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Submission on the Proposed National Policy Statement on Indigenous Biodiversity

Land and Water Management Team
Ministry for the Environment
Environment House
23 Kate Sheppard Place
Wellington

On behalf of the New Zealand Geothermal Association

2 May 2011

The New Zealand Geothermal Association (NZGA) would like to thank the Ministry for the Environment for the opportunity to comment on the proposed National Policy Statement on Indigenous Biodiversity.

The NZGA is an independent, non-profit association that provides information on geothermal phenomena and utilisation for industry, government and educational organisations. In addition, the NZGA, as a member of the International Geothermal Association, contributes to the international exchange of information within the geothermal development industry. NZGA membership comprises participants, regulators, and interested parties within the geothermal community. It totals 320 members currently.

Contact details for the NZGA are as per the letterhead through the Executive Officer, Brian White.

NZGA has no objection to the publishing of this submission and will be publishing this on our own website.

The NZGA is supportive of efforts to assess our biodiversity in a consistent manner, and then to preserve that biodiversity. As a technical Association we are not in a position to give a view on the preferability of a National Environmental Standard (NES) or National Policy Statement (NPS).

Geothermal resources are generally associated with rare habitats so often have uncommon or rare species (some more so than others) within or near them. Recent studies have shown that many of these species do appear across geothermal fields internationally, so even at the microbial level are unlikely to be unique. Because of the extreme volcanic environments these species have adapted to, they are very resilient and can recover (or establish themselves in the case of Waimangu) over generations. Some however are unique to a particular area and require site-specific management to protect these values.

We would like to point out the good efforts by Regional Councils involved with high temperature geothermal fields to preserve rare aspects of geothermal environments and therefore the biota within these. In the case of Ngawha developments, world-leading targeted reinjection has been a requirement of the Northland Regional Council to preserve the behaviour of existing springs. The majority of the high temperature fields are found within the Waikato and Bay of Plenty Regional Council areas. These councils have identified some fields for high levels of protection, to act as repositories of rare features and the associated

biota. They also identify significant features and place protection measures around these, thus giving appropriate protection to the flora and fauna associated with these sites.

NZGA supports Council efforts around the management of geothermal environments, while ensuring developers avoid, remedy or mitigate any adverse effects on these geothermal environments and associated biota, and we want to ensure that the Councils have ongoing flexibility in how they implement this. They have developed their own methods of interpreting 'like-for-like' remediation and applying 'offset' principles based on many years of experience.

In the Environment Waikato operative and proposed Regional Policy Statement, measures that may be taken to achieve 'like-for-like' are described:

"Measures may include but are not limited to:

- obtaining formal protection or public ownership of the land surrounding and including the feature or features;
- removal or control of exotic plants from the feature and its margins, and replacement with appropriate indigenous vegetation;
- control of animal pests;
- exclusion of stock;
- removal of rubbish, unconsented structures and excessive debris;
- removal and re-channelling of erosional outwash from roads and paths;
- blocking artificial drainage or channelling of a feature or its outflow;
- reinstatement of the local water table;
- providing interpretive signs describing the nature and value of the feature;
- and
- in rarer cases, the temporary augmentation or channelling of flow in order to regenerate damaged sinter or to re-establish a natural flow regime."

The emphasis is not on transplanting an ecosystem, which is probably impossible, but on:

1. avoiding or minimising any effects on biota within the environs of the development,
2. restoring the natural character of a degraded feature elsewhere, or
3. protecting a feature from degradation.

The elements of natural character taken into account invariably include hydro-dynamic and ecological characteristics and any other factors potentially affecting the integrity of the ecosystem such as emissions or potential discharges.

Our principal concerns revolve around Policy 5:

"POLICY 5

In addition to the inclusion in plans of any other provisions that the plan has or is required to have relating to section 6(c) of the Act, local authorities must manage the effects of activities through district and relevant regional plans (or be satisfied that the effects are managed by methods outside of district or regional plans) to ensure 'no net loss' of biodiversity of areas of significant indigenous vegetation and significant habitats of indigenous fauna by:

- a. avoiding adverse effects
- b. where adverse effects cannot be avoided, ensuring remediation
- c. where adverse effects cannot be remedied, ensuring mitigation
- d. where adverse effects cannot be adequately mitigated, ensuring any residual adverse effects that are more than minor, are offset in accordance with the principles set out in Schedule 2.

For the avoidance of doubt, in accordance with the principles of Schedule 2, there are limits to what can be offset because some vegetation or habitat and associated ecosystems, is vulnerable or irreplaceable. In such circumstances off-setting will not be possible and local authorities will need to take full account of residual adverse effects in decision-making processes."

In the case of geothermal biota and a geothermal development, it is not possible to relocate them outside geothermal areas, and undesirable to disturb protected fields with attempts to relocate biota. It can only be hoped that Councils can continue to interpret current methods of remediation or mitigation (which includes untied monetary compensation administered by Councils and/or affected parties) as sufficient to be covered by items b. and c. above.

Currently Policy 5 has a requirement for 'no net loss' which the NPS defines as follows:

"No net loss means no overall reduction in:

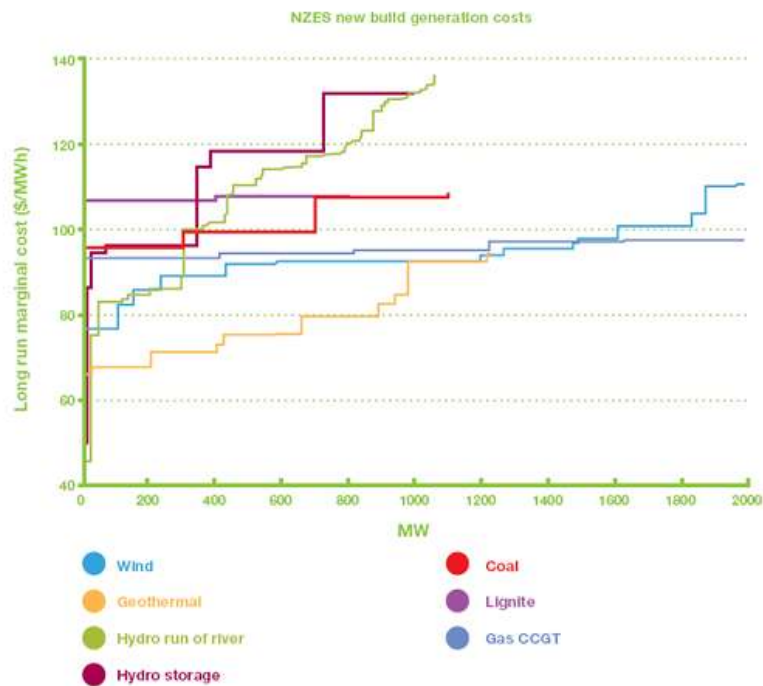
- a. the diversity of (or within) species
- b. species' population sizes (taking into account natural fluctuation), and long-term viability
- c. area occupied and natural range inhabited by species
- d. range and ecological health and functioning of assemblages of species, community types and ecosystems."

Again, because it is not possible to relocate geothermal biota outside geothermal areas, and undesirable to disturb protected fields with attempts to relocate biota, it will not be possible to comply with criteria b. and c. above. Given that a goal of the NPS is to preserve biodiversity, and that Councils have achieved this through the protection of certain areas from development, then criteria b. and c. should be deleted from the definition of 'no net loss'.

We note that there may be unintended impact on Maori through this initiative. We understand that the progress of this NPS has been encouraged by the Maori Party with a desire to protect our natural biodiversity and to ensure the role of tangata whenua as kaitiaki. However, most of New Zealand's high temperature geothermal fields are overlain by Maori land, such that, more often than not, Maori Trusts and land interests are significant partners in developments or principal developers of geothermal resources. If additional restrictions on development occur over and above the checks and balances applied through the current RMA constraints then this may directly impact these Maori interests. None of this has been covered in the Regulatory Impact Statement (RIS). However the RIS specifically states "While neither the NPS nor NES will impose direct costs on landowners, they may act to place additional limitations on the way in which landowners can develop their land."

While the RIS covers costs to Councils of the introduction of an NPS or NES, it does not touch on the huge cost to the nation if future geothermal developments were somehow restricted by this initiative. On one hand there will be costs associated with identifying, monitoring and managing the composite biota associated with geothermal systems.

There is a far greater cost to the economy associated with suppression of geothermal electricity generation. To establish natural fluctuations in populations may take decades and could potentially stall or halt future geothermal development. Protections on species population sizes and areas will have the same suppressing effect. The following figure is taken from the previous New Zealand Energy Strategy and shows the cost of various forms of electricity generation available in New Zealand.



Source: Ministry of Economic Development

Figure 1: Graph of various energy sources in New Zealand showing associated prices and quantities (taken from the New Zealand Energy Strategy)

If the geothermal option were severely curtailed, then Figure 1 shows that the roughly \$70/MWh (7c/kWh) generation option will be removed and after rapid uptake of wind options the country will be forced into uptake of \$95/MWh (9.5c/kWh) gas-fired generation. The marginal generation sets the wholesale electricity price, so such an action would result in a 2.5c/kWh jump in electricity price. The effect would be nation-wide. With total electricity consumption of about 40,000 GWh/year a 2.5c/kWh increase in price equates to an additional cost to the nation's electricity consumers of \$1 billion/year i.e. around \$250 per man, woman and child per year.

The duration of this additional cost effect can be roughly assessed. MED has estimated generation growth at around 6,000 GWh/year over the next 10 years in their Energy Outlook publication. Figure 1 above showed the availability of around 1000 MW of competitively-priced geothermal generation, probably including Kawerau and Nga Awa Purua totalling 240 MW leaving around 760 MW of geothermal growth. At a 93% load factor this amount of geothermal capacity could generate just over 6,000 GWh/year. Hence there is around 10 years of generation growth that could be through geothermal sources, so the impact of the loss of this is a cost to electricity consumers of the order of \$10 billion. For comparison, the cost of the Christchurch earthquakes recovery is expected to be of the order of \$10-20 billion, though the rebuild there will actually stimulate the economy.

We would like to make to following simple points:

- Biodiversity cannot be considered in isolation. There are complex environmental, social, cultural and economic tradeoffs.
- We note that there will be a conflict between the requirements of this NPS as drafted and that of the NPS on Renewable Electricity Generation because of the possible suppressing effects on renewable geothermal electricity generation. Will guidance be given to Regional Councils and Territorial Authorities on how they should prioritise these conflicting NPSs?
- Development of a geothermal resource inevitably involves changes to the various habitats that exist within a geothermal field. The resources are dynamic even without man's interference. Springs can change their temperature and chemistry, and

features can change from being liquid-fed to being steam-fed. These changes can have dramatic effects on the biota in the vicinity of these features.

- If added restrictions do come on the development of geothermal resources then this major source of future electricity and process heat generation will be less available. This is currently one of New Zealand's most economically attractive, low carbon emission, base load renewable energy sources. It is also located relatively close to major energy demand points. Loss of this advantage could lead to greater reliance on more expensive high emission fossil fuels, or more expensive, less reliable wind and hydro resources for New Zealand's future energy mix. There are obvious economic and environmental implications for these alternatives.
- When considering offsets, Environment Waikato's (EW's) consenting regime is worth considering. This identifies a regional/national geothermal resource and includes some like-for-like remediation within that context rather than on a region-specific, field-specific or a feature-specific basis. In practice, this 'like-for-like' remediation consists of funds made available through the Council for various measures (see the next dot point) by interested parties, and some could be directed to habitat and biota studies. EW has identified some resources to be totally protected, while other fields remain open for development.
- The proposed NPS does not list geothermal aquatic and wetland habitats or the microbiotic life forms within them. Comprehensive surveys of microbiota would be prohibitively expensive, and it is not clear how a like-for-like remediation effort may be carried out in terms of transferring affected life forms to an alternative environment. An extension of the fund idea mentioned above could address that.

We would be happy to discuss any of these points further with officials.

Yours faithfully



Brian White
Executive Officer
New Zealand Geothermal Association