transpower		
Plan advocacy/managing third parties	0	8.3
Operations/new lines	0	1.8
Councils		
Changing plans	2.7	0
Appeals	0.5	0
Managing third parties	0.9	0
Government		
Support	0.167	0
Land owners		
Direct and transaction costs	2.8	0
Total costs and benefits	7.0	10.1
Total net costs or benefits		3.0

Note: Numbers are approximate, also numbers have been rounded, therefore do not sum exactly.

Source: NZIER

Expected cost impacts of NPS policies		Policies													
	Status quo	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Transpower															
Plan advocacy	Confidential	\$230,000 net benefit in first year													
Managing third parties	\$5,500,000 per year	B small	B small	B small	C medium	B medium	C medium	C medium	C medium	B small	\$630,000 benefit in first year	B small	neutral	B small	
Operation costs/new lines	\$2,000,000 per year	\$200,000 net benefit in first year													
Councils															
Plans ⁽¹⁾	0	\$846,000 cost in first year (over four years)													
Consent/appeals	0	\$100,000 cost in first year													
Managing third parties	0	C medium			B small		C small			B small	\$200,000 cost in first year	C small	Neutral	C small	
Government															
Policy	0	B small			C small	B small	C small			B small			Neutral	C small	
Support ⁽²⁾	0	\$100,000 cost in first year and \$200,000 cost all together													
Land owners															
Direct and transaction costs	0	C medium			B small			B medium		Neutral	520,000 cost in first year	Neutral		C small	
Consumers															
Direct costs/benefits	?	B small			C small					B small			Neutral		
Environment															
Local adverse effects	0	Neutral	C medium		B medium	C small	B medium			Neutral	B small	Neutral			
Generators/others															
Direct costs/benefits	0	B small			C small	B small	C small			B small			Neutral		

Notes: (1) One-off costs for plan adjustment \$20,000 x 12 regional plans; \$75,000 x 73 district plans. This is expected to impact on 60% of councils

(2) \$100,000 in first year; \$50,000 in each of next two years

B Unquantifiable benefit; C Unquantifiable cost, negative impact; ? Probable effects, but no information on amount or balance of positive/negative

A.2 Transpower

A.2.1 Plan advocacy/consents

Under the status quo, plan advocacy (including appeals to the Environment Court) costs are confidential but substantial on a per annum basis. They include consultants, transaction costs with councils and the equivalent of one internal full-time equivalent for Transpower.

Under all policies, we expect benefits in the range of \$230,000 in the first year with the introduction of the NPS. The benefits will grow over the first 10 years because of the upgrade of the national grid, then taper off over the life of the transmission assets (the next 30 years). This is because the NPS reinforces the need for regional and district councils to take into account the national benefit from the enhanced integration of the transmission network. This adds weight to Transpower's arguments, particularly where it advocates a more consistent treatment of transmission activities across councils.

One risk to the benefits is that the NPS gives no specific direction as to how it should be taken into account when dealing with planning rules.

Further consideration will have to be given to environmental concerns; therefore Transpower is expected to incur unquantifiable costs because of Policies 4, 6, 7 and 8. Other policies are likely to clarify rules and either be neutral or add a small benefit.

A.2.2 Managing third parties

Under the status quo, third-party costs are approximately \$5,500,000 per annum. The benefits of the NPS are approximately \$630,000 in the first year and remain substantial over the first 10 years, then taper off over the life of the network. This includes monitoring of district plan changes (one full-time equivalent internally, consultant costs and information booklets) and dealing with excavations, earthworks, vegetation and mobile construction activities that either interfere with the running of the network (within a buffer zone) or have the potential to interfere with the network.

Under Policies 1, 2 and 3 Transpower will gain a small benefit, however, it is under Policy 10 and particularly Policy 11 that Transpower will gain from some protection from third-party activities on transmission assets. This is likely to be significant since part of the intent of the NPS is to change the behaviour of land owners around transmission lines. The policies aimed at safeguarding the environment (Policies 4, 6, 7 and 8) will have an unquantifiable cost for Transpower since it is required to consider environmental effects, particularly related to new line development. Other policies are likely to clarify rules and either be neutral or add a small benefit.

A.2.3 Operations/new lines

The main benefit for the development of new lines/operations comes from Policies 1, 2 and 3. The benefit could be as much as \$200,000 in the first year for reduced transaction costs with

councils. These policies give clear direction to councils (although it remains to be seen how councils react to that direction).

A.3 Councils

A.3.1 Policy and plans

Under the status quo, no information is held on average council costs.

Under all policies, a cost of \$846,000 (plan changes will have to be made by 60 percent of councils and are spread over four years). This equates to \$20,000 per regional council and \$75,000 per district council.

Other policies are likely to have either a small benefit or cost.

A.3.2 Appeals

Under Policies 1, 2 and 3, a cost of \$100,000 is expected in the first year as land owners test the intent of the NPS in the Environment Court. This is likely to increase slightly in the following two years and then drop to \$50,000 per year. After year 10 a small benefit can be expected since the NPS intent will have been clearly signalled through the Environment Court and land owners will have clarity about what they can and cannot do near transmission lines (reducing transaction costs between councils and land owners).

A.3.3 Managing third parties

Under the status quo, no cost information is held on councils. Under Policies 1, 2 and 3, a medium cost is expected since these policies signal a change in behaviour from the status quo when operating around transmission lines.

The most significant costs will occur under Policies 10 and 11 where the NPS details the restrictions on land owners. In the first year, the costs are expected to be approximately \$200,000 rising to 250,000 in year 3. While these costs taper off towards year 10, they are significant.

Other policies are likely to result in either a small benefit or cost.

A.4 Government

Under all policies, there are costs in developing policy and some benefits, mainly due to increasing security of supply.

For supporting the NPS, under the status quo, there are no costs. For all other policies, a one-off cost of \$200,000 is expected to be spread over the first three years.

A.5 Land owners

No information is held on the status quo costs in any of the categories for land owners.

Under Policies 1, 2 and 3, there are costs for land owners. This is because these policies require land owners to recognise the national benefits of transmission. However, the main costs for land owners fall under Policies 10 and 11. These policies have a specific intent to modify the activities of land owners with a buffer zone. Costs are both:

- transaction costs with councils (consenting, appeals and so on); and
- direct costs (modifying economic activity).

Therefore, we expect costs be to approximately \$500,000 per annum for the first three years and \$400,000 for the remaining seven years. These costs are mitigated somewhat because the location of transmission assets has been factored into the purchase price of the land – in the same way easements are for other properties. Further, the general principle of ‘buyer beware’ applies to purchasing property that is located close to transmission assets.

A.6 Consumers, generators and others

No information is held on the status quo costs in any of the categories for other interested parties. Under Policies 1, 2 and 3, some benefit is expected for consumers, generators and other interested parties. This would be in the form of security of supply and improved utilisation of the network.

Under all the policies, costs are expected because interested consumers, generators and others will have start-up costs associated with understanding how the NPS affects district plans (all of which have variable treatment of transmission lines).

Overall, a small net benefit is expected.

A.7 Environment

Costs associated with the status quo are nil.

Under Policies 1, 2 and 3, there may be environmental costs, although the NPS will not preclude appropriate controls being in place to avoid, mitigate or remedy effects. Because of this mitigation process, a small net benefit is expected (Policies 4, 6, 7 and 8).

Glossary

All-of-government submission	A submission to a local authority (likely on a resource consent or notice of requirement) jointly by two or more government departments that sets out the government's views on the matter (also known as a 'Crown submission').
Call in	The Minister for the Environment may 'call in' a nationally significant matter (most likely a resource consent or notice of requirement) under section 141 of the RMA, from the local authority that would normally have determined it, and instead ask a Board of Inquiry or the Environment Court to determine it.
Designation	An authorisation included in a district plan that allows a requiring authority to undertake a public work or network utility project without a land-use consent.
District plan	A plan prepared under Part 5 of the RMA to control the use of land within the district or unitary authority.
Easement (agreement)	An agreement entered into between Transpower and a land owner that secures access to private land in return for negotiated consideration.
Electricity Act 1992	This can be found at: www.legislation.govt.nz/
Electricity Commission	The Crown entity established in 2003 in accordance with the Electricity Amendment Act 2001 to oversee New Zealand's electricity industry and markets.
Electricity transmission network	The system of transmission lines, substations and other works, including the High Voltage Direct Current (HVDC) link, used to connect grid injection and exit points ¹ and convey electricity throughout the North and South Islands of New Zealand.
Existing use rights	Rights under section 10 of the RMA that allow an existing land use to continue, notwithstanding that it may not be permitted by a district plan, provided the activity was lawfully established and its environmental effects remain the same or similar.

¹ 'Grid entry point': a point in the transmission network at which electricity enters the network. These are typically at, or near, places of generation.

'Grid exit point': a point on the network at which electricity exits the network. Each grid exit point is a substation, where electricity transported through the national grid is converted to lower voltage for distribution by local distribution companies.

ICNIRP	International Committee on Non-Ionizing Radiation Protection. NPS Policy 9 refers to the ICNIRP guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). Internet link: www.icnirp.de/documents/emfgdl.pdf
Minister	The Minister for the Environment, unless otherwise specified.
Ministry	The Ministry for the Environment, unless otherwise specified.
National grid	The assets used or owned by Transpower (and/or its successor/s) for the purposes of conveying electricity.
Nationally significant	A level of importance assessed as being significant on a national scale, having regard to the criteria listed in section 45(2) of the RMA.
NES	National environmental standard – a tool used to set nationwide standards for the state or use of resources. A national environmental standard is issued under section 43 of the RMA.
Notice of requirement	A notice given to a territorial authority by a requiring authority for its requirement for a designation to be included in the district plan.
NPS	National policy statement – national policy guidance for environmental matters that are considered to be of national significance (eg, the coastal environment). A national policy statement is issued under section 52 of the RMA.
NZEC 34	The New Zealand Electrical Code of Practice 34:2001 (NZEC 34) – a mandatory code under the Electricity Act 1992, implemented by the Energy Safety Service. The Code's purpose is to set safe distances for works and/or buildings from transmission lines. For further information, see: www.ess.govt.nz/rules/pdf/nzecz34_2001.pdf
Objective	An outcome being sought to resolve a significant resource management issue.
Part 2	Part 2 of the RMA sets out the purpose of the RMA (section 5) and other principles (sections 6, 7 and 8).
Policy	A general course of action taken to achieve an objective, identified in district and regional plans or regional policy statements.

Reference Group	The Electricity Transmission Reference Group set up to consider the feasibility and merits of an NPS and/or NES to address issues associated with the management of electricity transmission under the RMA. It comprised representatives of agencies, industries and organisations ² with a specific interest in electricity transmission. The Reference Group produced a report and recommendations: <i>The Merits and Potential Scope of National Guidance on the Management of Electricity Transmission under the RMA</i> . See: www.med.govt.nz/energy/nps/transmission/
Requiring authority	A Minister of the Crown, a local authority or a network utility operator approved as a requiring authority by the Minister for the Environment under section 167 of the RMA.
Resource consent	An authorisation to use a natural or physical resource, issued under Part 6 of the RMA.
RMA	The Resource Management Act 1991 and its amendments. See: www.legislation.govt.nz/
Rule	A regulation in a plan to prohibit, control or allow activities to manage the use, development and protection of natural and physical resources in accordance with the purpose of the RMA.
Section 32	The section of the RMA that requires any person developing a policy or regulatory instrument under the RMA to carry out an evaluation of the appropriateness, alternatives, costs and benefits of what is proposed.
Submission	The written comments, opinions, concerns in support or opposition to a proposed development or a proposed policy statement or plan.
Transpower	The state-owned enterprise known as Transpower NZ Ltd.
Trees regulations	The Electricity (Hazards from Trees) Regulations 2003, promulgated under the Electricity Act 1992.

² Federated Farmers, Electricity Commission, Transpower, Local Government New Zealand, Business New Zealand, Ministry of Agriculture and Forestry, Te Puni Kōkiri (Ministry of Māori Development), The Treasury, Department of Conservation, Ministry for the Environment, Ministry of Economic Development (Chair).