Proposed National Policy Statement on Electricity Transmission

Evaluation under Section 32 of the Resource Management Act 1991

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Preface

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

This evaluation report is substantially based on an evaluation and interviews carried out on an earlier draft of the National Policy Statement by independent consultants, the New Zealand Institute of Economic Research (NZIER) and Connell Wagner, who were commissioned by the Ministry for the Environment. Since that earlier evaluation, further development and changes have been made to arrive at the proposed National Policy Statement discussed in this report. The NZIER have reviewed the revised cost–benefit analysis.

A second section 32 evaluation will be undertaken once a Board of Inquiry has conducted its inquiry process (set out in sections 48 to 51 of the RMA) and provided its report and recommendations to the Minister on the proposed National Policy Statement.[1]

[1] The *Proposed National Policy Statement on Electricity Transmission* is the document to be notified by a Board of Inquiry for public submissions.

Contents

Proposed National Policy Statement on Electricity Transmission[2]

Preamble

This proposed National Policy Statement sets out the objective and policies for managing the electricity transmission network under the Resource Management Act 1991.

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 Resource Management Act. These include:

- transporting electricity efficiently over long distances requires pylons, conductors (wires) and cables that create significant environmental effects
- the transmission network is extensive and linear, making it important that where possible there are consistent policy and regulatory approaches by local authorities
- the linear character of the transmission network can limit the extent that it is feasible to avoid adverse environmental effects
- the environmental effects of the transmission network are often local – while the benefits extend beyond the local to the regional and national – making it important that those exercising powers and functions under the Resource Management Act balance local, regional and national environmental effects
- extensive investment in the transmission network and significant upgrades are expected to be required to supply demand for electricity and to meet the Government's objectives for a renewable energy future.

Objective

To recognise the national significance of the electricity transmission network.

Policy 1

The benefits of sustainable, secure and efficient electricity transmission relevant to any particular project or development of the electricity transmission network may include:

i) improved security of supply of electricity

ii) improved efficiencies in the supply of electricity

iii) the facilitation of new and existing renewable electricity generation

iv) lower overall environmental costs from the generation of electricity.

[2] See the Glossary for definitions of terms used in the Proposed National Policy Statement.

Policy 2

The electricity transmission network should be operated, maintained and upgraded efficiently.

Policy 3

Corridors and sites should be located and other activities associated with the electricity transmission network should be undertaken in a way that avoids, remedies or mitigates any adverse effects on matters of national importance.[3]

Policy 4

Any new development[4] that is sensitive to the effects of the electricity transmission network should be managed in a way that does not compromise efficient operation of the electricity transmission network.

Policy 5

Where maps are included in a plan, these should identify the existing electricity transmission network, whether or not it is designated.

Policy 6

Provisions dealing with electric and magnetic fields (EMF) associated with the electricity transmission network should be based on the ICNIRP[5] guidelines.

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[3] The Resource Management Act (section 6) states that 'Matters of national importance' are:

(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:

(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:

(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

(d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

(f) The protection of historic heritage from inappropriate subdivision, use, and development:

(g) The protection of recognised customary activities.

[4] Not related to the electricity transmission network.

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

Explanatory note

The proposed National Policy Statement will not detract from, or override, the responsibilities of local authorities to ensure that all relevant environmental effects are appropriately considered in carrying out their functions under the Resource Management Act 1991.

The proposed National Policy Statement will not override the Resource Management Act or any other legislation. The proposed National Policy Statement should be read together with other relevant planning documents, including the New Zealand Coastal Policy Statement.

The National Policy Statement will apply to all persons exercising functions and powers under the Resource Management Act. The provisions of the National Policy Statement will be included in documents pursuant to section 55(2A)(b) of the Resource Management Act.

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 transmission system.

The proposed National Policy Statement on Electricity Transmission (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 provides an evaluation of the NPS in accordance with section 32 of the Resource Management Act 1991 (RMA). A section 32 evaluation requires four inter-related examinations:

1. The extent to which each objective is the most appropriate way to achieve the purpose of the RMA.[6]
2. Whether, having regard to their efficiency and effectiveness, the policies, rules or other methods are the most appropriate for achieving the objectives.
3. The benefits and costs of policies, rules or other methods.
4. 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.

Following is a summary of the section 32 evaluation.

1. 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"*.

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 more complete response and a more cost-effective solution.

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

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."

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

Policies 1 and 2 are appropriate in scope and specify the national benefits that support the main intent of the NPS objective. The matters addressed in policies 3, 4, 5 and 6 are addressed variably by local authority planning documents, often without specific reference to electricity transmission. The inclusion of these policies is appropriate in supporting the objective, but also depends on how local authorities will implement them.

3. What are the benefits and costs of the proposed policies?

The quantifiable benefits of the NPS and its policies would stem largely from cost savings for Transpower of some hundreds of thousands of dollars it currently spends on plan advocacy, RMA appeals and applications each year.

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 be passed on to electricity consumers as a reduction in Transpower charges and 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, to government in implementing the NPS, and to some landowners adjoining the transmission network who may have their future activities further curtailed.

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

The key areas of uncertainty or limited information have 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.

The main purpose of the NPS is to elevate the status of electricity transmission as a consideration under the RMA. Current information suggests the transmission network will need to increase in its extent, especially over the next decade. In the absence of an NPS, unnecessary relitigation over the importance of electricity transmission and any subsequent delay could result in risks to electricity supplies and the facilitation of renewable electricity generation.

Proceeding with the NPS, through a Board of Inquiry process, will involve further testing and investigating its purpose, including uncertainties.

1 Introduction

1.1 Overview

Electricity is vital for modern lifestyles, commerce and industry. In most cases 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.

Concerns over how best to develop major infrastructure were acknowledged again during consultation on amendments to the RMA in 2004/05. In response, the Government established a Reference Group to advise on the feasibility and merits of a national policy statement (NPS) and/or national environmental standards[7] to address issues associated with the management of electricity transmission under the RMA.

Following public consultation, the Reference Group[8] produced a report entitled: *The Merits and Potential Scope of National Guidance on the Management of Electricity Transmission under the RMA* (April 2006).[9] 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.

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[7] One or more national environmental standard (NES) may also be developed in addition to the National Policy Statement to add certainty on some resource management matters relating to the electricity transmission network.

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

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

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.

The NPS is due to be notified by an independent Board of Inquiry,[10] which will undertake public consultation and public hearings. Once the inquiry is complete, the Board will prepare a report that may include recommendations to the Minister for the Environment to consider and make changes to the NPS.

1.2 Section 32 evaluation and report

RMA section 32(3) 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.

RMA section 32(4) 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 explicit requirement to assess alternative approaches to the NPS.

The main 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.

[10] 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.

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 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.

1.2.2 An iteration of the section 32 process

It is important to note that section 32 requires an ongoing assessment over the full length of the policy development process. Within this context the following evaluation is just one iteration, which mainly considers the wider appropriateness of the NPS.

1.3 Statement of the issues

The transmission network's national significance stems from it being an attenuated network of infrastructure that traverses all of New Zealand's local council territories,[11] 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.

[11] Except for the Chatham Islands.

A further factor is that New Zealand's ratification of the Kyoto Protocol[12] and international commitment to restrain carbon emissions have increased interest in new kinds of power generation from renewable sources (hydro, wind, geothermal), which 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.

The fact that transmission lines cross district boundaries means that:

- transmission appears to involve an imbalance of local costs for benefits elsewhere, yet all localities benefit from effective integration of the grid
- there is significant risk of trans-boundary 'externalities' caused by impediments imposed in one district having consequences and adverse effects on power supply in other districts.

Control over externalities is one of the main justifications for national instruments that create a common understanding and consistent treatment of transmission activities across different districts.

The main issue to be addressed is confirming the importance of electricity transmission and its positive benefits to the nation. An NPS, by its very nature, will give nationally significant status to the transmission network, to help ensure both the national benefits of transmission and local costs are taken into account in local decision-making under the RMA.

Complementary issues concern the consistent management of activities that may interfere with electricity transmission, and acknowledging the adverse effects electricity transmission activities can have on places and values.

[12] 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.

2 The Status Quo – Present Controls over the Electricity Transmission Network

2.1 Overview

The 'status quo', as outlined below, relates to how the national electricity transmission grid was established and is currently managed. Specific reference is made to RMA documents and processes, and to some documents and processes outside the RMA umbrella where the issues are linked.

All district plans contain objectives and policies relating to the facilitation and/or control of transmission network activities. Many regional policy statements and regional plans also have relevant provisions. However, no district or regional documents recognise the *national benefits* of transmission.

In addition, the objectives and policies used are not consistent across local authority boundaries, which is inappropriate for a national network that must be operated as a whole. The question therefore arises as to whether the status quo is appropriate in terms of recognising a nationally significant physical resource.

Planning documents usually contain a range of objectives and policies that address the adverse effects of transmission on other activities, and vice versa, and describe the benefits. However, research suggests that district plans are heavily weighted towards a clearer recognition of transmission's *adverse* effects. There is therefore also a question of balance in the status quo.

All district plans contain rules and standards that relate to the control of 'minor works', whether or not they are expressed as such. Some regional plans also have relevant provisions. However, there is significant variability between plans in terms of the activities covered by the provisions, and in the specific wording of provisions covering the same activity. These issues are sometimes compounded by uncertainty over the interpretation of the provisions. The status quo therefore has issues of consistency (important in the context of a national network) and ease of management for what are generally acknowledged as works with minor effects.

2.2 Current planning controls (Resource Management Act 1991)

Most of the transmission network was established before the RMA, which means its basic existence relies on 'existing use rights' (RMA section 10). Extensions, alterations and maintenance relating to the network are managed through a variety of provisions, including designation, resource consents, certificates of compliance and existing use right certificates.

There are 73 city, district and unitary local authorities in New Zealand, which all have electricity transmission lines crossing their territories,[13] and 12 regional councils with resource management responsibilities that potentially affect transmission operations. Currently these various councils approach transmission issues in their areas in their own particular ways, resulting in variability in the treatment of transmission in local plans. The national electricity grid operator, Transpower, expends considerable effort in making submissions on these plans to achieve a less onerous and clearer set of rules in each district, but the variability of approaches magnifies this task.

A consultant's report[14] prepared for Transpower examined the current approaches across all district plans, and concluded that the council-by-council approach is uncertain, inconsistent and produces inappropriately variable outcomes that are not necessarily effects based. In summary, it found that:

- 82% of district plans contain an adequate policy framework relating to the *adverse effects of* infrastructure
- 78% of district plans contain an adequate policy framework relating to *the benefits of* infrastructure
- 41% of district plans contain an adequate policy framework relating to *adverse effects on* infrastructure.

The consultant's report concluded that only 27% of district plans make acceptable provision for activities other than minor upgrading activities. In the majority of district plans, upgrading activities that fall outside the definition of a minor upgrade are treated in the same way as proposals for new lines, despite clear differences in the baseline conditions of the existing environment.

Overall, current plans place more emphasis on the adverse effects of transmission infrastructure than on the potential adverse effects of other activities on that infrastructure. Such a slant on the planning provisions for infrastructure is important for transmission because of the elongated network on which it operates and the potential for problems in one locality to spill over as 'externalities' in other parts of the country.

[13] The exception is the Chatham Islands.

[14] Burton Planning Consultants Ltd, *District Plan Stocktake Report* (2006).

District (including city) and regional councils are responsible for considering applications for works under the provisions referred to above. The decisions of those councils are guided by the content of district and regional plans, and regional policy statements. Within their planning documents each local authority has its own set of objectives, policies and rules. Transpower has recently sought to introduce some commonality by engaging in advocacy on plan development. For instance, some district councils share the same or similar provisions relating to 'minor works' for maintenance or upgrading.[15] Transpower also advocates network-friendly provisions in a range of other (non-RMA) documents produced by local and central government agencies.

However, Transpower has had uneven success in achieving the provisions it has advocated for in district plans. Related issues are the perceived lack of clarity of provisions, the inconsistency 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,[16] while a Transpower study has found that most district plans deal with the adverse effects of infrastructure on other activities.[17] 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 balancing recognition of the transmission network's national benefits.

Transpower also seeks to protect the network from the effects of other activities 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, although 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:

1. *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
2. *applicant* – seeking approval for proposed physical works (new, upgrading or maintenance) via:
    - an existing use certificate
    - a certificate of compliance
    - a resource consent
    - a designation and outline plan[18]
3. *opponent* – seeking control over the outcomes of proposed third-party activities, where these are notified or a local authority requires an applicant to gain Transpower's written approval.

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[15] 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.

[16] *Stocktake and Analysis of Regional and District Plans and Policy Statement*, a report prepared by Beca for the Ministry of Economic Development, June 2005.

[17] *District Plan Stocktake Report*, a report prepared by Burton Consultants for Transpower, May 2006.

[18] This also links to acquisition compensation provisions under the Public Works Act 1981.

The ongoing costs of dealing with transmission network issues under RMA processes are borne by Transpower, local authorities, landowners 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, this 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 depends on whether the relevant planning document has network-friendly provisions, which links back to the success of advocacy. For local authorities, landowners 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 to be limited. Transpower, as the authority responsible for managing 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 as to whether the provisions will remain unchanged or will be interpreted consistently. For local authorities and landowners, 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.

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 landowners over general access and maintenance issues. The economic consequence is that transmission work is likely to be more costly – and not necessarily with any commensurate benefit – because processes in a sensitised setting are likely to be subject to a degree of 'scope creep' and to incur increased transaction costs in their resolution.

2.3 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 before 1988, and the Act maintains the right to occupy private land without the need for landowner agreements. Lines built from 1988 onwards require negotiated agreements with landowners. 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 (eg, for resource consent or plan preparation) and activities under the direction of the Electricity Act. The links between the two include:

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

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

Existing district and 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 (via the Electricity Commission) allows Transpower to pass those costs on to its customers. The status quo may therefore impose an unnecessary level of costs on Transpower customers.

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

2.4 Other regulations and guidelines

A number of other regulations and guidelines influence the physical environment of the transmission network, including the:

- New Zealand Electrical Code of Practice 34:2001 (the NZECP 34)
- Electricity (Hazards from Trees) Regulations 2003 (the Trees Regulations)
- Building Act
- RMA regulations
- ICNIRP Guidelines.[19]

These provisions contain a level of detail that is generally not addressed by objectives and policies in planning documents. To this extent, the status quo represents a lack of integration of transmission-related matters.

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

2.5 Conclusions on the resource management issues created by the status quo

Before beginning the evaluation of the NPS we need to consider the appropriateness and validity of the issues the NPS seeks to address. While these are not stated in the NPS, these issues are central to the requirement for it and their resolution (either partial or full) will ultimately determine the effectiveness of the NPS.

The Reference Group report identifies the following issues as being relevant to the NPS:

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

With respect to these issues, the evaluation of the status quo above found that:

- 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, which means there is a question of balance in the status quo
- there is significant variation in how different district plans provide for the operation, maintenance and upgrade of the existing network
- substantial material is already included in policy statements and plans regarding the potential adverse effects of the transmission network.

As a consequence of this evaluation, it is considered that the first two issues identified in the Reference Group report represent resource management issues for which consideration of alternatives to the status quo is warranted. However, in relation to the adverse effects of the transmission network the conclusion is not as clear, but can be warranted to ensure an internal balance within the NPS itself.

3 Alternatives to the NPS

3.1 Summary of the alternatives considered

In this section various policy and non-policy options are considered where these might provide appropriate alternatives to the NPS and specific provisions of the NPS. The alternatives considered are:

- amendment of the RMA
- ministerial call in of transmission proposals
- whole-of-government submissions on transmission proposals
- enhancing the status quo
- easements over the entire transmission network
- designations over the entire transmission network.

A table summarising these alternatives is given in Appendix A.

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 6).

3.2 Evaluation of the alternatives

3.2.1 Amendments to the RMA, ministerial call in and whole-of-government submissions

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.

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 more consistently throughout the country.

The preparation of whole-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 benefits of these options, none presents a real alternative to the policy framework proposed in the NPS. If these non-policy options were implemented, it would still be useful to have a policy framework on the national benefits of electricity transmission. 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.

Similarly, without a policy framework, little specific benefit would be provided by any amendment to the RMA on the nature of the national benefits of electricity transmission. Changes to the RMA will only provide a limited direction that such benefits are important, not guidance on the nature of the benefits.

While none of the options are considered to represent alternatives to the proposed provisions on national benefits, the use of both call-in powers and whole-of-government submissions would be appropriate complementary mechanisms.

3.2.2 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 landowners, 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. It is therefore considered that easements would not provide an appropriate alternative to the NPS policy option.

The enhanced status quo alternative would rely on including the transmission network on plan maps and better enforcement of the New Zealand Electrical Code of Practice 34:2001 (NZECP 34) 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. Better enforcement of NZECP 34 would reduce the risk of disruption to the transmission network from some of the land-use activities the policy options seek to address.

In the Reference Group report, better 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.

3.2.3 Designations over the network

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

1. Transpower, as a requiring authority, could issue notices of requirement to all local authorities traversed by the network.
2. 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 landowners affected by the designation. The Reference Group report notes that many thousands of landowners would be affected by such designations. The transaction costs of determining lost value, negotiating with each landowner 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 ministerial call in, that incorporate notices of requirement across multiple local authorities. However, the hearing costs would still be very 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 their 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 achieving the consistency of outcome implicitly sought in the objective.

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 landowners to co-operate with Transpower, government and local authorities on other matters.

3.2.4 Non-statutory guidance

In addition to the options considered above, non-statutory guidance represents an alternative, not just to individual provisions within the NPS but also to the NPS itself. Such 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.

Guidance could 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 not only with Transpower, but also with local government and landowner representatives.

The benefit of this approach would be to increase awareness of the issues associated with the transmission network and of best practice in relation to managing these issues. However, ultimately the translation of this guidance into policy and plan provisions, and its recognition as part of 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. That is, in those areas where the local community has become particularly sensitised to the transmission network, the political will to implement the guidance material may be less than in other locations. It is anticipated that these areas are also likely to be those where 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, it is therefore concluded that a guidance approach would not represent a full alternative to the NPS; although it may have some value as a complementary measure and would usefully be included as part of any promotional/education programme undertaken after the NPS is finalised.

3.3 Conclusions

It is the overall conclusion of this evaluation that none of the options represent full alternatives to the NPS or its specific provisions. The key reasons for this conclusion are that none of the options would provide an appropriate policy framework to guide RMA-based decisions relevant to the network. Furthermore, the options involving easement or designations would present significant costs and delays, which would ultimately be passed on to electricity consumers.

However, although it is considered that the options do not provide appropriate alternatives to the NPS or its provisions, some would be appropriate complementary measures. In particular the procedural options (call in and whole-of-government submissions) would add value to the policy framework provided by the NPS.

4 NPS Evaluation

4.1 Overview and introduction

The NPS is intended to achieve three main resource management outcomes:

- recognition of the importance and benefits of electricity transmission
- providing for electricity transmission activities
- managing the effects of electricity transmission activities.

The NPS contains a sole objective to achieve these outcomes. Under the objective are six policies directing councils to undertake action. It is expected that councils will also alter or develop rules in their plans to give effect to the objective and policies of the NPS.

The main intention of the objective, and its policies, is to establish electricity transmission as a matter of national significance, and to direct local authorities and decision-makers to recognise the national benefits produced by electricity transmission. Accompanying policies require local authorities to provide for the operational needs of the electricity transmission network, manage the effects of electricity transmission and manage activities that may disrupt electricity transmission.

The following evaluation is broken into six sub-sections, covering the objective and the six policies included in the NPS. The discussion focuses on the appropriateness of the objective and policies, and their efficiency, effectiveness, costs and benefits.

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.

4.2 Evaluation of the objective

Objective: *"To recognise the national significance of the electricity transmission network"*.[20]

4.2.1 Summary of the evaluation

In general terms, this is considered to be an appropriate objective in terms of the purpose of the RMA given the value of the national grid to the nation. As the Reference Group report notes, the Environment Court has recognised[21] that electricity is a vital resource and that there could not be sustainable management of natural and physical resources without energy, of which electricity is a major component.

4.2.2 Detailed evaluation

The transmission network's national significance stems from its being a large, attenuated network of infrastructure that traverses all but one of New Zealand's local council territories.[22] It connects the areas of growing electricity demand (mostly in the North Island) with locations of excess electricity supply and hydro-storage capacity (mostly in the South Island), and provides a vital link for smoothing out variations in the availability and price of electricity in different parts of the country that would occur with less interconnected systems.

All localities benefit from the integrated grid in that it relieves them of the risk of relying on their own local power sources. This applies as much to areas with supply in excess of demand as for areas with demand in excess of supply, because even areas with normally plentiful supplies suffer shortages (eg, in dry years), when local supply needs to be supplemented by supplies from elsewhere. It is not in the interests of electricity consumers (which includes people and industries in all territorial authorities) to delay maintenance to or improvement in the integrity of the network.

Given the elongated, cross-boundary characteristics of the network, there is a high potential for 'externality' effects (ie, actions in one locality having implications elsewhere). These can arise from:

- process delays in one location prolonging the time before the benefits from improved transmission are realised elsewhere
- network effects, whereby the integrity of aspects of network operation are only as strong as those in the weakest link in the network

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[20] The NPS defines the 'electricity transmission network' and 'electricity transmission' as the national grid of transmission lines and cables (aerial, underground and undersea, including the high voltage direct current link), stations and substations 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.

[21] Genesis Power Ltd v Franklin District Council, 2005, A148/05.

[22] The exception is the Chatham Islands.

- cost shifting, because the 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, which 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, although this is an average value and for some uses the value of losing power for even a short period is very much higher
- the potential losses from transmission failures, which 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.

A common recognition of these nationwide benefits and a common approach to providing for them in local planning processes is economically worthwhile if it:

- reduces the costs of carrying out necessary works on the network while meeting the requirements of sustainable management
- reduces uncertainty about the outcome of particular planning provisions, which can disrupt investments patterns
- reduces the cost of lobbying to make plan provisions more amenable to transmission needs, and the cost of legal challenges for plans and their interpretation
- reduces the consequential costs of any work deferred due to the uncertainties of delays caused by the planning process.

A further externality is the potential influence that grid capacity and location have on the type and location of new electricity generation. Constrained grid capacity increases the risk that generation from cheaper (often renewable) sources will be displaced in favour of accepting generation from higher-cost sources. That risk influences generator decisions about new investments. This potential constraint problem has to be balanced against the frequency with which the constraint actually occurs, since the costs of easing the constraint might outweigh the benefit when the constraint occurs infrequently.

If the grid constraint problem is important, then an NPS that facilitates greater input of new renewable sources of generation into the transmission system would potentially have national benefits, including:

- lower-cost electricity supplied to the market, enhancing the economic surpluses for both producers (generators and retailers) and consumers
- a reduction in carbon dioxide equivalent emissions, aiding the achievement of national Kyoto targets
- increased long term sustainability of generation.

Without an NPS recognising the national significance of transmission, variable provision for transmission activities around the country increases uncertainty about what can be done and where. This generates transaction costs associated with interpreting and resolving various planning provisions, and increases the risk of costs being externalised until the uncertainty is resolved. With an NPS, all these costs are likely to be reduced rather than leaving councils to implement policy in their own way, which perpetuates variability.

It is a clear intention of the NPS to increase recognition of the benefits of the transmission network. To the extent that achieving this outcome requires decision-makers to weigh such benefits against the potential adverse environmental effects of the transmission network, it is likely that as an outcome of the NPS decision-makers will place greater weight on the benefits than is currently the case.

The assessment of the status quo showed that the current practice in RMA planning documents is to provide little or no recognition of the national benefits, as opposed to the local or regional adverse effects, of transmission. This lack of recognition has implications for decisions on individual proposals, in that local interests tend to be given greater weight than national interests.

This lack of recognition also appears to have implications in relation to the need for resource consent. There are a number of categories of transmission work where consents must be applied for, and which are the subject of a range of consent categories (ie, controlled, discretionary and non-complying activities). Comments from both Transpower and local authorities indicate that these consents are nearly always granted and rarely with any conditions attached. This suggests that current consent requirements are perhaps overly cautious, incur costs for no significant environmental benefit, and do not recognise the positive national benefit of electricity transmission.

Given these points, and the value of the national grid, it is considered appropriate that the NPS provide for the benefits of the network and in doing so provide direction for regional and local decision-makers to do the same.

4.3 Evaluation of Policies 1 and 2

Policy 1

The benefits of sustainable, secure and efficient electricity transmission relevant to any development of the electricity transmission network may include:

i) improved security of supply of electricity

ii) improved efficiencies in the supply of electricity

iii) the facilitation of new and existing renewable electricity generation

iv) lower overall environmental costs from the generation of electricity.

Policy 2

The electricity transmission network should be operated, maintained and upgraded efficiently.

Overall it is considered that both policies are generally appropriate, and will generally be effective in achieving the outcome sought in the objective. The policies 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.

Policies 1 and 2 propose two different, but complementary, approaches to achieving the outcome sought in the objective. The first more generally requires local authorities to have regard to the benefits of the network when exercising a range of functions under the RMA. The second directs local authorities to include provisions in their plans which provide for the efficient management of the transmission network.

The costs of Policy 2 (which seeks to direct the content of district and regional plans) will fall largely on local authorities and their ratepayers, and will be associated with amendments to those plans necessary to give effect to it. Policy 1 will also need to be given effect through amendments to plans. In particular, councils would need to consider whether proposed district and regional plan rules (particularly relevant controlled and restricted discretionary activity rules) enable consideration of the benefits identified in Policy 2.

However, because these amendments are likely to be part of a larger policy statement or plan change to give effect to the NPS in its entirety, the additional cost of giving effect to Policies 1 and 2 by themselves is not likely to be significant. Further, given that most policy statements and plans already contain provisions that provide for network utilities generally, these plans are unlikely to require major amendment to 'give effect to' Policies 1 and 2 of the NPS.

However, the costs of policy and plan changes will be significant if local authorities are challenged through the Environment Court over how they choose to give effect to these policies. It is considered that all parties to such appeals will incur reasonably significant costs. Ensuring that the direction provided to local authorities by the NPS is as clear as possible will reduce the risk of such costs.

In addition to the costs associated with policy and plan changes, Policy 1 will impose costs more broadly across the RMA decision-making processes. There will be some cost to Transpower in preparing the necessary information on the benefits of transmission as part of these decision-making processes. However, as the Reference Group report notes, these costs are likely to be low because Transpower already gathers this information for other purposes.

Policy 1 may also result in costs to councils associated with reviewing the information on benefits presented by Transpower. As this information is likely to be additional to what is currently reviewed, this will be a new cost. It is unlikely that councils will have the expertise to review this material in-house and will therefore need to engage a consultant to do so on their behalf. The Reference Group report suggests that the cost of this additional work for large projects could be in the order of $10,000 to $20,000. It notes that this cost will be passed on to Transpower as part of the processing fee associated with the resource consent application or the notice of requirement.

The Reference Group report also notes the potential for environmental costs associated with balancing the stated benefits against adverse environmental effects. In other words, the report suggests that local environmental values may be traded away in the process of having regard to the benefits identified. The NPS focus on the benefits of electricity transmission, including this policy, could lead to local authorities altering the balance in their decisions in favour of the benefits of transmission, which may result in environmental costs.

Whether or not Policies 1 and 2 result in such costs will not be able to be fully determined until the NPS is operative, local rules are developed, individual proposals are considered under it and decision-makers are confronted with the need to weigh the benefits of transmission with any adverse environmental effects. However, the combination of Part 2 of the RMA and the significant body of existing policy that addresses the management of the adverse effects of activities is likely to ensure that decision-makers continue to manage adverse environmental costs appropriately, and therefore significant adverse environmental effects should not result from the application of Policies 1 and 2.

The benefits of both Policies 1 and 2 will result from the increased certainty that the benefits of transmission will be taken into account by local authorities as part of decision-making under the RMA. Transpower indicates that it currently spends significant time advocating for plan provisions that provide for and recognise the benefit provided by the transmission network. Equally, Transpower spends significant time challenging those plan provisions that take a very localised view of the transmission network (eg, provisions requiring lines to be underground). The cost of Transpower's plan advocacy activities is likely to be reduced by the introduction of Policies 1 and 2, which will legitimise the arguments currently being made.

In relation to specific proposals, the benefit of Policies 1 and 2 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 increased certainty that the benefits of electricity transmission will be considered as part of RMA decision-making will not only benefit Transpower, but can also be viewed as a benefit to end users and generators, who will be able to take advantage of the transmission network.

4.4 Evaluation of Policy 3

Policy 3

Corridors and sites should be located and other activities associated with the electricity transmission network should be undertaken in a way that avoids, remedies, or mitigates any adverse effects on matters of national importance.

An analysis of the status quo shows that a significant body of policy addressing the environmental effects of activities (including those of the transmission network) already exists and covers a broad range of environmental issues. Overall, it is considered that Policy 3 is generally appropriate and will generally be effective in achieving the outcome sought in the objective.

Policy 3 seeks to direct decision-making in relation to resource consent applications and notices of requirements. The additional cost of these policies to Transpower and local authorities is likely to be negligible as the matters addressed in NPS policy are all very likely to be considered as part of current decision-making processes.

Another specific element of Policy 3 that has the potential to add costs over those experienced under the status quo relates to the potential inconsistency with the New Zealand Coastal Policy Statement (NZCPS). As currently drafted, Policy 3 is not consistent with corresponding provisions in the NZCPS. For example Policy 1.1.2 of the NZCPS states that:

It is a national priority for the preservation of the natural character of the coastal environment to protect areas of significant indigenous vegetation and significant habitats of indigenous fauna in that environment by:

a) avoiding any actual or potential adverse effects of activities on the following areas or habitats:

i) areas and habitats important to the continued survival of any indigenous species; and

ii) areas containing nationally vulnerable species or nationally outstanding examples of indigenous community types ...

By using the word 'avoid' the NZCPS applies a high and absolute threshold in addressing the effects of activities, including electricity transmission, on areas of significant indigenous vegetation and significant habitats of indigenous fauna. In contrast, Policy 3 of the NPS requires any adverse effect to be avoided, remedied or mitigated.

Within the coastal environment, both the existing NZCPS and the NPS for electricity transmission would apply. If these two NPS provide inconsistent direction to decision-makers, then resolving the resulting uncertainty would represent a cost, both as part of changing regional policy statements and regional and district plans, and as part of resource consent and notice of requirement proceedings.

Overall, given the existing significant body of policy that already addresses the adverse effects of activities (including those associated with the transmission network), it is considered that Policy 3 would result in relatively low benefits.

4.5 Evaluation of Policy 4

Policy 4

Any new development that is sensitive to the effects of the electricity transmission network should be managed in a way that it does not compromise the efficient operation of the electricity transmission network.

There is potential for Policy 4 to generate small additional costs to resource consent and notice of requirement proceedings by virtue of any uncertainty they may cause.

However, there is uncertainty about what constitutes a sensitive activity and at what point the activity is sensitive to electricity transmission. For example, the term could cover residential activities, tourism activities and/or farming activities. As a result, this clause has the potential to generate costs as parties to resource consent and notice of requirement processes attempt to resolve the uncertainty.

Policy 4 highlights the potentially significant adverse effects to the transmission network. It also has the potential to generate costs that would be additional to those experienced under the status quo. However, a specific definition of sensitive activities is not considered appropriate because this is likely to vary depending on local circumstances.

Policy 4 directs the content of plans, so it would generate costs through the need to change plans to give it effect. These costs would fall to local authorities and landowners affected by the provisions. However, in all cases the cost in addition to that experienced under the status quo is likely to be marginal at most.

Depending on how local authorities give effect to Policy 4, it may also have costs for landowners in the vicinity of substations. For example, if local authorities choose to use rules to require noise attenuation for sensitive activities, then the cost may be significant. However, if they choose to implement the policy through advocacy, the cost to landowners will be substantially less.

Policy 4 would result in benefit to the efficient operation of the transmission network. Transpower notes that it is currently spending an increasing amount of time addressing reverse sensitivity issues as new, potentially sensitive urban activities encroach on previously rural or industrial areas. This effort takes the form of both submissions on plan changes adjacent to substations and also lodging submissions on third-party resource consent applications.

In addition to advocacy costs, reverse sensitivity issues have cost implications for the physical operation of the network. For example, where existing substations become surrounded by sensitive development, and consequently an adequate buffer of land is not retained, options for upgrading these facilities become constrained. In these locations upgrades can only take place if low-noise transformers are used (adding significantly to the cost), or if noise barriers are installed. This latter solution itself creates operational problems in relation to access for maintenance contractors and maintaining electrical safe clearance distances.

For example, in 1997, when Transpower sought to roll-over the designation at Wilton substation (in Wellington, established in the mid-1960s), neighbouring residents (who had built or bought subsequent to the substation being established) complained about the noise. Transpower had to install noise barriers at several hundreds of thousands of dollars cost (the specific figure is not available) to meet the noise condition imposed on the designation.

Transpower notes that community awareness of noise issues is likely to increase as substations are upgraded (ie, over the next decade). While these upgrades may involve the replacement of older, noisier plant with newer, quieter plant, Transpower is concerned that without national guidance, inappropriate conditions may be placed on designations or consents in response to community concerns.

Ultimately, the extent of the benefit to the operation of the network will be determined by how councils give effect to the policy. If local authorities give effect to it through the use of rules, this may mean the ongoing operation of substations is less affected. However, an advocacy-based approach may have little such benefit.

Overall, it is considered that the relative costs and benefits of Policy 4 will be largely determined by how individual local authorities choose to give effect to it.

4.6 Evaluation of Policy 5

Policy 5

Where maps are included in a plan, these should identify the existing electricity transmission network, whether or not it is designated.

Policy 5 seeks to ensure that the transmission network is marked on maps included in local authority plans, whether or not the network is designated. This is considered to be an appropriate means of achieving the outcome sought in the objective. The reasons for this finding are as follows.

- The inclusion of the transmission network on all plan maps should increase awareness of the location of the network for prospective purchasers of land, and also for local authority staff who may be considering proposals for building, land-use activities and/or subdivision within the vicinity of the network. As a consequence, the potential for disruption to the efficient operation of the network should be reduced, so the policy would be effective in assisting to achieve the objective.
- Although some local authorities will be required to change their plans to give effect to the policy, the cost of doing so is expected to be relatively low. This conclusion is based on the fact that changes to most plans would be required to give effect to the NPS in its entirety, and that within this total cost the costs specifically associated with this policy will be small. Also, Transpower should be able to provide the data necessary for the map changes relatively easily.

4.7 Evaluation of Policy 6

Policy 6

Provisions dealing with electric and magnetic fields (EMF) associated with the electricity transmission network should be based on the ICNIRP guidelines.

Policy 6 seeks to ensure that where electric and magnetic fields (EMF) are provided for in association with the transmission network, they are based on the guidelines endorsed by the Government – the ICNIRP guidelines.[23] This is considered to be an appropriate way to achieve the outcome sought in the objective: to enable the efficient and effective operation of the network and achieve a consistent approach. The reasons for this finding are as follows.

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

- EMF issues are often raised as a health concern by the public when there is a development or upgrade to the electricity transmission network. The ICNIRP guidelines are well established and widely recognised. The guidelines provide a basis that will give confidence to the public, and ensure that decision-making is consistent and based on recognised science.
- Although local authorities may be required to change their plans to give effect to the Policy, the cost of doing so is expected to be relatively low. Most of the cost of implementing the policy will probably fall to Transpower. However, councils and Transpower may also enjoy a benefit because of the certainty the Policy achieves.

5 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 of the policies, rules or other methods.

The key area of uncertainty or limited information has been identified as the potential cost to third parties from implementing the NPS.

The risk of acting or not acting on this uncertainty, where more or better information might become available, is indefinite. This uncertainty presents a risk in relation to the implementation of an NPS on electricity transmission.

On balance, proceeding with the NPS through a Board of Inquiry process will provide an opportunity to further test and investigate the NPS; including uncertainties, costs and benefits.

6 Conclusions

This report provides an evaluation of the proposed National Policy Statement for Electricity Transmission in accordance with section 32 of the RMA. Because of the high-level guidance given by the proposed NPS, it is not feasible to quantify its costs and benefits with precision. However, there are certain benefits (largely in the form of costs avoided) and costs that can be expected to arise. These can be summarised as follows.

- Because an NPS should be instrumental in producing rules and policies more amenable to transmission requirements, there should be some reduction in the transaction costs for Transpower in interpreting plan provisions, determining what they require, and lobbying for the alteration of inappropriate rules. In the longer term, the NPS should result in operational cost savings by reducing conflicts between transmission and other activities (eg, line shorting, supply interruption, negotiations over access). It could also reduce the incidence of reverse sensitivity that can lead to substantial costs for the transmission system.
- Local government would incur implementation costs, which, across 73 local authorities and 12 regional councils, could accumulate to a large one-off cost if plans need to be specifically adjusted to accommodate the NPS. However, if allowed to roll over until the next plan review date, there would be a low marginal cost.
- The Government would incur some implementation costs in drawing up the NPS and assisting in its adoption by local authorities.
- Some landowners adjoining the transmission network may incur small costs and benefits to the extent that their activities are curtailed and property values affected.
- Electricity consumers should generally receive some benefit from more timely maintenance and upgrade activity because of:
  - reduction in the (already low) probability of transmission system failure caused by RMA process-induced delay
  - reduction in transaction costs of Transpower's plan advocacy work, to the extent that this is passed on to consumers through the average charges for transmission (the balance remains a cost for Transpower).

The evaluation of the status quo discusses 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.

The evaluation confirms that these are undoubtedly resource management issues that warrant considering alternatives to the status quo. However, in relation to the adverse effects of the transmission network, the conclusion is not as clear, because most council plans already cover these issues at length. Inclusion of provisions that cover these matters might be warranted to ensure an internal balance within the NPS itself. Because the NPS only gives broad guidance, it may not alleviate the variations across districts that are part of the cost of the current status quo.

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

The benefits of the NPS stem largely from 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 a reduction in Transpower charges and improvements in network security and operation.

There could also be benefits nationally if grid capacity improvements facilitated by the NPS encourage the development of more renewable energy generation, subject to the grid improvement itself passing a benefit–cost test. Costs are likely to stem largely from costs to local governments in changing plans to recognise the NPS (which may be very small if simply a marginal cost on their next plan review), to central government in implementing the NPS, and to landowners adjoining the transmission network, who may have their activities curtailed by NPS policies.

Appendix A: Alternatives to the NPS

Note: for further explanation of the terms below marked with an asterisk (*), please see the Glossary.

Alternative to the NPS	Main effect on electricity transmission	Main weakness compared to the NPS
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.
Whole-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 landowners 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 landowners for the interest taken by the designation, and the designation process.

Appendix B: 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 table simply illustrates 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. After the table, costs are examined in relation to the main stakeholders.

Expected cost impacts of NPS policies	Status quo	Policies 1 and 2	Policy 3	Policy 4	Policy 5	Policy 6
Transpower						
Plan advocacy	$350,000/year	B small	B small	B small	B small	B medium
Consents	?	B small	B small	Nil	Nil	B medium
Operation costs	?	B medium	B medium	Nil	Nil	B medium
Managing third parties	$180,000/year	B medium	NA	B small	NA	B medium
Councils						
Plans*	?	$5,620,000/year	C small	C small	C small	B medium
Consent	?	B small	B small	B small	NA	C small
Managing third parties	0	Nil	NA	C small	NA	Nil
Government						
Policy	0	C small	Sunk	C small	C small	C small
Support**	0	$200,000/year				
Landowners						
Opportunity cost	?	Nil	Nil	B small	Nil	B medium
Plan advocacy	?	B small				B medium
Consents (landowners)	?	B small				B medium
Consumers						
Opportunity forgone	?	B small	NA	NA	NA	NA
Participation	?	C small				
Environment						
Local adverse effects	0	C		NA	NA	NA

KEY

*	One-off costs for plan adjustment $12,000 x 12 regional plans; $75,000 x 73 district plans
**	$100,000 in first year; $50,000 in each of next two years
B	Unquantifiable benefit
C	Unquantifiable cost, negative impact
Nil	No effects expected
NA	Not applicable to the objective/policy
?	Probable effects, but no information on amount or balance of positive/negative
Sunk	Committed/spent

Transpower

Plan advocacy

Under the status quo, plan advocacy (including appeals to the Environment Court) costs are estimated to be approximately $350,000 per annum. This includes consultants and the equivalent of one internal FTE for Transpower.

Under Policies 1, 2, 3, 4 and 5 an unquantifiable benefit is expected with the introduction of the NPS. 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 will add some weight to Transpower's arguments, particularly where it advocates a more consistent treatment of transmission activities across councils.

The benefits will be small because the NPS gives no specific direction as to how it should be taken into account when dealing with planning rules. It could even cause some confusion in some councils between what has been written down in district plans and what is written into the NPS.

Under Policy 6, there is a medium benefit because the NPS gives greater direction (relative to other policies), specifying that councils should base their provisions on ICNIRP guidelines.

Consents

Under the status quo no average dollar amounts spent on consents have been possible to quantify. This is partly due to the large variability in money spent on each consent, and partly due to Transpower being unable to pull timely information out of their database.

Under Policies 1, 2 and 3 small unquantifiable benefits are expected from the NPS because councils have to consider the national importance of the transmission network along with other Transpower arguments. This could deliver smoother passage through council processes for some consents.

Under Policies 4 and 5 there will be no change in costs and benefits. Under Policy 6 a medium benefit is expected because it is clear what approach councils should take (ie, follow the ICNIRP guidelines).

Operating costs

Operating costs are those costs incurred by Transpower in general operations. They are increased by planning processes that impose undue delays on operations, and reduced by more transmission-friendly processes. Planning-induced operating costs are potentially large if delays in process cause Transpower to miss an opportunity to work on a particularly part of the network which may not come around again for some time, necessitating rescheduling of planned activities.

Transpower costs under the status quo have not been quantified because of the difficulty in obtaining representative data given high variability of costs on a year-to-year basis.

Under Policies 1, 2, 3 and 6 some benefit is expected because the NPS gives some degree of clarification over the importance of transmission, which will reinforce some of Transpower's arguments to councils, particularly about the importance of the network and, in the case of Policy 6, clarification on the guidelines to be followed. Under Policies 4 and 5 there will be no change in costs and benefits.

Managing third parties

Under the status quo, third-party costs are approximately $180,000 per annum. This includes monitoring of district plan changes, one full time equivalent internally, consultant costs, and information booklets. Call centre enquiries and line inspections were not valued, although it was recognised that they were important activities related to third-party activities.

Under Policies 1 and 2 a medium benefit is expected, since Transpower will not have to publish information booklets for councils and interested parties. This amounts to an avoided cost of $22,000 per year. Under Policies 3 and 5 the NPS does not apply. The NPS will provide a small benefit for Transpower under Policy 4 since it will be in a stronger position to discourage third parties from compromising the efficiency of the network. Further, a medium benefit will occur for Policy 6, since third parties have reduced uncertainty on how electric and magnetic fields (EMF) issues will be dealt with under ICNIRP guidelines.

Councils

Policy and plans

Under the status quo, no information is held on average council costs. Under Policies 1 and 2, a one-off cost of $5,620,000 is expected for plan adjustment. This equates to $12,000 per regional council and $75,000 per district council.

Under Policies 3 and 4, a small increase in costs for councils is expected because of the confusion between what is written in district plans and what is written in the NPS. This is likely to incur some cost. Some small one-off costs may also be incurred by Policy 5 to identify transmission lines in district plans.

There is a medium benefit from Policy 6 because councils not only have an NPS but also guidelines to follow that can be added to the plan, thus reducing uncertainty and adding to clarity.

Consents

Under the status quo, no information is held on the total number of consents in an average year, although the processing cost is approximately $3,450 per consent and the average appeal is approximately $15,000.

Under Policies 1, 2, 3 and 4 a small benefit can be expected since those councils that require Transpower to obtain consent for all activities will now be required to consider the national importance and efficiency of the national grid. Under Policy 5 there is no change.

The benefit of Policy 6 for councils is at the planning stage. At the consent stage there will be a small cost associated with demonstrating how the guidelines apply at the local level.

Managing third parties

Under the status quo, no cost information is held on councils. Under Policies 1, 2 and 6 there is no change in costs. Under Policy 4 there will be a small cost because of the increased information requirements needed by interested parties as to how the NPS will affect them. Policies 3 and 5 in the NPS are not applicable.

Government

Policy development

Under Policies 1, 2, 3, 4, 5 and 6 there are costs in developing policy, although for Policy 3 the costs are sunk (ie, committed/spent).

Education and support

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.

Landowners

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

Opportunity cost

Under Policies 1, 2, 3 and 5 the costs and benefits are expected to be nil. Under Policy 4 there are potential infringements of property rights for landowners who are constrained from developing their properties in a way that could compromise the efficient operation of the electricity transmission network, although, the location of transmission assets should be 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. There is a small benefit with the introduction of an NPS because it makes it clear that these development constraints exist.

Increased certainty will occur under Policy 6 because ICNIRP guidelines will be in place.

Plan advocacy

Plan advocacy is expected to have a small benefit for landowners under policies 1, 2, 3, 4 and 5. These benefits occur because the NPS makes Transpower's rights clearer on how the NPS applies in each district. Under Policy 6 increased certainty (because of ICNIRP guidelines) will assist landowners in their plan advocacy, so a medium benefit is expected.

Consents

Consent costs under Policies 1, 2, 3, 4 and 5 will be small. There is some small benefit because landowners' status under the NPS makes landowners' obligations clearer under the RMA. Increased certainty is likely to deliver a medium benefit under Policy 6.

Consumers

No information is held on the status quo costs in any of the categories for other interested parties.

Opportunities forgone

Under Policies 1 and 2 some benefit is expected for consumers, generators and other interested parties. This would be in the form of lower electricity prices and better utilisation of the network. Policies 3, 4, 5 and 6 will have no impact.

Participation

The participation costs will be small for Policies 1, 2, 3, 4, 5 and 6. 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).

Environment

Local adverse effects

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 of remedy effects. Policies 4, 5 and 6 are not applicable.

Glossary

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 HVDC (High Voltage Direct Current) link, used to connect grid injection and exit points[24] 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.
ICNIRP	International Committee on Non-Ionizing Radiation Protection. Proposed NPS Policy 6 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.

[24] '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.

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 (e.g. the coastal environment). A national policy statement is issued under section 52 of the RMA.
NZECP 34	The New Zealand Electrical Code of Practice 34:2001 (NZECP 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 more information, see: *www.ess.govt.nz/rules/pdf/nzecp34_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[25] with a specific interest in electricity transmission. The Reference Group produced a report and recommendations: *The Merits and Potential Scope of National Guidance on the Management of Electricity Transmission under the RMA.* 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/*

[25] 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).

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.
Whole-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').