Waikato Regional Council Geothermal Policy – on the Home Straight

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WAIKATO REGIONAL COUNCIL GEOTHERMAL POLICY: ON THE HOME STRAIGHT

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SUMMARY – The review of geothermal policies and rules in the Waikato Region started in 2003 is nearly completed. This paper summarises changes to the June 2004 Decisions Versions of the Waikato Regional Policy Statement (WRPS) and Regional Plan (WRP) Geothermal sections presented at WGC2005 (Dickie and Luketina 2005) as a consequence of appeals made through the RMA First Schedule process. Most of these changes relate to the management of those geothermal systems classified for large-scale development, with input from electricity companies, district councils, and government departments. Many appeal points were settled by negotiation between parties during the two-years following the release of Council decisions. At the close of the final Environment Court hearing in August 2006 the Court approved a replacement Geothermal Chapter to the WRPS. There remained only four matters relating to the WRP for the Court to decide upon. The judgement is expected in late 2006, and before the Court decides on the Wairakei consent appeals. It will put the final seal on a comprehensive and integrated system of sustainable management of geothermal resources for the Waikato Region that takes into account the needs of current and future generations for accessible energy, and the cultural, scientific, and amenity values of geothermal resources.

1. INTRODUCTION

Under the Resource Management Act 1991 (RMA), Waikato Regional Council (Environment Waikato) is responsible for managing the use of natural and physical resources in the Waikato Region. The region contains approximately 80% of New Zealand's known geothermal resource, including 15 high-temperature geothermal systems and numerous small geothermal systems.

New Zealand's legislative environment for management of most environmental matters, and in particular geothermal resources, is outlined in Dickie and Luketina (2005). Regional Councils are required to produce a Regional Policy Statement with the primary purpose of achieving integrated management of natural and physical resources within each region. They may develop Regional Plans, containing rules to regulate the use of particular resources. In practice all Regional Councils have used this option as the alternative is *ad-hoc* case-by-case management with little guidance for decision-making.

Reflecting the importance of geothermal resources to the Waikato environment and economy, both the Waikato Regional Policy Statement (Environment Waikato 2004a) and the Proposed Waikato Regional Plan (Environment Waikato 2004b) contain a geothermal chapter setting out the policy and regulatory situation for the use of geothermal resources.

The geothermal chapters in both of these documents have been progressing through a review since March 2003. This process is nearing completion, with an Environment Court ruling expected in late 2006.

2. THE PROCESS

In March 2003 a meeting of the Waikato Regional Council (WRC) recognised that there were inconsistencies between the geothermal regimes in the operative WRPS and the Proposed WRP. Council resolved to change the WRPS to reflect its new policy directions that were based on new information and understandings about the value of geothermal resources and the effects of their use. Council also resolved to vary the Proposed WRP to ensure a seamless integrated policy/management package for the future.

In May 2003 draft geothermal chapters of both documents were circulated to stakeholders for comment. Proposed versions were released in August, submissions received in October, and hearings ran from December 2003 to February 2004. Council's decisions were notified in June, appeals received in August, and mediations commenced in October 2004. From September 2005 the Environment Court sat for nine weeks to hear those matters that needed to be determined prior to it hearing the consent appeals for the Contact and Geotherm consent appeals for the Wairakei-Tauhara Geothermal System. The Court issued an interim decision in April 2006, and mediations continued until the Court sat again for two weeks in August 2006 to hear the remaining matters. Negotiations between parties continued during this time, and on August 16, agreement was reached on all outstanding matters in the WRPS. The judge then signed an order clearing the way to make that document operative. A judgement on remaining matters is expected late 2006 which will require WRC to amend the WRP in line with the Court's determinations.

3. THE MANAGEMENT CHALLENGE

3.1 Sustainability

Sustainable management of the geothermal resource relies on the maintenance of the different characteristics of the resource. However, some applications are incompatible with others. For example, to continue to exist, sinter-depositing springs and geysers require surface outflows of mineralised hot liquid and cannot co-exist with the extraction of large quantities of hot liquid from the same source. In contrast, mud pools, fumaroles and steaming ground do not require a surface outflow of this hot liquid and can therefore co-exist with extraction activities.

Geothermal resources can be used sustainably (using a definition of weak sustainability) over any given period through controlled depletion. To sustain the energy-producing potential of a geothermal system to meet the reasonably foreseeable needs of future generations, extraction must be at a rate that can be maintained by those future generations.

The principles of sustainable management applied to a geothermal system also require that the effects of the take and discharge of energy and fluid on the system and on other natural and physical resources be avoided, remedied, or mitigated. In addition, they take into account issues of economic efficiency, as discussed below.

3.2 Efficiency

Wasteful take and discharge lead to greater loss of heat and fluid than is required for the purpose. This is inconsistent with sustainable management and productive efficiency. Wasteful use can also occur, with geothermal resources being used in the place of more appropriate sources of heat, water, or minerals. This can deprive current and future generations of the ability to use the resource appropriately, and is inconsistent with the principle of allocative efficiency.

3.3 Information Requirements

Sustainable management of a resource requires understanding of the characteristics of that resource. Management of the resource is improved by greater availability of relevant information. The nature of the geothermal resource is such that there is considerable lack of knowledge. Surface features, where they exist, provide only a very small indication of the extent of the resource and its hydrodynamic characteristics. Geophysical and geochemical techniques, as well as an understanding of the local geology, must be applied to enable understanding of the resource.

4. THE POLICY REGIME OF JUNE 2004

A Regional Policy Statement is required to identify the significant resource management issues for the region. Five management issues were identified in the WRPS Geothermal Chapter (Decisions Version). For each issue there was a corresponding objective to be achieved by the methods in the policy statement, rules in the Geothermal Module of the WRP, and in some cases rules controlling land use activities in the relevant District Plans. The issues identified were:

1. Sustainability of the regional geothermal resource
2. Effects of geothermal resource use on geothermal surface features
3. Effects of other uses of land and water on geothermal surface features
4. Effects of geothermal resource use on other natural and physical resources
5. The lack of knowledge about the geothermal resource and the effects of its use.

The RPS addressed these issues with several key policy directions:

1. Significant geothermal feature types were to be identified, based on their rarity and vulnerability.
2. The Region's geothermal systems were to be divided into five types based on size, existing uses, the presence and number of significant geothermal features, and the state of knowledge about the system. The types were:
    - Development Geothermal Systems, where large-scale sustainable development may occur and adverse effects are to be avoided, remedied, or mitigated.
    - Limited Development Geothermal Systems, where smaller-scale development may occur as long as significant adverse effects on Significant Geothermal Features are avoided. Other adverse effects are to be avoided, remedied, or mitigated.
    - Research Systems, where not enough is known about the system to be able to classify it. This category includes any large undiscovered systems.
    - Protected Systems, where no development may occur, in order to protect geothermal features.
    - Small Geothermal Systems that can support only small uses such as water takes for bathing.
3. In Development Systems, use of a social discount rate of approximately 2% rather than a financial rate of 10% to value the resource, in order to ensure sustainable use.
4. Reinjection to be required for all large-scale extractions.

5. In Development Systems, a system-wide management with a single operator working to a peer-reviewed management plan.

5. THE APPEALS

There were 14 appellants, including electricity generators, District Councils, Hapu, landowners, government agencies, and public utilities.

Electricity Generators: These included **Contact Energy (Contact), Mighty River Power (MRP), Geotherm, Genesis,** and **Trustpower**: **Trustpower** wanted Te Kopia changed from Research to Development. **MRP** appealed regarding restrictions on the effects of their hydro dams on geothermal features. **Contact** wanted to ensure that small takes for scientific purposes were allowed in all types of system. Other main concerns of developers were the methods used to define Significant Geothermal Features and assign geothermal systems into types, the social discount rate, sustainable management, reinjection, the single operator policy, protection of surface features, and the amount of information required and its commercial sensitivity. They had concerns over some terminology such as the use of the words 'efficiency', 'stocks and flows', 'conservation of the resource', 'small takes' and 'enhancement'.

District Councils: **Rotorua District Council** wanted Te Kopia Protected, and greater recognition of the benefits of geothermal tourism. **Taupo District Council** was concerned about subsidence and hydrothermal eruptions in Taupo town, and wanted 100% reinjection to counter these.

Government Agencies: **Department of Conservation (DOC)** wanted Te Kopia and Ngatamariki Protected. They also wanted all adverse effects on Significant Geothermal Features to be avoided, including in Development Systems, and for all features to be protected in Protected Geothermal Systems. **The Energy Efficiency and Conservation Authority**, and the **Ministry of Economic Development** sought to ensure that access to geothermal energy was not overly restricted.

Public Utilities: **Watercare Services** were concerned about the effect of discharges to surface water on water quality. **Transpower** wanted to ensure that rules governing activities in and around Significant Geothermal Features would not affect the maintenance of infrastructure including pylons.

Others: The **Lake Rotoaira Forest Trust** and **Ngati Kurauia** had concerns about culturally sensitive treatment of information about the geothermal resource, and also wanted larger takes allowed in Limited Development Geothermal Systems. **New Zealand Geothermal Association** (NZGA) wanted Atiamuri and Reporoa to be available for development, and wanted to ensure that development was not restricted by various policies.

6. MEDIATED RESOLUTIONS AND WITHDRAWALS

Bilateral discussions, facilitated meetings, and formal mediations between WRC and appellants started once all appeals were received, and continued until the last day of the second hearing. During mediations, many matters were resolved between parties. Mediations following the release of the Court's interim judgement incorporated the direction given in the judgement. On the last day of the August 2006 hearing, the parties were able to present to the Court a fully agreed WRPS geothermal chapter, which the judge signed, enabling the WRPS to be made operative upon approval by the WRC's elected representatives. The major changes as a result of agreements reached along the way are listed below.

6.1 Regional Policy Statement

Issues: The five issues have been revised, with no significant change in content.

Format: The Proposed WRPS Geothermal Chapter was divided into five subsections, one for each issue, that dealt with the different types of environmental effects relating to geothermal resources. This was changed so that now there are three sections, the first dealing with partitioning the resource into system types. This has five subsections dealing with each of the five system types. The remaining two sections deal with effects of the use of other resources on the geothermal resource, and information requirements.

Social Discount Rate: The requirement for a social discount rate to ensure sustainable management in Development Systems was dropped in favour of ensuring a process of stepped production in order to test the effects on the resource before increasing the take volume.

Te Kopia: Trustpower withdrew their appeal on Te Kopia's status as a Research System. The only remaining appeal on Te Kopia was from DOC wanting it to be Protected. WRC accepted that appeal.

Protection of all features in Protected Systems: The DOC appeal sought that all discharging features in Protected Geothermal Systems, including steaming ground and seeps were to be protected. WRC accepted that appeal.

Tangata Whenua information issues: Wording was agreed between parties that took into account

ahi kaa (manawhenua) and the role of tangata whenua as Kaitiaki of geothermal characteristics.

Terminology: Reference to the components of economic efficiency, being allocative, productive, and dynamic efficiency, that were inserted following submission by Trustpower were removed in favour of simply 'efficiency' following withdrawal of Trustpower's appeal and appeals by other parties. Wording was agreed between parties that satisfied the concerns of all parties on other issues of terminology.

Benefits of Tourism vs Benefits of Electricity Production: A balance was achieved in the wording of the WRPS that satisfied all parties.

Emphasis on Surface Features: The table describing Significant Geothermal Feature types was shifted from the body of the WRPS into an appendix following an appeal by Contact that the WRPS was weighted towards the protection of features.

Geothermal Vegetation: The Significant Geothermal Feature category of geothermal vegetation is now subdivided into three categories: vegetation that is dependent on heated ground, heated moist air, and warm water respectively.

Reverse sensitivity: The Integrated Management provisions relating to the complimentary roles of regional and district councils under the RMA have been strengthened. This enables WRC to address the issue of reverse sensitivity, where a resource use provided for in the WRP is compromised by surrounding land uses. A new objective and policy in the WRPS make explicit the requirement for land uses to be compatible with the uses of that Geothermal System. This was previously implied but has now been made explicit.

6.2 Regional Plan

Atiamuri and Reporoa: NZGA withdrew their appeal and so Atiamuri and Reporoa remained with Limited Development and Research System status respectively.

Status of System Maps: The WRP has maps of all the large geothermal systems. The rules relating to geothermal resource use applied within the boundaries of the systems. Developers wanted the maps to be indicative only. This issue was resolved by amending the rules to apply to geothermal water outside the boundary when it can be proven that there is a strong hydrological connection to the system.

Large Takes in Limited Development Systems: The take limit for Discretionary Activities was increased from 10,000 to 15,000 tonnes per day to satisfy Ngati Kurauia's appeal.

Research Takes in all Systems: A rule was added to all system types to permit the take and discharge of up to one tonne of geothermal fluid per day for research purposes to satisfy Contact's appeal.

Hydro dams: MRP's consented hydro dam operations of MRP were exempted from the rules relating to effects of uses of land and water on Signficant Geothermal Features.

Significant Geothermal Feature Tables and Maps: The tables of Significant Geothermal Features in Development and Limited Development Geothermal Systems have been revised to accurately reflect the significant characteristics of the features. Some maps were redrawn to reflect changed vegetation extent.

7. THE INTERIM JUDGEMENT

Commencing September 2005 the Environment Court sat for nine weeks to hear those matters that needed to be determined prior to it hearing the consent appeals for the Contact and Geotherm consent appeals for the Wairakei-Tauhara Geothermal System. These matters were allocation over time, reinjection, and the single operator policy. The Court issued an interim judgement in April 2006.

Reinjection: The judgement determined that the policy on reinjection was to be strengthened, while allowing for flexibility to enable an appropriate response to be made to possible adverse effects of reinjection. It also said the policy needed to give clear direction on the need to carry out careful monitoring and investigatory work to anticipate future subsidence risks.

It required a policy that focussed on a discharge strategy incorporating reinjection/injection, for the purpose of avoiding or mitigating adverse effects. The discharge strategy is to be part of the System Management Plan. Any discharge by reinjection or injection that was part of the Discharge Strategy is to be a discretionary activity (needing a resource consent) while any other large discharge by reinjection/injection is to be treated as non-complying (meaning that it can only be granted if either it has no significant adverse effects or is not in conflict with the objectives and policies of the WRP).

Single Operator/Integrated Management: The Court determined that limiting development to a single operator is not the best way of ensuring sustainable development for Development Geothermal Systems, and that the identified future problems that could arise with more than one operator can be adequately addressed by requiring

a comprehensive System Management Plan which in turn requires mechanisms to address the issues of integrated management. The system management plan is to cover reservoir modelling and subsidence modelling, the discharge strategy, making provision for cascade users, research, monitoring, and reporting, the peer review panel, review conditions and procedures, and the establishment of a System Liaison Group/Forum to give interested and affected parties a voice.

Where there are multiple operators, there must be a regulatory requirement that the multiple operators co-ordinate and co-operate through agreements such as steamfield management agreements and field operations protocols. These agreements need to address such matters as efficient and beneficial use of the resource, mechanisms for conflict resolution, and accountability for adverse effects.

The court also determined that large takes from Development Systems are to be discretionary activities and not permitted activities as some developers sought, and that discharges to surface water are to be dealt with in the Geothermal Module of the WRP and not in the Water Module as was also sought by developers.

8. OUTSTANDING MATTERS

Following the mediations and two court hearings there were four matters remaining in the WRP for the Court to decide on. A decision on these matters is expected in late 2006.

Large Discharges to Surface Water in System Management Plan: Contact sought that large discharges to surface waters should be less regulated if they form part of the System Management Plan.

Large Discharges to Geothermally Influenced Surface Water: Contact sought that large discharges to surface water should be less regulated if the receiving waters already contain geothermal inputs, whether from a natural or an anthropogenic source.

The limit for Large Discharges: The Court's interim decision determined that large discharges that were not by reinjection/injection should be non-complying. However, it did not specify the quantity that determined a large discharge. WRC considers that 15,000 tonnes per day (tpd) should be the limit for a large discharge to surface, as this enables existing uses that have been shown to have little adverse effect and that demonstrate efficient use of the resource. MRP agreed that such a limit for discharge would enable their needs such as well-test discharges. On the other hand, Contact considers it should be in line with their existing Wairakei operation (approximately 100,000 tpd), and Taupo District Council considers it should be 1,000 tpd to ensure that full reinjection is carried out with the aim of limiting subsidence.

Distance of small takes from Signficant Geothermal Features in Development Systems: The WRP has a Permitted Activity rule allowing small takes of geothermal energy and water in Development Systems as long as they are more than 100 metres from a Significant Geothermal Feature, among other conditions. Contact want that distance reduced to two metres in some circumstances and 50 metres in others.

9. CONCLUSION

Implementation of the Court's decision should be accomplished in the first half of 2007. This will put the final seal on a comprehensive and integrated system of sustainable management of geothermal resources for the Waikato Region. It takes into account the needs of current and future generations for accessing energy, and the cultural, scientific, and amenity values of geothermal resources.

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