FURTHER SUPPLEMENTARY STATEMENT OF
ANDREW CLIFFORD SCHOLLUM

Statement of qualifications and experience

1. My full name is Andrew Clifford Schollum. I am employed in the Ministry for the Environment as a Senior Adviser in the Natural Systems Policy Team within the Natural and Built Environment Policy Directorate. I have been employed by the Ministry since April 2008.

2. My qualifications and experience are set out in my initial statement to the Board of Inquiry.

Scope of statement

3. This statement provides answers to the following supplementary questions directed to the Ministry for the Environment by the Board of Inquiry for the proposed National Policy Statement for Renewable Electricity Generation (the proposed NPS):

   A. "What are the factors when it comes to the identification and assessment by generators of potential sites and energy sources for renewable electricity generation that central government would want to make sure were included in the inferior instruments? What criteria would central government like to see in those instruments? For instance, is transmission an important factor?

   B. Should the local decision maker take into account the effect of energy efficiency measures on electricity demand when considering an electricity generation proposal?

   C. Could you provide us with information on the Crest Energy Ltd proposal to develop an array of tidal turbines in the mouth of the Kaipara Harbour, in particular the processing timeframes and the scope of the section 92 requests for further information?

   D. Can MfE provide any examples of regional and district council instruments which attempt to provide for/recognise/support renewable generation projects?

E. How does the proposed NZCPS define 'coastal environment' in terms of section 6(a) of the Act?

F. What is the scope of the Government's second phase of resource management reform?

G. What are the implications of the change of Government on the proposed NPS, and in particular what are the implications of the new Government's decisions to (among other things) review the NZES, repeal the Renewables Preference Act and release a draft revised Government Policy Statement on Electricity Governance?

H. Do the provisions of the proposed NPS take precedence over Water Conservation Orders in instances where both are relevant considerations?

I. In order to give effect to policy 3, are local authorities required to translate the concept of 'reversibility' into their planning documents? If so, what is the most effective means of doing this?"

J. In the definition of small and community-scale renewable electricity generation, why did MfE consider it desirable to exclude 'offshore wind, tidal and wave generation'? (see Interpretation of the Proposed NPS)

K. Do you have any information on the percentage of electricity generation project development costs associated with consenting under the RMA?

- Have you any information to assist in clarifying whether this proposed NPS will reduce these costs?
- Do you have any information on the costs of RMA processes for 'renewing' resource consents for *existing* projects?

A. "What are the factors when it comes to the identification and assessment by generators of potential sites and energy sources for renewable electricity generation that central government would want to make sure were included

in the inferior instruments? What criteria would central government like to see in those instruments? For instance, is transmission an important factor?

4. At the point of finalising the proposed NPS, it was considered that there was an insufficient evidential basis to enable officials to nominate and specify factors or criteria at a national level for inclusion in plans and policy statements across the country. During the policy development process officials did, however, consider a range of potential matters including:

- The physical scale of effects – monitoring structures and research-scale installations are likely to have a relatively limited scale and/or scope of effects
- The temporal scale of effects – the effects of monitoring structures in particular are likely to be temporary
- The need to gather data to enable an accurate assessment of the quantity, quality and characteristics of a particular energy resource
- The need to gather data upon which to enable an accurate assessment of the effects that might be associated with a full-scale proposal – a factor that is relevant to both new technologies and established technologies in new locations
- The need to ensure that the effects of the monitoring or research-scale proposal are not confounded with the effects of any potential proposals that may arise in the future.

5. Noting that the proximity to transmission infrastructure will influence the eventual effects signature of a generation proposal, as far as I can recall, "transmission" *per se* was not one of the matters that officials considered including as a relevant factor during the development of this policy.

B. Should the local decision maker take into account the effect of energy efficiency measures on electricity demand when considering an electricity generation proposal?

6. In drafting the proposed NPS we sought to *elaborate* the meaning of sections 7(i) and 7(j) of the RMA in particular. We did not, however, seek to replace the judgement of decision-makers on the relevance or relative importance of particular elements of Part Two of the RMA when considering specific proposals – including section 7(ba) of the RMA "the efficiency of the end use of energy".

C. Could you provide us with information on the Crest Energy Ltd proposal to develop an array of tidal turbines in the mouth of the Kaipara Harbour, in particular the processing timeframes and the scope of the section 92 requests for further information?

7. The executive summary of the assessment of environment effects associated with Crest Energy Ltd's original application for resource consent and the executive summary attached to the revised application together provide a useful overview of the proposal. I have provided copies of these executive summaries in **Appendix 1** of this statement.

8. I have included tables in **Appendix 2** of this statement which set out the consent processing timeframe for the Crest Energy Ltd proposal and summarise the information requested by via section 92 of the RMA.

D. Can MfE provide any examples of regional and district council instruments which attempt to provide for/recognise/support renewable generation projects?

9. I have provided examples of regional and district council provisions addressing renewable electricity generation in **Appendix 3** of this statement. I would like to note that, as well as helpfully updating the examples of planning provisions I

provided in Appendix 3 to my original statement, the Electricity Efficiency and Conservation Authority (EECA) has also advised me that it actively submits on regional and district plans seeking the inclusion of the following provisions:

- To recognise the potential for and maximise the development of renewable energy resources.
- To recognise and protect the local, regional and national benefits (social, economic, cultural and environmental) of renewable energy generation of various scales and those associated transmission and distribution networks.
- To provide for the development, operation, maintenance and upgrading of existing and future renewable energy activities while, as far as practicable, avoiding, remedying or mitigating the adverse effects on the environment.
- To recognise the importance and quality of the existing and potential renewable energy resources.
- To manage activities that adversely affect renewable energy infrastructure including reverse sensitivity.
- To ensure existing and future infrastructure and utilities are managed in a manner which achieves as much consistency across local authority boundaries as reasonably practicable.
- To recognise and provide for the locational requirements of renewable energy.

E. How does the proposed NZCPS define 'coastal environment' in terms of section 6(a) of the Act?

10. The definition of "coastal environment" is discussed on pages 29/30 of the section 32 evaluation[1] of the proposed New Zealand Coastal Policy Statement (NZCPS). I consider that the following discussion is particularly relevant:

> *"It is recognised that the coastal environment cannot be defined by one set of criteria that would be able to be applied nationally. Rather it is more logical for local authorities to define the extent of the coastal environment at the regional and district level in a manner that takes into account the local settings. In considering local settings there are however a range of nationally consistent matters that should be considered and on which guidance can be provided."*

[1] http://www.doc.govt.nz/publications/getting-involved/consultations/current/proposed-new-zealand-coastal-policy-statement-section-32-report/

11. The relevant policy of the NZCPS in terms of defining the coastal environment is:

> ***"Policy 1 The coastal environment***
>
> *In promoting the sustainable management of the coastal environment, policy statements and plans shall recognise that the coastal environment includes, at least:*
>
> *(a) the coastal marine area;*
>
> *(b) land and waters where coastal qualities or influences are a significant part or element;*
>
> *(c) land and waters affected by active coastal processes;*
>
> *(d) areas at risk from coastal hazards;*
>
> *(e) coastal vegetation and habitat; and*
>
> *(f) landscapes and features that contribute to the natural character, visual qualities or amenity values of that environment.*

F. What is the scope of the Government's second phase of resource management reform?

12. The government's overarching objective for Phase Two of its resource management reform programme is to achieve least cost delivery of good environmental outcomes. This objective is supported by the four sub-objectives of:

- providing greater central government direction on resource management
- improving economic efficiency of implementation without compromising underlying environmental integrity
- avoiding duplication of processes under the Resource Management Act and other statutes
- achieving efficient and improved participation of Māori in resource management processes.

13. At this year's annual conference of the New Zealand Planning Institute, the Minister for the Environment stated that:

> *"Phase Two is a far more complex reform process [than the first phase of reform][2] with 10 related work streams. The first four work streams involve greater central Government direction to improve management of aquaculture, infrastructure, urban design and water. There is also a major job to develop the scope, functions and structure of the proposed Environmental Protection Authority.*
>
> *A further four work streams involve better alignment of the Resource Management Act processes with those of the Building, Conservation, Forests, and Historic Places Acts. The final work stream involves a number of generic RMA processes that were too complex to include in Phase One of the reforms.*
>
> *"Due to the detailed and complex nature of the second phase of the RMA reform programme, work will progress at a more modest pace. It will involve a number of advisory groups and significant opportunities for public consultation and engagement. There is also a lot of detail to work through and it will take time to get it right.*
>
> *New Zealand is richly blessed with natural resources. The Government's resource management reforms are about ensuring we manage our resources more effectively and efficiently to deliver both economic and environmental benefits for future generations."*

G. What are the implications of the change of Government on the proposed NPS, and in particular what are the implications of the new Government's decisions to (among other things) review the NZES, repeal the Renewables Preference Act and release a draft revised Government Policy Statement on Electricity Governance?

[2] Addition mine

14. The government has not expressed any intention to review the proposed NPS in light of the decisions to review the New Zealand Energy Strategy, repeal the Renewables Preference Act and revise the Government Policy Statement on Electricity Governance. If the Board considers that it would be helpful, the Ministry for the Environment (via the secretariat) could assist the Board to engage an independent expert to provide an opinion on the implications of these decisions of government.

H. Do the provisions of the proposed NPS take precedence over Water Conservation Orders in instances where both are relevant considerations?

15. If the Board considers that it would be helpful, the Ministry for the Environment (via the secretariat) could assist the Board to engage an independent legal expert to provide an opinion on the relative effect of the provisions of a NPS versus the provisions of an operative WCO.

I. In order to give effect to policy 3, are local authorities required to translate the concept of 'reversibility' into their planning documents? If so, what is the most effective means of doing this?"

16. In the case of this NPS, where there is no requirement to insert provisions directly into plans, the requirement for Local Authorities to give effect to national policy statements is directive but not prescriptive. That is, local authorities are afforded the flexibility to give effect to national policy statements in a manner that best takes into account local factors and the local setting.

17. I note that the provisions of local authority planning documents and decisions made against them should already reflect the fact that section 3(b) of the RMA defines "effect" to include temporary effects.

18. I also note that the explicit consideration given to "reversibility" in paragraph 43[3] of the evidence of Andrew Guerin to the Environment Court in relation to appeals on the Meridian Energy Central Plains windfarm application [ENV 2009 WLG – 000046] appears to be in general accordance with the intent of the policy.

J. In the definition of small and community-scale renewable electricity generation, why did MfE consider it desirable to exclude 'offshore wind, tidal and wave generation'? (see Interpretation of the Proposed NPS)

19. Section 5.2.5.2 on page 46 of the section 32 evaluation of the proposed NPS includes the following statement:

> *"Marine generation has been excluded in the definition of small and community-scale projects because it has not been possible to clearly establish the scale of effects that could be expected to be associated with a project of less than 4 MW installed capacity."*

20. I note, for instance, that the pre-production prototype of the Pelamis wave energy converter is 120m long and has an installed capacity of 750KW. A 4 MW array of wave energy converters could occupy a significant stretch of the coastal environment.

K. Do you have any information on the percentage of electricity generation project development costs associated with consenting under the RMA?

- **Have you any information to assist in clarifying whether this proposed NPS will reduce these costs?**

[3] "The windfarm proposal has particular compatibility with the concept of reversibility of adverse effects as set out in policy 3 above. Should the windfarm permanently cease to operate in whole or in part, the turbines and other infrastructure that create the majority of the ongoing adverse effects of the activity can be removed and their effects eliminated (or "reversed").

- **Do you have any information on the costs of RMA processes for 'renewing' resource consents for *existing* projects?**

21. The Ministry for the Environment does not hold data on the costs of either acquiring new consents or renewing existing consents. Cost information is likely to be commercially sensitive and, because the specific commercial and environmental factors at play in particular cases will be highly relative, an average cost estimate could be of limited value. The Board might, however, wish to direct this question to generators, who may be better placed to assist.

22. The Ministry for the Environment's evaluation of the benefits and costs of the proposed NPS (section 32 analysis) concluded on page 55 that:

> *"Because of the high-level guidance provided by the proposed NPS and the complexity of the marketplace and regulatory framework within which it will apply, it has not been possible to accurately quantify the costs and benefits of the proposed Objective and policies. However, it is possible to identify areas where costs and benefits are expected and to make preliminary estimates of the potential economic costs of the proposed NPS.*
>
> *The principal benefits … of the proposed NPS can be summarised as follows:*
>
> - *the proposed NPS will promote an increase in the proportion of electricity generated from renewable sources in accordance with the government's target for renewable electricity generation of 90 per cent by 2025. This will result in the development of a diverse and resilient generation sector, which will in turn increase the security of electricity supply. A reduced dependence on fossil-fuel generation will minimise the country's exposure to fluctuations in resource (oil and gas) prices, limit the extent of its economic liabilities on the international carbon market flowing out of New Zealand's international climate change obligations, and have positive implications for the wellbeing of New Zealanders*

- *clear statutory recognition of the national benefits of renewable electricity generation provides generators with a degree of certainty that decision-makers will give appropriate consideration to these benefits when considering plan provisions and applications.*

July 2009

Andrew Clifford Schollum

APPENDIX 1: OVERVIEW OF CREST ENERGY LTD PROPOSAL

A. ASSESSMENT OF ENVIRONMENTAL EFFECTS – JULY 2006

EXECUTIVE SUMMARY

INTRODUCTION

It has been recognised for many years that the security of electricity supply is a matter of serious concern in New Zealand, and that shortages of electricity pose a significant risk to New Zealand's sustainable economic growth.

CREST proposes to construct a marine turbine generation power station (the CREST Project) in the Kaipara Harbour in northern New Zealand, comprising up to 200 completely submerged Rotech Tidal Turbine (RTT) marine turbines with a total generating capacity of around 200MW.

Under the provisions of the Resource Management Act 1991 (RMA), resource consents are needed for activities associated with the CREST Project. Applications for resource consents are set out in Part 1 of the present document, and as required by the Act, the applications are supported by an Assessment of Effects on the Environment ("AEE") provided as Part 2 of this document.

CREST has focussed on developing marine turbine arrays for harnessing energy from tidal currents. Over the past two years CREST personnel have been involved in discussions and negotiations with UK developers of marine turbines, and CREST has entered into a commercial agreement with Lunar Energy Ltd for the application of that company's particular technology in New Zealand.

Tidal energy is absolutely reliable. A supplier can predict when the supply will be available and in what quantities so that it can be matched with other sources to meet the load demand. In this respect tidal energy is significantly better than many renewable technologies. Solar, wind and wave energy are solely reliant on variable and unpredictable climatic conditions. Tidal stream power generation using marine turbines has been identified as having huge potential for provision of electricity in many parts of the world. Marine current turbines have significant operational, economic and environmental advantages in power generation.

The CREST Project provides significant and environmentally sustainable electricity generation in an area of New Zealand where there is a particular strategic need for such provision. The CREST Project presents an opportunity to provide significant generation without over-riding adverse environmental effects and associated concerns.

The CREST Project will entail the generation of around 200MW of electricity which if generated by combustion of fossil fuels would result in annual emissions of between

1,000,000 tonnes and 1,500,000 tonnes of CO2. This equates to a nominal offset saving of this amount. Potential offset savings in greenhouse gas emissions should be given due regard by consent authorities in evaluating consent applications pursuant to Section 104E of the RMA.

The marine turbines are proposed to be located near the entrance to the Kaipara Harbour with a 30 km sub-sea buried cable connecting to a land-based substation and subsequent connection with the electricity grid, near the Hoteo River.

In selecting a route for a transmission line, CREST evaluated three alternatives: (1) a shorter distance connection between the Generation Array and the South Head of the Kaipara Harbour; (2) a shorter connection with the northern shoreline; and (3) a longer sub-sea cable connecting the Generation Array with an eastern landfall on the bank of the Hoteo River.

CREST considered that the risk of adverse environmental interactions increases dramatically with increased extent of land-side transmission and associated aerial lines and concluded that the eastern sub-sea route was the most appropriate. The chosen sub-sea transmission route forms an almost direct line between the North Channel entrance and the south east land based DC converter station, except where it follows the Hoteo River loop channel.

Potential environmental effects associated with the CREST Project are assessed as follows:

- Effects associated with loss of energy from harbour flows and subsequent impact on sand deposition, will be less than minor based on the relative scale of the CREST Project and the scale of tidal flow and energy in the Kaipara Harbour.
- Adverse effects in terms of surface turbulence, seabed erosion and effects on benthic organisms are not anticipated as a consequence of the depth of the array, duct configuration and location in an area of stable and hard seabed.
- Formation and development of new seabed habitats, and provision of new artificial reef structures could prove beneficial for the biological environment.
- The risk of possible collision by fish and seabirds is considered to be extremely low, and will be mitigated in any case by the fluid dynamics characteristics of the rotors. The deep location of the marine turbines on the seabed and the presence of protective cowlings will serve to further mitigate risks. Noise emissions will also deter animals in the immediate vicinity of the turbines, and it is proposed that design measures (no gearbox) will be employed to ensure noise emissions from the units are managed to avoid adverse effects.
- Cable installation will disturb fauna and flora in the area, especially seabed communities. However, impacts of this nature are likely to be temporary, with short-term recovery. Once any cabling has been buried or secured, there will be minimal impact thereafter.
- No hydrocarbon lubricants will be associated with the generation devices and transmission cables and thus lubricants will not have a potentially significant effect on water quality. New anti-corrosion and anti-fouling agents will be marine industry accepted standards in widespread use worldwide.
- EMF field strengths will not be a factor considering the adoption of DC mode for generation and transmission to shore.

- The presence of the Generation Array will necessitate restrictions on anchorage and fishing in the immediate vicinity. Appropriate navigational warnings will be depicted on marine charts and deployed on site to ensure harbour users are aware of the location of the turbine array.
- The CREST Project will pose no visual impact given its completely submerged deployment. Maintenance and installation vessels will be observable, but the presence of these vessels is completely consistent with accepted patterns of use in the harbour.
- There will be no environmental or resource management implications from connection to the transmission grid on land – use will be made of existing structures or will use approved third party providers and existing easements and rights if new structures are needed.
- Reference to independent publications and ARC archaeological databases indicates that the CREST Project will not interact with marine archaeological resources.
- All materials for the CREST Project will be conveyed on standard road transport vehicles – items exceeding road transportation limits will be transported by water where appropriate.
- Turbines for the CREST Project will provide direct and indirect economic benefits to the community in which construction will be located. The CREST Project could contribute between 100 and 400 full time equivalents per 100 MW, across the anticipated 3 year fabrication and installation period, and around 5-10 full time equivalents during routine operation.
- CREST acknowledges the significant cultural and environmental importance of the Kaipara Harbour and is engaged in ongoing consultation with Te Uri o Hau Ngati Whatua and with Ngati Whatua Nga Rima o Kaipara ki te Tonga representing all affected ancestral marae in respect of their particular concerns for the Kaipara Harbour.

CREST has recognised the comments and concerns identified during early consultation with various parties and given consideration to measures to mitigate adverse effects including those which cannot be avoided or remedied. CREST's analyses have indicated very few adverse effects are likely to accrue from the CREST Project. However there are some areas where CREST Project activities might interact with other activities and uses of the harbour, and where mitigation might be warranted. These matters relate in particular to:

- Effect on the mauri of the Kaipara Harbour;
- Fishing access;
- Perceived risk to marine megafauna in general and Maui's Dolphins in particular; and
- Potential interaction with sand extraction operations.

These areas are addressed as follows in terms of potential mitigation options:

- In respect of potential effects on the mauri of the Kaipara Harbour, CREST is consulting with tangata whenua to identify ways in which the CREST Project can proceed in a manner consistent with protecting and strengthening of the mauri of the Kaipara Harbour.

- The presence of the turbines will necessitate some restrictions on fishing in the immediate vicinity of the generator strings. It will be possible however to locate generators away from those areas valued highly by local recreational fishers (e.g. the "Graveyard"). Consistent with recent artificial surfing reef seabed structures it is widely accepted that the Generation Array may provide additional environmental benefits through creation of de-facto artificial reefs and refugia in the vicinity of the harbour entrance.
- The risks for any marine creature passing through the rotors of the tidal turbines will be mitigated in large part by the hydrodynamic flow of the currents, and through the known ability of marine animals to detect seabed structures and thereby take evasive action.
- The intensity and frequency of noise emanating from the turbines is not considered to pose a potential risk to marine megafauna. Operational noise for a 1MW unit is comparable with the level of noise emanating from a commercial boat/small car ferry, with sound falling away over distance and without a noticeable cumulative effect.
- In regard to EMF effects, the undersea cables will carry bipolar DC electricity which is recognised to have minimal emissions. In addition, cables will be buried, and armoured thereby achieving residual field strengths that will be within background measurements.
- The CREST Project has been sited to avoid interference with existing and potential future sand extraction operations. In particular the cable route has been selected to avoid sand mining operations in the mid harbour area. Analysis of likely current energy loss indicates that the CREST Project will not cause changes in the sand deposition regime through the harbour entrance.
- The CREST Project turbines will not be visible from the surface.
- CREST continues to undertake an ongoing consultation programme with affected parties to keep them advised of progress and to provide a mechanism for all parties to communicate concerns or issues.
- CREST proposes that a range of "Best-Practice" management plans (including a Spill Contingency Plan and Monitoring Plan) will be prepared, and finalised in consultation with appropriate regulatory agencies and other stakeholders.

On the basis of the analysis set out in this AEE the CREST Kaipara Harbour Marine Turbine Project is consistent with relevant Central Government policy directions, and with District and Regional Plan policies and objectives. The activities associated with the CREST Project are not anticipated to result in significant adverse effects on the environment. Where any less-than-significant effects are anticipated, there are a number of significant mitigation measures that have been developed.

Accordingly the AEE concludes that the consents for the CREST Project should be granted as sought.

B. PROJECT UPDATE AND FURTHER INFORMATION PURSUANT TO SECTION 92 RMA - JULY 2007

EXECUTIVE SUMMARY

INTRODUCTION

CREST Energy Limited (CREST) proposes to undertake a marine current generation project (the CREST Project) in the Kaipara Harbour in northern New Zealand, comprising deployment of up to 200 submerged marine turbines with a total generating capacity of around 200MW.

In July 2006 CREST applied for resource consents for the CREST Project. Applications were publicly notified in November 2006, with 72 submissions received in support and 91 in opposition.

Since early 2007 CREST has undertaken consultation with submitters and other interested parties, and based on feedback received, CREST has refined a number of project elements as follows:

- Connection to land-side grid now via subsea cables to Pouto Point.
- River crossing under the bed of the Northern Wairoa River at Tikinui.
- New applications lodged for the revised cabling configuration.
- Previous applications relating to the eastern cable and Hoteo substation will be formally withdrawn once the replacement consents have been received by the Northland Regional Council.
- All land-side components are now proposed to be located within Kaipara District. A Certificate of Compliance for land-side components pursuant to s139 of the Resource Management Act 1991 has been issued by Kaipara District Council.

In April 2007 CREST received a further s92 request from the Northland Regional Council. This report sets out CREST's response to the April 2007 s92 request, along with additional background information on project refinements.

PROJECT REFINEMENTS

All proposed refinements fit within the envelope of effects described in the 2006 suite of applications, other than the subsea cabling, which is the subject of new applications lodged with the Northland Regional Council.

Turbine Technology

In the light of concerns raised by submitters, CREST undertook a further evaluation of available turbine technologies to determine whether there might be options which might be considered more acceptable to submitters. This evaluation identified several alternative turbine configurations including one developed by Openhydro Group Ltd. The Openhydro turbine has an open centre which would provide unimpeded passage for marine fauna. The

turbine is designed to generate energy at a slow rotational speed, has only one moving part and no seals. It has a self-contained rotor and as there is no requirement for a gearbox and hydraulics, no noise will be generated as a result operation of operation of the turbine.

Depth of Deployment

The original application proposed that the CREST turbines would be located in water deeper than 30 metres, with a minimum surface clearance of greater than 5 metres. CREST now proposes to install the turbine units in water deeper than 35 metres, with a minimum surface clearance of 10 metres.

Subsea cable alignment

The original applications involved two 30 km subsea cables from the generator array to a landfall at Hoteo and a substation constructed adjacent to the Hoteo Rover at Glorit.
CREST's revised proposal is that these cables will be replaced by two approximately 7km cables connecting the array to a landfall at Pouto, with land-side transmission via Northpower's network, to a full-scale substation to be developed adjacent to the Northpower substation at Ruawai.

Once the applications for the Pouto Cable have been formally received by the Northland Regional Council, CREST will withdraw applications for consents associated with the Hoteo Cable and Substation. This change will bring the entire project under the jurisdiction of the Northland Regional Council.

Project Staging and monitoring

Given that the land-side reticulation will now be able to be upgraded in a progressive manner, it is now feasible to develop the CREST Project in a staged manner rather than the one-off development embodied in the original application.
Units are now proposed to be deployed according to the following stages:

- **Stage 1** – Up to 20 units (total)
- **Stage 2** – Up to 40 units (total)
- **Stage 3** – Up to 80 units (total)
- **Stage 4** – Up to 200 units (total).

Monitoring data would be evaluated by the Consent Authority under the auspices of a s128 review after each stage and before moving to the next stage if that is considered appropriate. Monitoring will include a wide range of environmental parameters and monitoring of the integrity of the turbine structures themselves.

Land-side Reticulation

Land-side reticulation of the project is now proposed via Northpower's transmission network, and comprises the following components**Error! Reference source not found.**:

- A cable landfall at Pouto Point;

- Underground cable, along Pouto Road for around 1 km to connection with the existing power line.
- Direct connection via a small substation to the existing 11kv network for project initiation;
- Progressive upgrade of transmission lines from Pouto to the existing Ruawai cable crossing at Tikinui
- Installation of buried cable duct under Wairoa River adjacent to existing Northpower cross-river cables at Tikinui
- Cable connection either side of the Tikinui river crossing;
- Upgrade to existing substation at the Ruawai substation site.
- Progressive upgrade of transmission lines from Ruawai to Dargaville

Kaipara District Council has issued CREST with a Certificate of Compliance, pursuant to s192 of RMA, for land-side infrastructure elements of the CREST project.

Dealing with Uncertainty

The Environment Court has stated that uncertainty can be addressed by proceeding with caution, and that that following steps were appropriate for a major marine farming activity in an area identified as environmentally sensitive by submitters and appellants. CREST's view is that these steps would apply equally in respect of the CREST Project:

- the activity would need to be implemented progressively (in stages)
- comprehensive monitoring should be undertaken at each stage to check expected outcomes on marine life;
- power to review the consent under section 128 to impose more strenuous conditions, including preventing further areas, or stages, being utilised (developed);
- recognition of the powers of the Court to cancel or modify the consent under section 314(1)(a)(ii) and/or section 314(1)(e) in appropriate cases.

Mitigation - Kaipara Harbour Trust

As an additional mitigation initiative CREST proposes to establish a Kaipara Harbour Trust, involving representatives from various harbour stakeholder groups interested in the harbour. The Trust will provide environmental benefits to the community at large. The objective of the Trust will be to distribute funds from the environmental mitigation package provided by Crest Energy against projects and initiatives to:

(i) improve the environmental health of the Kaipara Harbour; and
(ii) provide associated socio-economic opportunities.

CREST proposes that the Trust would operate independently of CREST, with its own governance structure, although CREST would retain a representative on the Trust Board. The Trust would be able to solicit financial contributions from other sources and could provide a mechanism to coordinate a range of environmental management initiatives in the Kaipara Harbour. CREST proposes that the "Environmental Mitigation Package" would

comprise a shareholding of 4% of the common equity of Crest Energy Limited. All proceeds of the Trust would be disbursed in accordance with the objective of the Trust.

SECTION 92 REQUESTS FOR FURTHER INFORMATION

The following paragraphs summarise key findings from s92 analysis set out in this report.

Stability of Generation Units

The turbine arrays will be concentrated to occupy a minimal space within the application area, and will be deployed in water depths of 35m or greater. At this depth there will be minimal risk of exposure to short period waves generated in Kaipara Harbour as the wave energy of these waves is concentrated close to the surface.
In place the turbine units will be subject to a combination of loadings, which are able to be well defined using established ocean/offshore engineering theory and practice, experience directly applicable from the offshore oil and gas industry.
Detailed project design will ensure the stability of turbines and their support structures, with appropriate offshore factors of safety using technology from the offshore oil and gas industry.

Seabed Bathymetry and Sediment Processes

The seafloor in the proposed deployment area is comprised of coarse, consolidated sands, with occasional sand ripples. The peak current speed is such that scour holes are likely to develop around each leg, but the extent of scour will be localised to a small area immediately downstream of the turbine. Given the localised downstream effects of each individual unit, the anticipated wide down-current spacing of the units and the installation of scour control measures, the effects of the full array of generation units on seabed bathymetry are not expected to be significant

Energy Extraction Effects

Turbine modelling indicates that the turbulence through and around the turbine would be less than the natural turbulence occurring due to the fluid mixing through the tidal channel.

Surface Turbulence Effects

Each turbine will create a maximum 120mm ripple on the sea surface. This would be almost imperceptible to the human eye and is comparable to the magnitude of ripples created in less than 5kts of wind acting on a calm surface. The tidal turbines are not expected to create any surface turbulence over and above what is experienced in the entrance to the Kaipara Harbour which is naturally a highly turbulent environment.

Nature of Seabed, Stability of Units and Sediment Characteristics

Side scan sonar surveys have confirmed that the proposed deployment area is comprised of a flat consolidated sand bottom (**Error! Reference source not found.** and **Error! Reference source not found.**).

Areas of rippled sand can be found at various locations throughout the proposed deployment area and at the south western and north eastern ends of the proposed cable. The ripples along the cable route are approximately 15 m from ridge to ridge and up to 500 mm high. Given the size of the proposed turbine units and their mass, the relatively small sand ripples present are not expected to affect the ongoing stability of the individual marine turbines.

Decommissioning and Removal of Submarine Asset

The decommissioning and removal of the tidal turbine units and gravity base at the end of their economic life will essentially be the reverse of installation – units would be physically removed from the seabed. Given the short term nature of the decommissioning process and the small area of seabed directly affected, no long term effects on biological resources, fishing or boating activity associated with decommissioning are anticipated.

Marine Biology - Collision Risk, Noise, Effects on Breeding

The Openhydro turbines will mitigate risk of adverse effects on marine biology. A potentially significant positive environmental effect will be the creation of a refuge (marine reserve) for fish due to the restriction on recreational and commercial fishing use in a localised area around the generation units.

Proposed Antifouling Management

Crest is yet to finalise its optimal biofouling management, although 'fouling – release' is the preferred option. A biofouling management plan will be developed in consultation with the Northland Regional Council. However, even if copper antifouling protection is used, concentrations of leaching copper from the turbines would be well below background Cu concentrations in seawater, and orders of magnitude below both USEPA (2002) and ANZECC (2000) guidelines. No associated adverse effects are anticipated.

Recreational and Commercial Fishing

No significant interaction with recreational or commercial fishing in the harbour is predicted. CREST has increased the depth of generator deployment to 35m in recognition of fisheries interests.

Shore Based Control of Junction Box

The primary control of the sub-sea junction box will be achieved mechanically using pneumatic valves and pistons supplied from an air compressor electric pump and accumulator unit; and digitally using fibre optic cores. Management will be maintained via duplex digital communications and SCADA link to Northpower's Central Control Room located in Whangarei.

Potential Effects on Maritime Heritage

A detailed survey of the seabed will be undertaken prior to the placement of the turbines to ensure there is no damage to any remaining artefacts. CREST proposes that a protocol will be developed between CREST, NZ Historic Places Trust, Tangata Whenua and any other interested stakeholders, to address any marine archaeological resources identified, including advising the NRC and the New Zealand Historic Places Trust of any find.

Rodney District Council

The cable landfall and shore structures are now proposed to be re-located to Kaipara District Council jurisdiction. Consenmt applications to Rodney District Council and Auckland Regional Council will be withdrawn once applications for the new seabed cabling configuration have been formally received by NRC.

Cultural Impact Assessment

CREST has commissioned Te Uri o Hau to undertake an independent Cultural Impact Assessment (CIA) of the project. The CIA will be provided to NRC under separate cover.
The Kaipara Harbour Trust was developed partly in recognition of concerns raised by tangata whenua that local effects needed to be mitigated in a tangible manner.

APPENDIX 2: SUMMARY OF THE SECTION 92 REQUESTS FOR FURTHER INFORMATION ON THE CREST ENERGY LTD PROPOSAL IN KAIPARA HARBOUR

Seven requests for further information were directed to Crest Energy Limited in relation to its proposal in the Kaipara Harbour including three from Northland Regional Council, one from the Auckland Regional Council, two from Rodney District Council and one from Kaipara District Council.

The consent processing timeline for the Crest proposal is set out in table 1 below:

Table 1: consent processing timeline

Action	**Date**
Original Application Lodged	14 July 2006
Section 92 Request 1 - ARC,NRC, Rodney District Council	21 Aug 2006
Reply to Section 92 Request 1	15 Sep 2006
Original Application Notified	24 Nov 2006
Section 92 Request 2 - NRC and Rodney District Council	4 April 2007
Request to Kaipara District Council for Certificate of Compliance	18 May 2007
Section 92 Request3 - Kaipara District Council	19 May 2007
Reply to Section 92 Request 3	9 July 2007
Receive COC from Kaipara District Council	26 July 2007
Reply to Section 92 Request 2	31 July 2007
Revised Application Lodged	31 July 2007
Revised Application Notified	24 Aug 2007
Section 92 Request 4 - NRC	19 Dec 2007
Reply to Section 92 Request 4	30 Jan 2008
NRC Hearing	26-30 May 2008
NRC Decision Received	21 August 2008
Environment Court Hearing	8-18 Jun 2008

A summary of the information requested via section 92 is set out in **table 2** below:

Table 2: Summary of information requested

DATE RECEIVED	DATE OF REPLY	AGENCY	SCOPE OF S92 REQUEST
21 Aug 2006	15 Sep 2006	Auckland Regional Council	• Detailed description of the cable laying methodology including: • An assessment of the potential for the buried cables to be reworked and exposed in soft seabed sediment, and identification of potential threats to the cable • Details of navigational controls in the vicinity of the cables (p1 02). • Details of the proposed land based service facility • Discharge to land from substation • Biology and Hoteo River Cable Landing • More detailed description of the subtidal habitats of the Hoteo River • Identification of recreational fishing areas including scallop beds, in relation to the proposed cable route. • Describe any consultation and responses received from recreational fishing and interest groups in relation to the potential anchoring restrictions in the vicinity of the cable.
21 Aug 2006	15 Sep 2006	Rodney District Council	• Plans including site plans (indicating access, onsite parking, maneuvering, building and other structures referred to in the application, landscaping, any tree removal required (including details of tree height and species) and cable locations) and elevations (including details of general materials, finishes and colors etc). • Vegetation removal on land • Activities associated with the construction of the turbines and related items. • Earthworks • Is Crest Energy is a Network Utility Operator as set out in section 166 of the RMA. • Confirm that the applicant is requesting public notification of this application.
22 Aug 2006	15 Sep 2006	Northland Regional Council	• Navigation Information Request: • Gross Energy extraction • Heat Production • Lubricants • Location of generator array • Dimensions of turbine units • Foundation integrity

			• **Alternative generator unit installation methods** • **Incidental discharges during ballasting** • **Installation phasing** • **Turbine Dimensions and Rotor Sizes** • **Rotation and tip speed ranges.** • **"Spacing" distances** • **Biological residue from maintenance** • **Assessment of actual and potential environmental effects arising from maintenance of the generator sets.** • **Ability of marine mammals to navigate in turbid waters** • **Cross-reference information for AEE Appendix One** • **Relationship with recreational and commercial fishing areas** • **Energy extraction from the harbour entrance** • **Effects on the adjacent coastline at Pouto and other adjacent bathymetry?** • **Noise levels** • **Noise effects on marine mammals** • **Noise mitigation options** • **Plan(s), to greater scale than Figure 31** • **Land-based service facility description**
4 Apr 2007	**31 July 2007**	**NRC and RDC**	**NRC** • **Calculations or results of modelling stability of the generation units under maximum tidal flows and extreme adverse wave conditions.** • **Calculations or results of modelling of changes that may be expected to harbour seabed bathymetry and sediment processes due to the presence of the 200 generation units** • **Information from modelling and analysis on how energy extraction by the 200 units will affect water levels or flows** • **Information on any surface turbulence effects that may be created due the presence and/or operation of the generators.** • **Nature of the seabed where the units are proposed to be located.** • **Decommissioning and removal of units and other submarine asset at the end of their economic life,** • **Species specific information for this location arising from any scientific study or specific analysis in regard to:** • **The effects of project construction, physical presence and operation of the generation units, as well as discharges arising from maintenance of units on movements, breeding and migration of fish,**

			marine mammals and shellfish. • The effects on marine mammals and fish due to noise generated by the units. • The actual ecology of the Kaipara Harbour and its significance within the generation array area • Confirmation of the type of antifouling management coating that is proposed • More detailed information on the impacts of your proposal on recreational and commercial fishing, including effects on marine life as well as on the activity of fishing, not only at the generation array site but elsewhere within the Kaipara Harbour. • In regard to shore based control of the junction box and its various functions, how is this control to be achieved? • An assessment of the actual or potential effects of the proposal on maritime heritage (i.e. shipwrecks). • A Cultural Impact Assessment is requested in relation to the application **RDC** • A detailed landscaping plan including details of species to be planted, size at planting and materials for fences etc. • Details of building materials and colours for all buildings. • Details of any exterior lighting proposed in association with the substation or car parking area. • Confirmation regarding cables and transmission structures (as set out in s92 letter dated 21/12/06). • Details of turbine construction site and construction methodology (in particular in relation to vehicles moving to and from the site).
19 May 2007	9 July 2007	Kaipara District Council	• Please provide detailed plans which accurately identify the site of the proposed substation. The plans should identify Road Reserve boundaries and the position of the substation within the reserve. It should also identify nearby residential buildings. • Please provide scaled drawings of the substation and include details of the landscaping, it any, and finishing proposed to the area as detailed in 10.6.1(5)(a) and (b). • Please provide details of any noise emissions generated by the substation. • Council requests that all of these landside components be detailed on an overall plan in order for the project implications to be fully understood.
19 Dec 2007	30 Jan 2008	NRC	• Flow Modelling changes in terms of scour and deposition whether in the near, medium or far field. • Information on the levels of electromagnetic fields (emfs) arising separately from the generation units, their interconnecting cable networks, and the transmission cabling to shore and their effect on sharks and other elasmobranchs. • Noise levels of 20, 40, 80 and 200 units operating at maximum output (i.e. at maximum tidal flow),

			including identification of natural background levels at the site, together with an assessment of total noise levels on relevant fauna such as cetacean and other megafauna that are susceptible to noise. • **Whether the noise might dissuade mammal entry/exit through the harbour entrance at times when the array is generating or alternately attract them and whether either of such outcomes could give rise to adverse effects on these animals.** • **Assessment, in dollar terms, of the expected benefits of the proposal on the wider New Zealand economy.** • **An estimate of the gross costs of decommissioning 20, 40, 80 and 200 generation units and all associated network and transmission cabling and other devices and material (e.g junction/control equipment, scour protection) from the seabed.**

APPENDIX 3:

EXAMPLES OF REGIONAL AND DISTRICT COUNCIL INSTRUMENTS RELATING TO RENEWABLE ELECTRICITY GENERATION

RECENT EXAMPLES

Taranaki Regional Policy Statement February 2009 (Proposed as amended by Council decisions)

Following the hearing proceedings and drawing on the submission of EECA and others, the Council amended its Proposed RPS to include the following provisions [changes are shown in underline, words to delete are shown in strike through]:

OBJECTIVE
"To promote the use and development of renewable sources of energy in a manner that avoids, remedies or mitigates adverse effects on the environment."

POLICY
"The use and development of renewable energy resources will be ~~encouraged as far as is practicable and appropriate in a manner that does not compromise the sustainable management of natural and physical resources or the achievement of other policies in this Regional Policy Statement.~~ promoted whilst avoiding, remedying or mitigating adverse effects on the environment as far as practicable."

"The protection of the natural character of the coastal environment shall be achieved by having regard to the following criteria in determining appropriate subdivision, use, development or occupation of he coastal environment:

(n) the benefits to be derived from the use and development of renewable energy sources, including national, regional and local benefits."

Horizons Regional Policy Statement – Proposed One Plan (Notified May 2007)
Changes following consultation (pre-hearing) are shown in underline, words to delete are shown in strike through:

"Objective 3-1A: Energy
There will be an increase in the use of renewable energy resources and an improvement in energy efficiency."

"Policy 3-4: Renewable energy
(a) ~~All persons exercising functions and powers under the RMA~~ The Regional Council and territorial authorities shall have particular regard to:
i. The social, economic, cultural and environmental benefits of the use and development of renewable energy resources including:
• contributing to reduction in greenhouse gases

• reduced dependency on imported energy sources
• reduced exposure to fossil fuel price volatility
• security of supply for current and future generations
ii. The Manawatu-Wanganui Region's potential for the use and development of renewable energy resources
iii. The need for renewable energy activities facilities to locate where the renewable energy resource is located
(aa) The Regional Council and territorial authorities shall give preference to the development of renewable energy generation and use of renewable energy resources ~~shall be preferred~~ to the development and use of nonrenewable energy resources in policy development and resource consent decision making.
(b) ~~Local authority decisions and controls on land use should~~ The Regional Council and territorial authorities shall generally not restrict the use of small domestic-scale renewable energy production for individual domestic use."

Wellington Regional Policy Statement March 2009 (Proposed)

OBJECTIVE
"The region's energy needs are met in ways that:
(a) improve energy efficiency and conservation;
(b) diversify the type and scale of renewable energy development;
(c) maximise the use of renewable energy resources;
(d) reduce dependency on fossil fuels; and
(e) reduce greenhouse gas emissions from transportation."

POLICY
"Recognising the benefits from regionally significant infrastructure and renewable energy – regional and district plans
District and regional plans shall include policies that recognise:
(b) the social, economic, cultural and environmental benefits of energy generated from renewable energy resources including:
(i) security of supply and diversification of our energy sources;
(ii) reducing dependency on imported energy resources; and
(iii) reducing greenhouse gas emissions."

Wellington District Plan Change 32 (Operative - as amended following Environment Court appeal)

Changes are shown in underline, words to delete are shown in strike through

OBJECTIVE
"To encourage efficiency in energy use, and the development and use of energy from renewable sources"

POLICY
"Encourage the efficient use of energy and the greater use of renewable energy."

POLICY
"Provide for renewable energy development, while:
• Avoiding, remedying or mitigating adverse effects on the environment; and
• Recognising the potential renewable energy resources that exist in the Rural Area including in identified ridgeline and hilltop areas."

Proposed Combined Wairarapa District Plan date (Notified August 2006 - as amended by decisions)
Changes are shown in underline, words to delete are shown in strike through.

OBJECTIVE
"To move the Wairarapa towards a sustainable energy future by encouraging energy efficiency and the generation of energy from renewable sources."

POLICIES
"(a) Encourage energy efficiency through conservation and efficient energy use.
(b) Provide for renewable energy generation, while avoiding, remedying or mitigating the adverse effects, particularly of large scale and/or prominent facilities.
(c) To recognise and promote the use of environmental management codes of practice and best practice methods in energy generation, distribution and use.
(d) To recognise the operational requirements of energy generation and distribution and its benefits to the wellbeing of the Wairarapa in setting and implementing appropriate environmental standards and assessing resource consent applications to avoid, remedy or mitigate the adverse effects on the environment."

OPERATIVE PLANNING PROVISIONS

Auckland Regional Policy Statement (Notified February 1994 – Operative August 1999)

POLICIES
"Renewable energy sources shall be encouraged by:
(i) promoting alternatives to the use of non-renewable fossil fuels;
(ii) promoting energy production from the Region's renewable energy assets, if such production is consistent with the provisions of the RPS."

Bay of Plenty Operative Regional Policy Statement (Notified September 1993 – Operative December 1999)

OBJECTIVE
"Reduced reliance on fossil fuels and increasing use of renewable energy resources."

POLICIES
"To promote the transfer from non-renewable to renewable sources.
To advocate that renewable energy sources within the region be managed sustainably.
To promote the utilisation of solar, wind, waste and other renewable energy resources.
To minimise the use of fossil fuel for energy production.
To reduce fossil fuel use through the promotion of effective public transport."

Canterbury Regional Policy Statement (Notified October 1993 – Operative June 1998)

OBJECTIVE
"*Reduce Canterbury's dependence on nonsustainable energy sources."*

POLICIES
"Promote the use of energy from renewable sources, including the substitution of fossil fuels with renewable resources

Promote energy conservation and efficient energy use
Enable existing hydro-electricity infrastructure in the region to be managed, upgraded and enhanced provided appropriate conditions are met."

Gisborne Regional Policy Statement (Notified March 1994 – Operative August 2003)

OBJECTIVE
"To encourage the progressive development and use of costeffective and sustainable sources of renewable energy within the Gisborne Region."

POLICY
"To support Government initiatives on renewable energy.
To support energy generation from the region's renewable energy assets where such development is shown to be cost-effective, technically viable, and the effects of the development environmentally acceptable.
To promote greater use of cost effective renewable energy sources in production processes and activities and in the provision of commercial and domestic energy services."

Marlborough Regional Policy Statement (Notified October 1993 – Operative August 1995)

OBJECTIVE
"Promotion of the efficient production and use of renewable energy resources, consistent with the duty to avoid, remedy or mitigate any adverse effects on the environment."

POLICIES

"Encourage the production and use of renewable energy resources, consistent with the duty to avoid, remedy or mitigate any adverse environmental effects."

Northland Regional Policy Statement (Operative)

POLICY
"To encourage the consideration of alternatives to non-renewable energy sources in resource management decision making."

Nelson Regional Policy Statement (Notified July 1996 – Operative March 1997)

OBJECTIVE
"Sustainable use of energy through an orderly transition from nonrenewable resources to renewable resources."

POLICIES
"To promote the use of renewable sources of energy."

Otago Regional Policy Statement (Notified October 1993 – Operative October 1998)

OBJECTIVE
"To sustainably and efficiently produce and use energy taking into account community values and expectations.

"To encourage use of renewable resources to produce energy."

POLICIES
"To promote the sustainable management and use of energy through:
(a) Encouraging energy production facilities that draw on the region's renewable energy resources; and
(b) Encouraging the use of renewable energy resources, in a way that safeguards the lifesupporting capacity of air, water, soil and ecosystems and avoids, remedies and mitigates adverse effects on the environment, as a replacement for non-renewable energy resources: and
(c) Encouraging the sustainable development of Otago's renewable energy resources."

Southland Regional Policy Statement (Notified February 1994 – Operative December 1997)

OBJECTIVES
"*To promote the sustainable management of energy resources and reduce the Region's dependence on non-renewable energy resources."*

"To promote the use of renewable energy resources"

POLICIES
"Promote the efficient use of all energy resources."

The explanation to this policy recognises that *"Promoting efficient use will involve encouraging the introduction of more efficient technologies for the development and use of existing energy resources, supporting the development of alternative energy technologies and promoting where appropriate the use of renewable resources. Promotion of energy use from renewable resources, for example, wind, water, solar, wave, biomass, etc will reduce the Region's dependence on fossil fuels and better enable the needs of future generations to be met and avoid the adverse effects associated with such dependence."*

"Recognise and provide for the use and enhancement of existing hydro-electricity facilities."

Tasman Regional Policy Statement (Notified July 1994 – Operative July 2001)

OBJECTIVE
"Conservative and efficient use of energy, and reduced dependence on non-renewable energy resources."

POLICIES

"The Council will seek to provide for the continuation of energy generation, transmission, or use opportunities, while avoiding, remedying or mitigating the adverse effects of such actions on natural, heritage and amenity values of resources."

Waikato Regional Policy Statement Regional Policy Statement (Notified October 1993 – Operative November 2002)

OBJECTIVE
"To provide efficacy and conservation in the production, transmission and consumption of energy."

METHOD OF IMPLEMENTATION

"2) Encourage the use of alterative and renewable energy sources through community education."

GEOTHERMAL OBJECTIVE
"Sustainable management of the regional geothermal resource promoted by:

- *The allocation of some of the geothermal resource for take, use and discharge in a way that enables current energy needs and the reasonably foreseeable energy needs of future generations to be met, while avoiding, mitigating or remedying significant adverse effects on the Regional Geothermal Resource."*

GEOTHERMAL POLICY CLASSIFICATION SYSTEM
"Allocate the regional geothermal resource in a way that provides for multiple uses and the extent and variety of the regional geothermal resource"

METHOD OF IMPLEMENTATION
"Development Geothermal Systems: In the Waikato Regional Plan, identify large geothermal systems where development will be enabled because:

I. *the system contains few geothermal systems that are moderately to highly vulnerable; or*
II. *the existing geothermal features are significantly impaired by lawfully established existing takes; or*
III. *the system is already subject to large scale energy use and development."*

GEOTHERMAL OBJECTIVE - DEVELOPMENT GEOTHERMAL SYSTEMS
"Large scale take, use and discharge of geothermal energy and water enabled within the Geothermal System in a manner that:

- *is efficient and allows the controlled depletion of energy so as to provide for the energy needs of current and future generations;*
- *remedies or mitigates significant adverse effects on Significant Geothermal Features; and*
- *avoids, remedies, or mitigates adverse effects on other natural and physical resource including overlying structures (the built environment)"*

GEOTHERMAL POLICY - DEVELOPMENT GEOTHERMAL SYSTEMS
"Providing for large scale use and development of geothermal energy and water, promote efficient use of the resource and recognise there will be controlled depletion."

West Coast Regional Policy Statement (Notified May 1996 – Operative March 2000)

OBJECTIVE
"To promote the sustainable management of energy resources."

POLICIES
"Promote the sustainable management and efficient use of energy within the region energy within the region.
Co-operate with any Crown initiatives and policies, where practicable, that seek to promote greater energy conservation, efficiency and the use of renewable energy sources including the Government's Voluntary Agreements Scheme for reduction of CO2 emissions."

Central Otago District Plan (Notified April 1999 – Operative July 2008)

OBJECTIVE

"In the development of energy resources, to have particular regard to the use of natural and physical resources in a manner which avoids, remedies or mitigates significant adverse effects on the environment."

POLICY
"To promote the development of power generation facilities that have minimal environmental impact by encouraging investigation into a wide range of renewable energy sources and prohibiting the production of nuclear power within the District."

Christchurch District Plan date (Notified June 1995 – Operative November 2005)

OBJECTIVE
"The efficient use of energy, in both supply and consumption, whilst promoting the development of alternative renewable energy sources."

POLICY
"To encourage the development and use of renewable energy sources."

Queenstown Lakes District Plan (Notified October 1995 – Operative (partially) June 2007)

OBJECTIVE
"The efficient operation, maintenance, refurbishment, and enhancement of established hydro generation facilities."
POLICIES
"1.1 To provide for the integrated operation of Hawea hydro activities, including Hawea dam, Gladstone Gap control structure and emergency spill way and the foreshore of Lake Hawea.
1.2 To recognise the importance of activities such as weed, sediment, erosion and flood control on the day to day operations of hydro generation facilities.
1.3 To provide for activities associated with existing small river based schemes by recognising that these schemes consist of a number of components including river weirs, intakes, pipelines and power houses."

SUPPORTING INFORMATION

Regional Policy Statement provisions - recent examples
Taranaki Regional Policy Statement February 2009 (Proposed as amended by decisions)
The Taranaki regional Council made its first RPS operative on 1 September 1994. An interim (5 year) review of the Regional Policy Statement was carried out in 1999. A full review was commenced in 2003. The review process leading up to the formal notification of the Proposed RPS for Taranaki 2006. The Proposed RPS included a chapter on energy issues with provisions focused on promoting the use and development of renewable energy in the region. EECA lodged a submission seeking amendments to strengthen these provisions. These submission points were supported through further submission by various parties. Following the hearing proceedings and drawing on the submission of EECA and others, the Council amended its Proposed RPS to include the following provisions [changes are shown in underline, words to delete are shown in strike through]: OBJECTIVE ***"To promote the use and development of renewable sources of energy in a manner that avoids, remedies or mitigates adverse effects on the environment."*** POLICY *"The use and development of renewable energy resources will be ~~encouraged as far as is practicable and appropriate in a manner that does not compromise the sustainable management of natural and physical resources or the achievement of other policies in this Regional Policy Statement.~~* ***promoted whilst avoiding, remedying or mitigating adverse effects on the environment as far as practicable."*** *"The protection of the natural character of the coastal environment shall be achieved by having regard to the following criteria in determining appropriate subdivision, use, development or occupation of he coastal environment:* ***(n) the benefits to be derived from the use and development of renewable energy sources, including national, regional and local benefits.****"*
Greater Wellington Regional Policy Statement 2009 (Proposed and as amended following issues and option consultation)
The Greater Wellington Regional Council issued a draft RPS in 2008 and following public consultation notified a Proposed RPS in March 2009. The Council is yet to release a summary of submissions and call for further submissions. The Proposed RPS identifies energy, infrastructure and waste are significant resource management issues for the region. EECA lodged a submission seeking recognition of the national benefits to be derived from the use and development of renewable energy and seeking greater recognition of the significant wind energy and marine energy resources in the region. The Proposed RPS incorporated that following planning provisions: OBJECTIVE *"The region's energy needs are met in ways that:* *(a) improve energy efficiency and conservation;* *(b) diversify the type and scale of renewable energy development;*

(c) maximise the use of renewable energy resources;
(d) reduce dependency on fossil fuels; and
(e) reduce greenhouse gas emissions from transportation."

POLICY
"Recognising the benefits from regionally significant infrastructure and renewable energy
District and regional plans shall include policies that recognise:
(b) the social, economic, cultural and environmental benefits of energy generated from renewable energy resources including:
(i) security of supply and diversification of our energy sources;
(ii) reducing dependency on imported energy resources; and
(iii) reducing greenhouse gas emissions."

Horizons Regional Policy Statement – The Proposed One Plan (Notified May 2007)

The Proposed Plan incorporates a chapter on infrastructure, energy and waste. The policy provisions recognise that the establishment, maintenance and upgrading of infrastructure is regionally and nationally important for the social, economic and cultural wellbeing of people and communities. The policy provisions recognise that the establishment, maintenance and upgrading of infrastructure is regionally and nationally important for the social, economic and cultural wellbeing of people and communities. This is done by generally providing for the establishment of new infrastructure and allowing the maintenance and upgrading of existing infrastructure. In effect the policy approach is to show how infrastructure will be considered a little more favourably consideration by decisionmakers than other activities. It also recognises that the Region has potential for further development of renewable energy resources and that this development may be required to meet the predicted shortfall in national energy requirements in the future. This is done by recognising the benefits of use and development of renewable energy resources.

EECA and a number of electricity generators are participating in the hearing proceedings to strengthen the proposed provisions. The hearing is expected to commence in July 2009. Following pre-hearing meetings the Council prepared revised provisions (having no formal status but to aid discussion) as follows [changes are shown in underline, words to delete are shown in strike through]:

OBJECTIVE
"Objective 3-1A: Energy
There will be an increase in the use of renewable energy resources and an improvement in energy efficiency."

POLCIY
*Policy 3-4: Renewable energy^*
(a) ~~All persons exercising functions and powers under the RMA~~ The Regional Council and territorial authorities shall have particular regard to:
i. The social, economic, cultural and environmental benefits of the use and development of renewable energy resources including:
- *contributing to reduction in greenhouse gases*
- *reduced dependency on imported energy sources*
- *reduced exposure to fossil fuel price volatility*
- *security of supply for current and future generations*

ii. The Manawatu-Wanganui Region's potential for the use and development of renewable energy resources

iii. The need for renewable energy activities facilities to locate where the renewable energy resource is located
(aa) The Regional Council and territorial authorities shall give preference to the development of renewable energy generation and use of renewable energy resources ~~shall be preferred~~ to the development and use of nonrenewable energy resources in policy development and resource consent decision making.
(b) ~~Local authority decisions and controls on land use should~~ The Regional Council and territorial authorities shall generally not restrict the use of small domestic-scale renewable energy production for individual domestic use.

Other relevant provisions:
"Objective 3-1: Infrastructure and energy
The benefits of infrastructure will be recognised by providing for the establishment of new infrastructure and allowing the operation, maintenance and upgrading of existing infrastructure

~~Resource use activities associated with the provision, maintenance and upgrading of infrastructure, and/or with the use of renewable energy, will be recognised and enabled.~~"

"Policy 3-1: Benefits of infrastructure
(a) ~~All persons exercising functions and powers under the RMA~~ The Regional Council and territorial authorities shall recognise the following infrastructure ~~within the Region~~ as being physical resources of regional ~~and~~ or national importance:
(i) facilities for the generation of more than 1 MW of electricity and its supporting infrastructure where the electricity generated is supplied to the electricity transmission and distribution networks ~~grid and facilities and infrastructure to transmit the electricity generated into the electricity grid.~~ …"

"(b~~) In making decisions about~~ The Regional Council and territorial authorities shall, in relation to the establishment, operation, maintenance, ~~alteration,~~ and upgrading~~, and expansion~~ of infrastructure ~~within the Region,~~ including the infrastructure of regional and national importance listed in subsection (a), recognise and provide for the benefits derived from the infrastructure. ~~at a local, regional and national level shall be taken into account.~~
(c) The Regional Council and territorial authorities shall manage ~~E~~existing and future infrastructure ~~shall be managed~~ in a manner which achieves as much consistency across local authority boundaries as is reasonably possible."

"Policy 3-2: Adverse effects^ of other activities on infrastructure
The Regional Council and territorial authorities^ shall ensure that ~~A~~adverse effects on infrastructure from other activities ~~on infrastructure shall be~~ are avoided, including by using the following mechanisms: …"

"Policy 3-3: Adverse effects of infrastructure on the environment
In managing any adverse environmental effects arising from the establishment, operation, maintenance and upgrading of infrastructure, the Regional Council and territorial authorities shall: (a) allow the operation, maintenance and upgrading of all infrastructure once it has been established, no matter where it is located
(b) allow minor adverse effects^ arising from the establishment of new infrastructure
(c) avoid, remedy or mitigate more than minor adverse effects arising from the establishment of new infrastructure in the same manner as these effects would be avoided, remedied or mitigated for other types of activities unless this is impracticable due to functional, operational or technical constraints, in which case the following matters shall be taken into account:

(i) The need for the infrastructure;
(ii) The extent to which adverse effects can be practicably avoided, remedied or mitigated, including whether there are any practicable alternatives to the proposed location and design of the infrastructure;
and
(iii) Whether a financial contribution should be sought to offset or compensate for adverse effects that cannot be adequately avoided, remedied or mitigated."

~~"When making decisions on consent applications regarding infrastructure, the adverse effects of infrastructure on the environment shall be managed in the following manner:~~
~~(a) Effects to be avoided – The following adverse effects of infrastructure on: shall be avoided to the same extent required of other types of activities:~~
~~(i) effects on waahi tapu, waahi tupuna and other sites of significance to Māori~~
~~(ii) effects on specified waterways valued for natural state and sites of significance (aquatic)~~
~~(iii) effects on rare and threatened habitats as defined in Chapter 7~~
~~(iv) effects on the outstanding natural features and landscapes identified in Chapter 7~~
~~(v) effects on protection zones in the coastal marine area as identified in Chapter 9~~…"

Electricity generators continued to oppose Policy 3-3 as written and sought its removal in favour of a policy restricted to dealing with the functional, operational and technical constraints of infrastructure. However, the Regional Council remained of the opinion that it is helpful for adverse effects to be dealt with in Policy 3-3 and that, subject to further changes to acknowledge electricity generator concerns, it should remain.

Regional Policy Statement provisions – Operative plans

Auckland Regional Policy Statement (Notified February 1994 – Operative August 1999)

The Auckland RPS includes the energy provisions as outlined below. The RPS is currently under review.

POLICIES
"Renewable energy sources shall be encouraged by:
(i) promoting alternatives to the use of non-renewable fossil fuels;
(ii) promoting energy production from the Region's renewable energy assets, if such production is consistent with the provisions of the RPS."

Bay of Plenty Operative Regional Policy Statement (Notified September 1993 – Operative December 1999)

The RPS incorporates a section on energy covering efficient use, renewable resource use and adverse effects on energy use. The chapter on geothermal energy focusing on balancing the need to protect the visible surface features and utilize the resource for energy generation. The RPS is currently under review.

OBJECTIVE
"Reduced reliance on fossil fuels and increasing use of renewable energy resources."

POLICIES
"To promote the transfer from non-renewable to renewable sources.
To advocate that renewable energy sources within the region be managed sustainably.
To promote the utilisation of solar, wind, waste and other renewable energy resources.

To minimise the use of fossil fuel for energy production.
To reduce fossil fuel use through the promotion of effective public transport."

Canterbury Regional Policy Statement (Notified October 1993 – Operative June 1998)

The RPS incorporates policies regarding the utilisation of renewable energy resources including hydro and indicates the development of a Regional Energy Strategy. The RPS is currently under review.

OBJECTIVE
"*Reduce Canterbury's dependence on nonsustainable energy sources."*

POLICIES
"Promote the use of energy from renewable sources, including the substitution of fossil fuels with renewable resources
Promote energy conservation and efficient energy use
Enable existing hydro-electricity infrastructure in the region to be managed, upgraded and enhanced provided appropriate conditions are met."

Gisborne Regional Policy Statement (Notified March 1994 – Operative August 2003)

The RPS incorporates a chapter on energy management that identifies the high degree of dependence on non-renewable sources of energy as an issue.

OBJECTIVE
"To encourage the progressive development and use of costeffective and sustainable sources of renewable energy within the Gisborne Region."

POLICY
"To support Government initiatives on renewable energy.
To support energy generation from the region's renewable energy assets where such development is shown to be cost-effective, technically viable, and the effects of the development environmentally acceptable.
To promote greater use of cost effective renewable energy sources in production processes and activities and in the provision of commercial and domestic energy services."

Marlborough Regional Policy Statement (Notified October 1993 – Operative August 1995)

The RPS includes a standalone Energy chapter including renewable energy provisions. The RPS is currently being reviewed.

OBJECTIVE
"Promotion of the efficient production and use of renewable energy resources, consistent with the duty to avoid, remedy or mitigate any adverse effects on the environment."

POLICIES
"Encourage the production and use of renewable energy resources, consistent with the duty to avoid, remedy or mitigate any adverse environmental effects."

Northland Regional Policy Statement (Notified October 1993 – Operative March 1999)

The Northland RPS includes energy objectives (although not specific to renewable energy) and policies as follows:

POLICIES
"To encourage the consideration of alternatives to non-renewable energy sources in resource management decision making."

The RPS is due for review and a steering group has been established to guide the identification and prioritisation of high priority topics for change.

Nelson Regional Policy Statement (Notified July 1996 – Operative March 1997)

The RPS incorporates a stand-alone energy chapter with provisions outlined below. The RPS is due for review however the review has been indefinitely postponed due to a reprioritisation of Council work.

OBJECTIVE
"Sustainable use of energy through an orderly transition from nonrenewable resources to renewable resources."

POLICIES
"To promote the use of renewable sources of energy."

Otago Regional Policy Statement (Notified October 1993 – Operative October 1998)

The RPS includes a standalone energy chapter incorporating planning provisions encouraging renewable energy. The RPS is due for review.

OBJECTIVE
"To sustainably and efficiently produce and use energy taking into account community values and expectations.
"To encourage use of renewable resources to produce energy."

POLICIES
"To promote the sustainable management and use of energy through:
(a) Encouraging energy production facilities that draw on the region's renewable energy resources; and
(b) Encouraging the use of renewable energy resources, in a way that safeguards the lifesupporting capacity of air, water, soil and ecosystems and avoids, remedies and mitigates adverse effects on the environment, as a replacement for non-renewable energy resources: and
(c) Encouraging the sustainable development of Otago's renewable energy resources."

Southland Regional Policy Statement (Notified February 1994 – Operative December 1997)

The RPS includes a standalone energy chapter incorporating objectives promoting renewable energy and a corresponding policy regarding hydro-electricity generation. The RPS is currently under review.

OBJECTIVES
"*To promote the sustainable management of energy resources and reduce the Region's dependence on non-renewable energy resources."*
"To promote the use of renewable energy resources"

POLICIES

"Promote the efficient use of all energy resources."
The explanation to this policy recognises that *"Promoting efficient use will involve encouraging the introduction of more efficient technologies for the development and use of existing energy resources, supporting the development of alternative energy technologies and promoting where appropriate the use of renewable resources. Promotion of energy use from renewable resources, for example, wind, water, solar, wave, biomass, etc will reduce the Region's dependence on fossil fuels and better enable the needs of future generations to be met and avoid the adverse effects associated with such dependence."*

"Recognise and provide for the use and enhancement of existing hydro-electricity facilities."

Tasman Regional Policy Statement (Notified July 1994 – Operative July 2001)

The RPS incorporates a specific renewable energy objective supported by a generic energy policy.

OBJECTIVE
"Conservative and efficient use of energy, and reduced dependence on non-renewable energy resources."

POLICIES
"The Council will seek to provide for the continuation of energy generation, transmission, or use opportunities, while avoiding, remedying or mitigating the adverse effects of such actions on natural, heritage and amenity values of resources."

Waikato Regional Policy Statement Regional Policy Statement (Notified October 1993 – Operative November 2002)

The RPS includes a section on energy efficiency, infrastructure and geothermal resources. The RPS is currently under review.

OBJECTIVE
"To provide efficacy and conservation in the production, transmission and consumption of energy."

METHOD OF IMPLEMENTATION
"2) Encourage the use of alterative and renewable energy sources through community education."

Plan Change 1 introduced the following provisions in 2007:

GEOTHERMAL OBJECTIVE
"Sustainable management of the regional geothermal resource promoted by:

- *The allocation of some of the geothermal resource for take, use and discharge in a way that enables current energy needs and the reasonably foreseeable energy needs of future generations to be met, while avoiding, mitigating or remedying significant adverse effects on the Regional Geothermal Resource."*

GEOTHERMAL POLICY CLASSIFICATION SYSTEM
"Allocate the regional geothermal resource in a way that provides for multiple uses and the extent and variety of the regional geothermal resource"

METHOD OF IMPLEMENTATION

"Development Geothermal Systems: In the Waikato Regional Plan, identify large geothermal systems where development will be enabled because:

IV. the system contains few geothermal systems that are moderately to highly vulnerable; or

V. the existing geothermal features are significantly impaired by lawfully established existing takes; or

VI. the system is already subject to large scale energy use and development."

GEOTHERMAL OBJECTIVE - DEVELOPMENT GEOTHERMAL SYSTEMS

"Large scale take, use and discharge of geothermal energy and water enabled within the Geothermal System in a manner that:

- *is efficient and allows the controlled depletion of energy so as to provide for the energy needs of current and future generations;*
- *remedies or mitigates significant adverse effects on Significant Geothermal Features; and*
- *avoids, remedies, or mitigates adverse effects on other natural and physical resource including overlying structures (the built environment)"*

GEOTHERMAL POLICY - DEVELOPMENT GEOTHERMAL SYSTEMS

"Providing for large scale use and development of geothermal energy and water, promote efficient use of the resource and recognise there will be controlled depletion."

West Coast Regional Policy Statement (Notified May 1996 – Operative March 2000)

The RPS incorporates a standalone Energy chapter including the following provisions:

OBJECTIVE

"To promote the sustainable management of energy resources."

POLICIES

"Promote the sustainable management and efficient use of energy within the region energy within the region.

Co-operate with any Crown initiatives and policies, where practicable, that seek to promote greater energy conservation, efficiency and the use of renewable energy sources including the Government's Voluntary Agreements Scheme for reduction of CO2 emissions."

District Plan – recent examples

Wellington District Plan Change 32 (Renewable Energy) (notified March 2004 - Operative 10 July 2009)

Plan Change 32 proposed an addition objective, policies and rules into the Wellington City Council District Plan (Operative July 2000) to give effect to the amendments to section 7 of the RMA inserted by the Resource Management (Energy and Climate Change) Amendment Act 2004.

Support for the Plan Change came in two forms: support for renewable energy developments generally; and then specific support for wind energy facilities within the Wellington City district. Commissioners heard from many submitters who support the concept of renewable energy and acknowledge that there is broad public support for the concept of renewable energy from a wide cross section of the community. The Panel also recognises that there are many different opinions on how that support should be interpreted and addressed by the Council. Submissions in opposition to the Plan Change focused on wind energy facilities and their possible effects.

The Council's decision to adopt Plan Change 32 was appealed to the Environment Court by Meridian Energy and Mighty River Power which sought additional policy recognition of the potential renewable energy resources that exist in the Rural Area including in identified ridgeline and hilltop areas. Community groups opposed the inclusion of the words *"including identified ridgeline and hilltop area".*

The Court concluded that the planning provisions as worded are an effective and efficient approach to achieving the objectives in the District Plan. Plan Change 32 provisions as agreed at appeal are as follows [changes are shown in underline, words to delete are shown in strike through]:

OBJECTIVE
"To encourage efficiency in energy use, and the development and use of energy from renewable sources"

POLICY
"Encourage the efficient use of energy and the greater use of renewable energy."

POLICY
"Provide for renewable energy development, while:
• Avoiding, remedying or mitigating adverse effects on the environment; and
• Recognising the potential renewable energy resources that exist in the Rural Area including in identified ridgeline and hilltop areas."

Proposed Combined Wairarapa District Plan date (Notified August 2006 - as amended by decisions)

The Proposed Combined District Plan incorporates a chapter on network utilities and energy and includes the following provisions as amended following Council decision [changes are shown in underline, words to delete are shown in strike through]:

SIGNIFICANT RESOURCE MANAGEMENT ISSUES
"6. Renewable energy resources can have environmental benefits compared to utilising non-renewable energy resources."

OBJECTIVE
"To move the Wairarapa towards a sustainable energy future by encouraging energy efficiency and the generation of energy from renewable sources."

POLICIES
"(a) Encourage energy efficiency through conservation and efficient energy use.
(b) Provide for renewable energy generation, while avoiding, remedying or mitigating the adverse effects, particularly of large scale and/or prominent facilities.
(c) To recognise and promote the use of environmental management codes of practice and best practice methods in energy generation, distribution and use.
(d) To recognise the operational requirements of energy generation and distribution and its benefits to the wellbeing of the Wairarapa in setting and implementing appropriate environmental standards and assessing resource consent applications to avoid, remedy or mitigate the adverse effects on the environment."

EECA lodged a submission seeking a separate energy chapter which would incorporate specific policies and objectives to recognise and provide for identified potential renewable energy potential. EECA considered that the objective regarding energy efficiency and renewable energy did not focus on national / regional benefits and the policies did not adequately recognise and provide for the benefits of renewable energy. Meridian Energy and Mighty River Power (among others supported these submission points). The Council rejected the introduction of a stand-alone energy chapter and other submission points in favour of minor amendments to the utilities and energy chapter. Meridian Energy appealed the Council's decision.

District Plan – Operative plans

Central Otago District Plan (Notified April 1999 – Operative July 2008)

The District Plan includes the following provisions:

OBJECTIVE
"In the development of energy resources, to have particular regard to the use of natural and physical resources in a manner which avoids, remedies or mitigates significant adverse effects on the environment."

POLICY
"To promote the development of power generation facilities that have minimal environmental impact by encouraging investigation into a wide range of renewable energy sources and prohibiting the production of nuclear power within the District."

Christchurch District Plan date (Notified June 1995 – Operative November 2005)

The District Plan includes a chapter on energy incorporating the following policy:

OBJECTIVE
"The efficient use of energy, in both supply and consumption, whilst promoting the development of alternative renewable energy sources."

POLICY
"To encourage the development and use of renewable energy sources."

Queenstown Lakes District Plan (Notified October 1995 – Operative (partially) June 2007)

The District Plan includes specific rules for hydro generation activities. The zone enables of the continued operation and maintenance, refurbishment and / or enhancement of existing hydro generation facilities. It also anticipates the upgrading of existing facilities and new development, where any adverse effects can be managed. It provides clear definitions of terms used and criteria against which to assess any applications.

OBJECTIVE
"The efficient operation, maintenance, refurbishment, and enhancement of established hydro generation facilities."
POLICIES
"1.1 To provide for the integrated operation of Hawea hydro activities, including Hawea dam, Gladstone Gap control structure and emergency spill way and the foreshore of Lake Hawea.
1.2 To recognise the importance of activities such as weed, sediment, erosion and flood control on the day to day operations of hydro generation facilities.
1.3 To provide for activities associated with existing small river based schemes by recognising that these schemes consist of a number of components including river weirs, intakes, pipelines and power houses."

South Waikato District Plan (Notified July 1994 – Operative June 1998)

The District Plan was developed in conjunction with the then Electricity Corporation of New Zealand to ensure that adverse effects on the environment are avoided, remedied, or mitigated while enabling the continued operation of the hydroelectric power stations and associated facilities within the District. A zone approach is adopted to provide operational certainty for hydroelectric power stations. The Zone rules were developed in conjunction with neighbouring Taupo, Otorohanga and Waipa District Councils to ensure as much as possible a high level of consistency. New hydroelectricity generation facilities are provided for as a discretionary activity.

Whakatane District Plan date (Proposed July 2006)

The District Plan includes a chapter on utilities that makes specific provision for various renewable energy generation facilities (as a permitted activity in some instances) incorporating the following provisions: