Decision No. A183/2002

IN THE MATTER of the Resource Management Act 199 1

AND

IN THE MATTER of an appeal under section 120 of the Act

BETWEEN **ENVIRONMENTAL DEFENCE SOCIETY (INCORPORATED)**

(RMA 598/01)

Appellant

AND **AUCKLAND REGIONAL, COUNCIL**

Respondent

AND **CONTACT ENERGY LIMITED**

Applicant

BEFORE THE ENVIRONMENT COURT

Environment Judge R G Whiting (presiding)
Environment Commissioner R F Gapes
Deputy Environment Commissioner J Keamey

HEARING at **AUCKLAND on 20** and 2 1 May 2002

APPEARANCES

Mr R Brabant for Environmental Defence Society Incorporated
Mr J A Bums and Mr D I J Cowper for the Auckland Regional Council
Mr T P Robinson, *Mr* G H van Bohemen and H R Dixon for Contact Energy Limited

DECISION

Introduction

[1] Contact Energy Limited obtained from the Auckland Regional Council the necessary resource consents to construct and operate a 400MW gas fired combined cycle power station at a site in South Auckland.

[2] Called Otahuhu C, its operation at maximum predicted output would discharge some 1.2m tonnes per year of carbon dioxide, an unavoidable product of combustion.

[3] Carbon dioxide is one of the gases colloquially referred to as *"greenhouse gases"*, which are generally understood in current scientific opinion to contribute adversely to global climate change. The air discharge consent granted by the Regional Council includes no condition addressing the discharge of any greenhouse gas.

[4] The Environmental Defence Society seeks the imposition of a condition on the air discharge consent, as specifically set out in the amended notice of appeal and attached as Annexure 1. This would require Contact, or someone on their behalf, to offset all the carbon dioxide emissions by the planting of trees to act as "carbon-sinks".

The greenhouse effect

[5] The greenhouse effect is a warming of the earth's surface and lower atmosphere caused by gases such as carbon dioxide, methane, nitrous oxide, chloroflurocarbons and water vapour. Greenhouse gases were so named because they act like the outside covering of a greenhouse, letting the sun's energy through to heat the ground, but preventing it from then escaping to outer space.

[6] The earth's temperature is determined primarily by the balance between incoming energy from the sun and outgoing energy radiated into space. The warmer the earth, the more energy it radiates. At *a* certain average temperature, the radiation is in balance. The *"greenhouse effect"* is a process by which gases in the atmosphere reduce the outgoing radiation, so warming the planet. This is a natural phenomenon. However, human activities have increased the quantity of such gases, so enhancing the warming process. This is known as the *"enhanced greenhouse effect "*.

[7] The increased concentration of carbon dioxide retains more heat near the earth's surface, leading to a possible increase in temperature, though it is but one factor in the complex phenomenon of climate change. The possible adverse effects of climate change include: sea level rises as well as greater variability or frequency of extreme climate events such as, droughts; floods and cyclones; with resultant

economic, social, and environmental cost. This is a simplistic explanation; in reality, the interacting phenomena are complex.

[8] Carbon dioxide is the greenhouse gas that causes the most widespread public concern, Not because it is the gas with the greatest warming potential, but because the human use of fossil fuels (coal, oil and gas) is adding so much extra to the atmosphere, and because it can stay there for centuries. There has been a continuously increasing discharge of the gas to atmosphere during the 150 years since the industrial revolution. It has been predicted that, if carbon dioxide continues to increase at such a rate, atmospheric concentrations could nearly double from pre-industrial times, by the year 2035.

Carbon sinks

[9] There are two important absorbers of carbon dioxide, forests and oceans. Forests and other biomass are referred to as *"carbon* sinks" as they absorb carbon dioxide. Simplistically, planting new forests soaks up the carbon dioxide, but cutting down forests frees carbon dioxide for release into the atmosphere.

The United Nations Framework Convention on Climate Change and the Kyoto Protocol

[10] Responding to the global warming threat, the United Nations General Assembly established the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change in December 1990. This Committee was mandated to negotiate a convention containing appropriate commitments, in time for signature at the United Nations Conference on Environment and Development at Rio de Janeiro in June 1992. The committee adopted the United Nation Framework Convention on Climate Change on 9 May 1992. The Framework Convention was open for signature at the Rio de Janeiro Conference, where it was signed by 154 states and the European community. It required 50 ratifications for entry into force. New Zealand signed the Framework Convention in June 1992. It ratified the Framework Convention on 16 September 1993 and was the 34" country to do so. The Framework Convention came into force on 21 March 1994.

[11] The Framework Convention does not commit states to specific limitations on greenhouse gas emissions; it recognises climate change as a serious threat and establishes a basis for future action. It states in Article 2, as a common long-term

objective; the stabilisation of atmospheric concentrations of greenhouse gases *at* a *level that would prevent dangerous anthropogenic interference with the climate system.* This level is to be achieved *within a time frame sufficient to allow ecosystems to adapt naturally to climate change...and to enable economic development to proceed in a sustainable manner.*

[12] In Article 3, it sets out principles relating to inter and intra generational equity, the needs of developing countries, precaution, cost effectiveness, sustainable development, and the international economy. Relevantly for present purposes is Article 4(2), by which developed countries' (including New Zealand) have undertaken specific commitments to *adopt nationalpolicies and take corresponding measures on the mitigation* ***of*** *climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse sink; and reservoirs...recognising that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal protocol...* would contribute to the objective of the Convention. It has also agreed to report on policies and measures adopted, as *well as on resulting projected anthropogenic emissions by sources and removals by sinks...for the period [to the end of present decade] with the aim of returning individually or jointly to their I990 levels of these anthropogenic emissions of carbon dioxide and other greenhouses gases... ".*

[13] The Framework Convention did not impose any specific obligation on New Zealand and the other countries concerned, to reduce their greenhouse gas emissions. However, it envisaged the adoption of protocols to the Convention that might supplement its provisions'.

[14] It was only with the adoption of the Kyoto Protocol in 1997 that the parties to the Framework Convention agreed to the imposition of specific targets for the 36 developed countries, including New Zealand, to limit their *aggregate carbon dioxide equivalent* emissions of greenhouse gases during the first commitment period of *2008 to 2012.*

[15] Those targets vary according to the circumstances of each country. In New Zealand's case, the target is to return its emissions to 1990 levels on average during the period 2008 t0 2012.[3]

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[1] 36 in all and set out in Annex 1 to the Convention.
[2] Article 17.
[3] Article 3(1) and (7).

[16] The Kyoto Protocol envisages further targets being set in future rounds of negotiations, which must commence by 2005[4].

New Zealand's response

[17] A number of government papers and publications were adduced in evidence, particularly by Mr J R Woods, a strategic modeller employed by Contact, and Ms S J Allan, a planning consultant called by Contact.[5] These documents are part of a considerable amount of information that reflects the government's intentions and policy over time.

[18] Relevant matters include::

(i) The Cabinet Minutes culminate in a Cabinet decision on 3 September 2001, directing that officials commence preparation of a legislative approach to enable ratification of the Kyoto Protocol prior to September 2002. It notes that a formal decision on ratification in early 2002 would take into account amongst other things, the outcomes of consultation and completion of a Final National Interest Analysis;

(ii) In the Kyoto Protocol Consultation Paper, released in October 2001 the government, through the Honourable Pete Hodson, convenor of the Ministerial Group of Climate Change, reaffirmed the government's intention to ratify the Kyoto Protocol. The options outlined included emission charges (also referred to as carbon charges) emissions' trading regimes and negotiated greenhouse agreements;

(iii) The National Interest Analysis released in February 2002 contains (at page 50) the government's conclusion that ratification is in the national interest. Clearly the process of developing a government policy that enables the commitments contained in the protocol to be achieved is still proceeding and is yet to be finalised;

'Article 3(9).

[5] These included: Cabinet minutes (CBC Min (01) 3-4, CBC Min (01) 1-7 and CAB Min (01) 27/5A); (Kyoto Protocol: Ensuring our Future, Climate Change Consultation Paper, October 2001; New Zealand Third National Communication under the Framework Convention 2001; National Interest Analysis, Kyoto Protocol to the UN Framework Convention on Climate Change, February 2002; Climate Change, The Government's Preferred Policy Package April 2002; Information for the Guidance of Local Authorities in Addressing Climate Change – 1993; Enquiry into the Role of Local Government in Meeting New Zealand's Climate Change Target, November 2001.

(iv) *In the Information for the Guidance of Local Authorities in Addressing Climate Change,* issued in 1993, is set out the complex nature of the issues raised by greenhouse gas emissions. It also provides a "menu" of opportunities that could be appropriately considered at regional level;

(v) *The Enquiry into the Role of Local Government in Meeting New Zealand's Climate Change Target,* released in November 2001, gives a strong indication that it is not expected that Councils should develop or apply rules or consent conditions that may have a distorting affect on the government's responsibilities. This is expressed as follows:

> The government has already signalled it does not see RMA controls and the mechanisms as being cost-effective for managing greenhouse emissions. Climate change is an international issue, and should therefore be dealt with consistently on a national level. The RMA consenting and planning process means that there will always be a risk of inconsistent treatment and costs of implementing and managing requirements for different regions."

The two following passages from the document demonstrate both the complexity of the issues, and the current practice:

> We agree with the tenor of submissions that greenhouse gas emissions from the electricity sector should be considered at a national level. It is not possible under the RMA for a regional council to require the retirement of an old electricity plant in one region as a condition on the commissioning of a newer, more efficient plant in another region. It is also difficult for local government to deal with cumulative global effects such as greenhouse gas emissions, which are small in terms of the scale of their local impact.[7]

And:

> The only example of a resource consent that imposes conditions specifically designed to address CO_2 discharges is the consent for the Taranaki combined cycle power station, which was "called in" by the Minister of the Environment because of its national and international implications.*

[19] The condition referred to in the Taranaki consent required an annual review of overall carbon dioxide emissions from the electricity generation sector. If that review showed carbon dioxide emissions increasing from the base year prior to commissioning of that particular power station, the consent holder was required *to*

[6] Page 21, Enquiry document.
[7] Page 33, Enquiry document.
[8] Page 22, Enquiry document.

take such steps as are necessary and effective to avoid, remedy or mitigate the effects of the additional amount of carbon dioxide being discharged as a result of the exercise of this consent.

[20] On our reading of the Framework Convention and the Kyoto Protocol, there is a general commitment by New Zealand, and developed countries, to limit emissions and enhance carbon sinks. But it is for the parties to the Convention, by way of national legislation, to adopt policies in relation to climate change. Hence, the government's apparent signal to the effect that it does not see RMA controls as the answer. Rather, climate change is an international issue, and should therefore be dealt with at a national level. Therefore, on the'face of it, it seems that the issue we have to decide is quintessentially a public policy decision.

[21] Notwithstanding that, we are required to approach the matter having regard to the provisions of the Resource Management Act 1991 and the general common law principles that are applicable.

Legal status of the Framework Convention and the Kyoto Protocol – **weight to** be accredited to them

[22] New Zealand signed the Framework Convention in June 1992 and ratified it in September 1993. In accordance with Article 22 of the Convention the Framework Convention entered into force on 21 March 1994. Accordingly, the Framework Convention is binding on New Zealand as a matter of international law. No specific legislation has been enacted, however, to give effect to the Framework Convention in New Zealand domestic law.

[23] New Zealand signed the Kyoto Protocol on 22 May 1998. New Zealand has **not** yet ratified the Protocol, and has both announced its intention to ratify the Protocol and indicated its preferred policy package for implementing the Protocol in New Zealand[9].

[24] It is an established principle of English and New Zealand common law that treaties do not, of themselves, become part of domestic law. For example, the Court of Appeal said in ***New Zealand Airline Pilots Association Inc v Attorney-General***:[10]

[9] See Climate Change, The Government's Preferred Policy Package, A Discussion Document, 2002

[10] [1997] 3 NZLd269 at 280-l.

> As Lord Atkin said for the Privy Council in ***Attorney-General for Canada v Attorney-General for Ontario*** [1937] CA 326 at p.347, it is well established that while the making of a treaty is an executive act, the performance of its obligations, if they entail alteration of the existing domestic law, requires legislative action. The stipulations of a treaty duty [sic] ratified by the executive, do not, by virtue of the treaty alone, have the force of law.

[25] However, as Richardson J said, in ***Ashby v Minister of Immigration***[11]:

> It has been increasingly recognised in recent years that, even though treaty obligations not implemented by legislation are not part of our domestic law, the Courts in interpreting legislation will do their best conformably with the subject matter and the policy legislation to see that their decisions are consistent with our international obligations.

[26] These principles were recognised by the Environment Court in ***Transit New Zealand v Auckland Regional Council***[12] where the Court observed that:

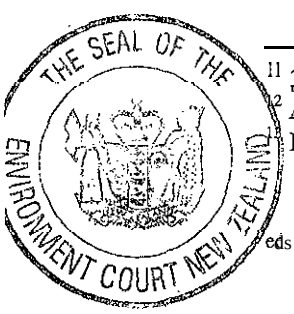
> Legislation is, if possible, to be read consistently with New Zealand's international obligations.

And:

> International instruments are not themselves part of New Zealand law.[13]

[27] Even though New Zealand has not yet ratified the Kyoto Protocol, as a signatory which has declared an intention to ratify, New Zealand is required by Article 18 of the Vienna Convention on the Law of Treaties to refrain from Acts which Would defeat the object and purpose of the Kyoto Protocol, even before it has ratified that instrument.

[28] Accordingly, although the Framework Convention has not been specifically enacted into New Zealand law, and although New Zealand has not yet ratified the Kyoto Protocol, both instruments are relevant considerations to be taken into account pursuant to section 104(1)(i). The weight we give to the instruments is dependent on the nature of New Zealand's obligations under them, and the extent to which New Zealand government policy has crystallised, so as to give an indication of how New Zealand's obligation under the instruments will be given effect in domestic New Zealand law.



[11] [1981] 1 NZLR 222, at p.229.
[12] A100/2000.
[13] Paragraph 49.

Nature of obligations under **the Framework Convention**

[29] No legislation has been enacted to give effect to New Zealand's obligations under the Convention.. This reflects the nature of the Convention. As its title suggests, it is a framework instrument. The Framework Convention:

- Establishes an ultimate objective -- the stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system -- Article 2;

- Sets out a series of principles by which parties must be "guided" in their actions to achieve this objective -Article 3;

- Commits parties to adopt various policies and programmes, to improve their knowledge and understanding of greenhouse gas emissions and measures to mitigate them, including the preparation of national inventories of anthropogenic emissions and sinks. It emphasised in particular the responsibility of developed countries, being the countries listed in Annex 1 of the Convention. This includes New Zealand,- Articles 4-6;

- Establishes a conference of parties to review the implementation of the Convention and any related instruments that the conference of parties may adopt'- Article 7;

- Establishes various administrative arrangements for the operation of the Convention -- Articles 8- 13 . .

Nature of obligations under Kyoto Protocol

[30] The most important obligation that would be imposed on New Zealand would be to ensure that New Zealand's total greenhouse gas emissions for the first commitment period (5 years from 2008 – 2012) are no higher than New Zealand's 1990 level of emissions, or that we have taken responsibility for any emissions over this level through the 'emissions-trading' and "carbon-sinks" provisions of the Protocol.

[31] Taking responsibility for excess emissions would require New Zealand to offset those emissions by making use of domestic forest sink activities or emissions reductions made elsewhere in the world (via trading and project mechanisms under the Protocol).

[32] Other obligations for New Zealand would be to:

- by 2005, make demonstrable progress toward achieving its commitments under the Protocol;
- by 3 1 December 2006, put in place a national system for estimating greenhouse gas emissions and carbon uptakes by sinks;
- Establish a register to record and track changes to New Zealand's assigned amount of emission units under the Protocol;
- Engage in international co-operation in relation to policies and measures, technology transfer, scientific and technical research, and education training;
- Provide financial resources and funding to undeveloped countries to assist them to implement their existing commitments;
- Comply with any future negotiated agreements to further reduce emissions.

[33] Mr Ford-Robinson explained, by reference to New Zealand's Third National Communication Under the Framework Convention, that New Zealand is in a very fortunate position in relation to meeting its first commitment period obligations. As a result of the storage of carbon in Kyoto forests[14] that have already been planted, or which are projected to be planted, New Zealand will have enough carbon credits to more than offset the projected growth in greenhouse gas emissions during that period. That New Zealand would be able to maintain that position following the first commitment period, is doubtful.

[14] Forests that are generated by afforestation or re-afforestation of land that was not in forest at the beginning of 1990.

Government policy package

[34] We have already referred to a number of government papers and publications released for consultation purposes, These instruments culminated in a discussion paper released on the 30" of April 2002 detailing the government's preferred policy package for the implementation of New Zealand's obligations under the Kyoto Protocol[15]. This document confirms that the government has made an in-principle decision to ratify the Kyoto Protocol, and describes the range of measures that, it is intending to implement, subject to consultation. These include the introduction of a Climate Change Response Bill to Parliament, and the development and implementation of a detailed policy package over a number of years.

[35] We have already commented on the Government's Preferred Policy Package[16]. Importantly, we note, that for present purposes, the government is intending to address the issue of what steps are most appropriate to meet, not only the specific target set for New Zealand for the first commitment period, but also the range of other, less prescriptive, responsibilities New Zealand will assume under the Protocol.

[36] We also observe that the government is not proposing to require individual emitters to offset the effects of their emissions, The government intends to deal with different groups in the economy, having regard to their particular characteristics. For example, industries that are seen as being at risk if subjected to the imposition of carbon taxes and other measures, and the agriculture sector, are likely to be exempted from any emission charge. However, the package gives a strong signal that industries in the general energy users group, which by definition includes the electricity industry, will be subjected to a price on emissions.[17]

[37] When taking account of the international instruments we have regard to the following two matters:

(i) The instruments leave it to the individual countries to implement their own domestic package of rules and regulations to ensure compliance with their international obligations under them;

[15] Climate Change - the Government's Preferred Policy Package – a Discussion Document-April 2002.
[16] Paragraphs 19-20.
[17] See pages 15 – 17 of discussion document.

(ii) Our government's policy, although not yet certain: is not proposing to require individual emitters to offset the effects of those emissions. The government proposes to retain to itself the benefit of New Zealand's sink credits; and considers that its climate change policies will address, greenhouse gas emissions in a more consistent and efficient manner than controls under the RMA.

Regional policy framework

[38] Evidence on the regional planning and policy framework within which this appeal must be considered was given by Ms Allan, for Contact, and by Ms Nicholl, for the Regional Council. In summary, there are two relevant documents:

(i) The operative regional policy statement for the Auckland region;

(ii) The proposed Auckland Regional plan Air, Land and Water.

The regional policy statement

[39] Chapter 10 is headed *Air Quality*. Issue 102.4 says:

> The discharge of greenhouse gases, namely carbon dioxide, methane, ozone, chlorofluorocarbons and nitrous oxide, in the region may contribute to changes in global climate.
>
> Such changes on a global scale may, in turn, affect the region by way of changes in weather patterns and sea level.

[40] Objective 10.3 relevantly states:

> 3. To reduce the discharge to air of:
>
> (ii) Greenhouse gases which contribute to global warming, including carbon dioxide, methane and chlorofluorocarbons.

[41] Of relevance is 10.4.22 which says:

> 10.422 Policies: Greenhouse Gases
>
> 1. Operators of industrial or trade premises shall, where practicable, adopt measures that reduce the discharge of carbon dioxide.

2. Adoption of greenhouse gas offsets shall be promoted as a mechanism to, as far as practicable, reduce regional greenhouse gas emissions.

And 10.423 methods.

1. The ARC will promote every energy efficient measures such as optimisation of process flows, product redesign, retro fitting heat recovery equipment to coal and gas fired boiler flues, steam heat recovery, and co-generation.

2. The ARC will take a strong advocacy role, requesting central government to promulgate a national policy statement on greenhouse gas emissions, setting sector-based reduction targets and methods to be adopted.

3. The ARC will investigate methods for promoting the use of equitable, sector-based offsets for greenhouse gas emissions.

[42] The accompanying explanation to the policies and methods for greenhouse gases sets out the sources of greenhouse gases nation-wide, noting both the "no regrets" approach and the scope for energy efficiency. The discussion concludes:

> Providing for offsets is best done equitably on a per sector basis rather than on an ad hoc basis through the resource consent process. To this end, the ARC advocates that central government promulgates a national policy statement, specifying equitable sector-based production targets and methods of implementation.

[43] The regional policy statement clearly signals a drive to efficiency and energy production and use, and the prospects of offsets. However, the document gives expression to an equitable basis for offsets (at least on a sectorial basis) to be promulgated by central government, rather than on an ad hoc basis through the resource consent process.

The proposed regional plan

[44] The proposed regional plan was publicly notified in October 2001. Therefore it is at an early stage of progress through the first schedule process. It expands on the issue of greenhouse gases and on the role of central government as a signatory to the Kyoto Protocol. It sets out the chief contributors to the Auckland region's carbon dioxide emissions, and notes the increase in emissions from the industrial and energy sectors nation-wide. The general objective 4.3.11 relating to greenhouse gas emissions says:

> To avoid, remedy or mitigate the discharge into air of greenhouse gases and ozone depleting substances in accordance with central government policy while enabling economic growth and protecting the health and social wellbeing of the people of the Auckland region.

The associated policy is:

> 4.4.27 Central government policy to manage emissions of greenhouse gases and the use of ozone depleting substances that can be implemented at least cost to the general public and industry in the Auckland region will be supported and promoted.
>
> 4.428 In assessing the effects of discharges into air of greenhouse gases or ozone depleting substances, particular regard shall be had to:
>
> (a) methods to reduce the quantity of the discharge;
>
> (b) the efficient production and use of energy, in particular from fossil fuels;
>
> (c) the efficient collection and utilisation of landfill gases.

[45] The proposed plan contains a clear policy focus, indicating that the Regional Council is looking to central government to take the lead in setting targets in identifying equitable mechanisms for meeting Kyoto Protocol requirements.

Environmental effects

Carbon dioxide emissions

[46] It is agreed that there are no practical methods currently available to avoid the emission of carbon dioxide from any process involving fossil fuel combustion. Otahuhu C will emit 1.2 million tonnes of carbon dioxide on an annual basis, assuming a full load and a maximum duty cycle. Mr G W Fisher, a research scientist with the National Institute of Water and Atmospheric Research Limited, and called by Contact, was of the view that the carbon dioxide emission calculation should not be made on the theoretical maximum, but on the actual operating conditions. Not all power stations are run at full load the whole time, and there can be a substantial difference between theoretical and actual emissions. In the case of Otahuhu C a duty factor of 95% has been used.

[47] Mr Fisher told us that carbon dioxide is a very stable compound that does not react easily in the atmosphere to form other compounds. While it is involved in a number of biological processes and is dissolved in rain water and surface water, it

can stay in the atmosphere for centuries. He said that the molecules emitted from Otahuhu would be dispersed by the wind, quickly, and be spread all over the world to become part of the global carbon cycle, over a period of years.

Effects of carbon dioxide emissions on theglobal environment

[48] It was agreed that the most authoritative statement on climate change is the Third Assessment Report of the Intergovernmental Panel on Climate Change, released in January 2001. The Panel is the authoritative world scientific body, established under the United Nations. It has provided increasingly stronger and clearer messages about the need for global action to address atmospheric greenhouse gas concentrations. In its Third Assessment Report it stated:

> There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities...[and that] anthropogenic climate change will persist for many centuries.[18]

[49] The Panel has estimated that the result of future greenhouse gas emissions will be an increase in globally averaged surface temperature of between 1.4 and 5.8^0 centigrade over the period 1990 to 2100[19].

[50] The project warming range under the Panel's scenarios is about two to ten times larger than the central value of observed warming over the 20th century. The panel considers that the projected rate of warming would very likely be without precedent during the last 10,000 years, even for the lower end of the range. Along with a change in average climate conditions, climate models also project changes in the frequency, intensity, and duration of extreme events such as more hot days, heat waves and droughts, heavy precipitation events, and fewer cold days.

[51] While the Panel considers that at a global level, projected climate change will have both beneficial and adverse environmental and socio-economic effects, on balance, the adverse effects will predominate. More people are projected to be harmed than benefited by climate change, even for global mean temperature increases of less than a few degrees.

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[18] IPCC 2001(a).

[19] The wide range of projected warming is driven by uncertainty about the sensitivity of the world's climate to future greenhouse gas emissions, and by uncertainty about future greenhouse gas emissions themselves. The underlying scenarios of future world development and associated greenhouse gas emissions assume that no specific climate policies are introduced, but the scenarios leading to the lower end of the warming range assume that clean-energy technology will be developed and implemented on a global scale.

[52] Apart from economic losses arising from climate change and extreme events, a rapid change in climate poses risks to unique and threatened ecosystems, and an increasing potential for large-scale and possibly irreversible changes in the earth's system (such as major ice sheets, large terrestrial ecosystems, ocean circulation, and permafrost regions).

Effects of carbon dioxide on the Auckland region

[53] Mr Fisher accepted that there is a broad scientific consensus that climate change is occurring and that anthropogenic carbon dioxide emissions contribute to that process. He then posed the question: whether one can determine the effects of climate change on the Auckland region.

[54] Mr Fisher told us, that over a period of 20 to 50 years, the greatest local effect on climate is due to secondary changes in the Interdecadal Pacific Oscillation (IPO). The IPO causes abrupt "shifts" in Pacific weather circulation that persist for several decades, and also affects New Zealand's climate.

[55] Mr Fisher told us, that he and his colleagues at the National Institute have conducted a study on the expected effects of global climate change on Auckland's climate. Their conclusion was that the influence of the IPO means that the actual climate in any one year will still be highly variable, although the overall trend is for a slight warming in the region. A more significant effect of climate change may be a higher frequency of occurrence of extreme events, such as storms, floods and droughts.

[56] The effects of climate change on New Zealand have been discussed in the papers released by the New Zealand government. As a result of research instigated by the government and consultation and discussions that have followed, the government has indicated its clear view that climate change is more than likely to have an adverse effect on New Zealand and its regions. In its discussion document called Climate Change *the Government's Preferred Policy Package, a Discussion Document, April 2002,* it says:

> The effects of climate change
>
> The effects of climate change are already measurable – the world's temperatures and sea levels are rising, and most glaciers are retreating. Changes in regional rainfall patterns have already been observed and are expected to alter more strongly as climate change continues. The frequency of some extreme weather and climate events such as heat

> waves, droughts and floods is also expected to increase. These changes are likely to influence native ecosystems, agriculture, coastlines, and our economy, infrastructure, health and security.[20]

What contribution would the carbon dioxide emissions from Otahuhu C make to these effects?

[57] It is important to put Otahuhu C's emissions in context. Mr Fisher produced a table listing the amounts and sources of carbon dioxide around the globe today (1999 figures).

Source	Amount of CO_2 discharge (million tonnes/year)	% of total
World total	22,500	100
Developed countries	10,700	48
USA	5,800	26
China	3,000	13
Global transport	9,000	40
New Zealand	32	0.15
Auckland Region	6	0.03
Otahuhu c	1.2	0.005

[58] Mr Fisher pointed out that the immediate and obvious conclusion from the above table is that New Zealand's contribution to the global total of carbon dioxide emissions at 0.15 percent is quite small. He pointed out that not only is it very small, but it is also not growing very quickly. During the 1990s, the rate of increase in emissions from the developing countries was nearly 5% per annum – in other words, their emissions increased by the same amount as the whole annual New Zealand emissions every 22 days, In other words, if New Zealand were some how able to completely stop all emissions of carbon dioxide, the effect would be negated in just 22 days by the growth of emissions from the developing countries. Or if Otahuhu C were not built, the CO_2 saving is equivalent to less than 1 day of growth in these developing nations.

Conclusion on adverse effects

[59] The meaning of "effect" is set out in section 3 of the Act. The definition includes:

[20] Page 51.

(a) any positive or adverse effect;

(b) any temporary or permanent effect;

(c) any past, present or future effect. ..

These categories are quite general and require us to consider any effect, regardless of scale: See Duncan *v Wanganui* District Council (1992) 2 NZRMA 101, 103. The definition should not be interpreted narrowly to mean a single or isolated effect resulting from a particular discharge, as the Act also includes in its definition:

(d) Any cumulative effect which arises overtime or in combination with other effects.

[60] Section 3(d) is significant in the present case. As the Board of Enquiry said in its report on the proposed Taranaki power station":

> The meaning of "other effects" cannot be taken simply to refer to other effects resulting from a discharge or activity for which consent is required, else the total result would be in effect clearly covered by (a) and there would be no need for the elaboration expressed in the second part of (d). One must therefore take "other effects" to refer to effects resulting from other activities which in themselves may or may not be adverse. The normal application of the RMA would be to local effects resulting from an activity located in a specific place.

[61] The last sentence of the above quote reflects, to some extent, a submission made by Mr Robinson for Contact Energy, when he said:

> Depending on the nature of the effect in question, it might well be appropriate to have regard to effects immediately on the other side of a district or regional boundary. However, it is submitted that a requirement to have regard to the effects on the entire world is definitely a bridge too far...[22]

[62] Mr Brabant submitted that it would be wrong to conclude that because a particular emission to air might have an effect beyond a region, or indeed beyond New Zealand, a regional or district council cannot address that issue. He submitted, that to conclude a regional or district council cannot address an adverse effect on the environment from a discharge to air that has more than just regional or district effect, is contrary to the wording of the relevant provisions of the Act, particularly section 5 and other provisions in Part II. Nor does the definition of "environment" in section 2 support such an approach.

[21] Page 66.
[22] Paragraph 40 of opening submissions.

[63] There is merit in Mr Brabant's argument. We have a significant contributor[23] to the total carbon dioxide emission budget for New Zealand, from a point source. The cumulative effects of greenhouse gas emissions are accepted, by the Global Scientific Community and by the New Zealand government, to be widespread and serious. We can find nothing in the wording of the relevant provisions of the Act, particularly in section 5, Part II and in the definitions of "environment and effects" in section 2 which could limit the application of consideration of effects to within the boundaries of a regional council.

[64] Accordingly, we conclude that consideration is to be given to the effects on the environment as it actually exists now, including the effects of past carbon dioxide emissions. In considering the effects in the future of allowing the proposal we have to consider the environment as it is likely to be from time to time, having regard to existing scientific knowledge and *a* reasonable prognosis based thereon.

[65] On the evidence presented to us, we find that the greenhouse effect and the possibility of climate change are a matter of serious concern, It is difficult to assess the degree of concern because there are widely differing opinions as to the likely environmental consequences. However the weight of scientific opinion is such, that on balance, the threat posed by the enhanced greenhouse effect is sufficiently significant for us to conclude that the green house effect is likely to result in significant changes to the global environment, including New Zealand and the Auckland region.

Mitigation measures

[66] Mr Fisher told us that so far as mitigation is concerned, there are two general options -the first, being to reduce or capture emissions of carbon dioxide, and the second, to offset those emissions.

Reduction and capture of carbon dioxide

[67] Mr Fisher explained to us the as yet unsolved problems of capturing and sequestering carbon dioxide. In summary, he said that the technology and procedures for capturing and sequestering carbon dioxide are, at the least, decades

[23] Its significance is enhanced because of its stability which enables it to stay in the atmosphere for centuries.

away — and unlikely to be seen within the lifetime of Otahuhu C. His evidence in this regard was not contradicted.

Offsetting by replacement of less efficient thermal generation

[68] Mr T Stevenson, Contact's General Manager Electricity Trading, explained how the electricity market operates. We do not intend to refer to his evidence in detail. Significantly, and of relevance, Mr Stevenson pointed out that the way the market operates means that more efficient thermal generation is generally offered into the market before less efficient thermal generation. He said that there is a correlation between efficiency levels and the levels of carbon dioxide emissions, Less efficient thermal electricity generation plants, such as those at Huntly and New Plymouth, discharge more carbon dioxide emissions for the same level of electricity generated, than would be the case if that same electricity were generated from a new combined cycle thermal power station, such as Otahuhu C.

[69] Mr Stevenson concluded, that mechanisms of the market can be expected to reduce carbon dioxide emissions overall, if electricity production from Otahuhu C is introduced.

[70] Mr R G Laws, a self-employed water engineering and management consultant, was called by the Society. He looked at the market forces from an historical point of view, and predicted growth rates for electricity demand. He considered there to be insufficient thermal generation in use for it to be displaced by all of the new high efficiency plants that are in the process of being consented. He concluded that Otahuhu C is likely to have some one-time effect, reducing emissions when it is commenced. But as electricity demand increases over time, eventually the less efficient thermal generation will be brought back on-line, whereupon the displacement effect is lost.

[71] We found this conflict of evidence difficult to resolve. Any conclusion must necessarily rely on a variable number of predictions. Nevertheless, we find that there will be a reduction of carbon dioxide emissions for a time after the commission of Otahuhu C, but that over time the nett reduction is likely to dissipate.

[72] However, that is not the end of the matter. Mr A J Sommerville of Contact, deposed that, at about the same time as the decision under appeal, Contact decommissioned its Stratford and Whirinaki Power Stations. Those power stations

had resource consents permitting air discharges extending to 2022 for Stratford, and 2015 for Whirinaki. Mr Fisher gave evidence that the capacity of the two decommissioned stations to emit carbon dioxide was over twice that from Otahuhu C 'on full load.

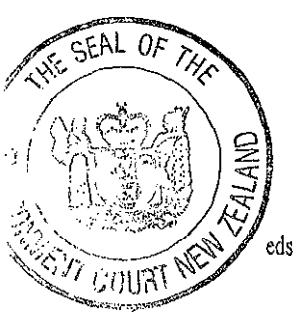
[73] Mr Laws responded by observing that the decommissioning of the Stratford and Whirinaki plants were made by Contact for sound economic reasons, not in order to mitigate carbon dioxide emissions. He noted that the Stratford and Whirinaki plants had not operated very much in recent years, and that accordingly there is little setoff.

[74] We consider Contact's motivation to be irrelevant. However, we are of the view that while a net reduction of carbon dioxide emissions may be the overall result, at least for a time, and it is a relevant consideration; nevertheless it is the emissions of carbon dioxide from Otahuhu C together with their cumulative effects that needs to be addressed by way of conditions, if any.

Offsetting by carbon sinks

[75] Mr J P MacLaren, a specialist in forest management and inventory, gave evidence for the Society. He explained the process of photosynthesis, which is well known to botanists. Plants absorb carbon dioxide through pores in their leaves and combine it with water (transported from their roots) to make sugars, which form the basis of plant material including wood. Carbon comprises 27% (12/44) of carbon dioxide by weight. Almost all of the carbon in wood is derived from the atmosphere. Half the dry weight of wood is carbon.

[76] As well as gaining carbon by the process of photosynthesis, a forest releases carbon to the air by the combustion or decay of biomass. Forest, established on a non-forested site, gains carbon until an upper limit is reached when the carbon loss equals or exceeds the carbon obtained by photosynthesis. After that point, the quantity of carbon held by the forest fluctuates. During any short period it may decrease, increase or remain relatively constant. Averaged over a long period, an established forest is "carbon neutral" and does not sequester significant amounts of carbon.



[77] Mr McLaren emphasised that it follows, that counteracting the gain in, atmospheric carbon by continuous fossil fuel emissions requires a continuous programme of tree planting on sites previously devoid of woody plants.

[78] He then gave evidence quantifying sequestration by forests 'and gave examples of typical sequestration rates, saying:

> If Otahuhu power station is to limit its effect on atmospheric carbon by means of forest sinks, then it must ensure that these sinks are additional to that which would otherwise occur. Purchase of sink credits from an existing forestry company would merely result in a windfall gain for the latter, with no benefit to the atmosphere.
>
> In order to ensure that afforestation amounts to a genuine offset, it would be necessary to establish forests on land where no afforestation was currently occurring. Such land could include marginal or erosion prone sites where forestry would be considered uneconomic under current or likely future conditions.[24]

[79] Mr Ford-Robertson, a senior scientist for the New Zealand Forest Research Institute called by Contact, criticised the evidence of Mr MacLaren. For example, he disagreed with Mr MacLaren's statement to the effect that a continuous programme of tree planting on sites previously devoid of woody plants is required to offset emissions from fossil fuels. He pointed out, that while the planting of trees on sites devoid of woody vegetation may be one means of sequestering carbon dioxide emissions, it is not the only means. Some species sequester more carbon than others, therefore switching species within an existing forest to species with higher carbon densities, would also be an effective option. He also referred to other means for increasing the take up of carbon, such as increasing the rotation length of an established forest.

[80] Mr Ford-Robertson also questioned Mr MacLaren's concept of "additionality", which is the notion that carbon offsets for emissions of carbon dioxide and other greenhouse gases must be established specifically for the purpose, and must be additional to those carbon credits that occur as a result of other actions. His reason for doing so was that the concept of additionality is not reflected in the Kyoto Protocol, under which New Zealand will claim most of the sink credits. Rather, it takes the environment as it finds it, and requires parties to account for the net human induced changes in greenhouse gas emissions by sources and removal by sinks in the relevant counting period[25]. He said it is not relevant for Kyoto purposes

[24] Mr MacLaren, EiC, paragraphs 71 and 72.
[25] Article 3.3.

whether a sink is established for the purpose of offsetting emissions, or for some other purpose (eg the planting of forests only for forestry purposes).

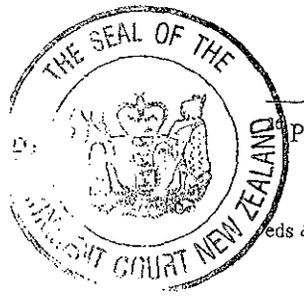
[81] Mr Ford-Robertson's evidence, which reflected the findings in the government papers to which we have already referred, was that there is already an extensive and increasing planting of plantation forests throughout New Zealand. The effect will be, that when calculated according to the basis set out in the relevant international agreements, then over the next ten years, New Zealand will be in credit (from a carbon perspective). Greenhouse gas sinks will fully offset the expected growth in greenhouse gas emissions. This is the expectation, confirmed in the Government's National Interest Analysis[26]. However, in this reference, the consent will enure until 2034. We doubt that New Zealand can meet its Kyoto Protocol obligations by tree planting for the life of the air discharge consent.

[82] Put simply, Contact's argument is that there is no need to plant any more trees to offset its carbon dioxide emissions. More than enough trees have been, or are, being planted throughout the country. Therefore, there is nothing for Contact to offset. With respect, we consider that argument to be somewhat simplistic in the global context. It is the combined global effect of carbon dioxide emissions that is posing the threat to world climate change. To confine the environment to New Zealand would be artificial in the overall context of the enhanced greenhouse effect. It is the cumulative effect of the carbon dioxide emissions which can remain in the atmosphere for many years, over the life of the consent that we must consider.

Discretion

[83] We have already made reference to the preferred government policy. It has been slow to emerge. This is understandable because of the complex ramifications economically, socially and environmentally. The government papers reflect a considerable amount of research and consultation and an awareness of the economic effects and the indirect social and cultural effects that may occur. This concern is apparent in the various government papers and publications.

[84] For example: ***In Kyoto Protocol: Ensuring our Future 2001, a Climate Change Consultation Paper*** it says:



> There may be indirect social and cultural effects that occur because of economic changes under the Protocol. These will depend very much on the policies we put in place to meet our Protocol obligations. Possible issues include: the costs of limiting or reducing emissions, who benefits from decisions relating to sinks credits, and distribution effects.[27]

And again:

> The effect on New Zealand's economy of meeting our obligations under the Kyoto Protocol will depend on the policies we choose.
>
> Effects on industry sectors are heavily dependent on how we implement the Protocol here in New Zealand.[28]

And in the ***Third National Communication on Climate Change*** it says;

> Since the adoption of the Kyoto Protocol in 1997, progress has been slow in finalising details of the rules and guidelines that countries need before they can ratify the Protocol. In particular, issues around the emissions trading and project mechanisms, sinks and compliance are critical. How these will work in practice has significant economic implications.*'

And in ***Climate Change: the Government's Preferred Policy Package;*** April 2002 it says:

> Issue 4: The Use of Carbon Sinks
>
> Sink credits create both assets and liabilities. They represent a significant risk management tool as the country makes the transition through the first commitment period and beyond. It is important that sinks be managed to maximise their value to New Zealand.

[85] In order for the government to give effect to the Kyoto Protocol in a balanced way, it presages a need to ensure a consistency of approach to guarantee an efficiency that is compatible with achieving the best environmental, social and economic outcomes. This would appear to be one of the main underlying reasons for the preferred government policy. Unless the problem is faced up to on a consistent global scale the social and economic effects arising from the ad hoc imposition of conditions could be considerable.

[86] On the evidence we have heard in these proceedings we are not able to assess adequately either the national and international implications or the social and economic consequences of imposing such a condition. As we have already said,

[27] Page 15.
[28] Page 17.
[29] Page 10.

these are quintessentially policy decisions, to be arrived at after much research, discussion, and consultation,

[87] The power contained in section 108 is to grant consent "on any condition that the consent authority considers appropriate". This is a very wide power, but of course, any condition must nevertheless be reasonable. ***Housing New Zealand v Waitakere City*** Council [2001] NZRMA 202, applying ***Newbury District Council v Secretary of State for the Environment*** [1981] A.C. 578, [1980], All ER 731.

[88] We accept that the present scientific consensus is that the cumulative anthropogenic emissions of carbon dioxide on a global basis contribute to climate change. While it is not possible to definitively quantify, the prognosis is sufficiently serious for us to find that the proposed emissions from Otahuhu C will result, in a cumulative way, in an adverse effect of some consequence. However, we are required to exercise a broad judgment after considering a range of considerations in order to give effect to the single purpose of the Act as expressed in section 5 and further elaborated on in Part II. After a careful consideration of the evidence we are left with a considerable disquiet about the efficacy, appropriateness and reasonableness of a condition as proposed. This disquiet is engendered by a range of considerations including:

(i) Our inability on the evidence to assess adequately the national and international consequences of such a condition;

(ii) Our inability on the evidence to assess adequately the social and economic consequences of such a condition;

(iii) The clear preferred policy of the New Zealand Government to address greenhouse gas emissions as an international issue, and that sectional emissions should be considered at national level to ensure a consistency of approach to guarantee an efficiency compatible with achieving the best social, environmental and economic outcome;

(iv) The endorsement of the preferred government policy by the regional policy statement and the proposed regional plan;

(v) The doubtful efficacy of such a condition in the global context.

Jurisdictional issue

[89] Mr Burns, on behalf of the Regional Council, submitted that to the extent that the proposed condition envisages that forestry sequestration plantings may take place in any part of New Zealand, the proposed condition exceeds the Council's jurisdiction.

[90] Mr Burns referred to section 30 of the Act and submitted that the respondent's powers are limited to the purpose of giving effect to the Act in its region. This includes the power to impose a condition under section 108. He submitted that' a condition requiring sequestration planting outside of the Auckland region would be outside the powers bestowed on the respondent by section 30, and thus beyond the jurisdiction of both the respondent, and of this Court on appeal.

[91] Similarly, Mr Bums submitted that the power to monitor and enforce sequestration planting outside the Auckland region would be outside the Council's jurisdiction.

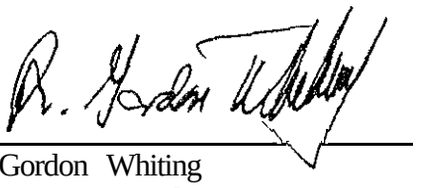
[92] It is not necessary for us to decide this issue. However, to the extent that the condition imposes sequestration planting outside the Auckland region, even if the Regional Council has jurisdiction to impose such a condition, we doubt that it can legally monitor and enforce such a condition. Quite apart from the legal position, if such a condition were imposed, the Regional Council would be confronted with considerable practicable difficulties in monitoring and enforcing it.

Determination

[93] Accordingly the appeal is dismissed. Costs are reserved but it is our tentative view that costs should lie where they fall.

DATED at AUCKLAND this 6th day of September 2002

For the Court:



R Gordon Whiting
Environment Judge

APPENDIX 1

An amendment to the conditions of consent for Permit Number: 24404 requiring the full offsetting during the term of the consent granted of the cumulative carbon emissions of the plant by the creation of new sinks of carbon dioxide which achieve permanent removal of the emitted carbon dioxide from the atmosphere. The proposed additional condition of consent to read:

(a) From the date on which the discharge of CO_2 (an air pollutant) authorised by this permit commences, the consent holder shall have in place a programme of forestry sequestration to off-set the effects on the environment of the emission of CO_2 as authorised by the permit.

(b) The emissions of CO_2 to air authorised by the permit will be off-set by forestry plantings in New Zealand at the following rates:

(i) 1ha of exotic production forest in New Zealand for every ~~100~~ 112 tonnes of carbon emitted pursuant to the discharge permit; or alternatively;

(ii) 1ha of indigenous forest established on the basis that it shall remain in perpetuity (and for that purpose shall be the subject of an appropriate covenant to ensure its continued existence) for every 200 tonnes of carbon emitted.

(c) During the term of the discharge consent, the forestry sequestration plantings may be either exotic or indigenous, or a mixture of both, provided that the plantings so established achieve a full off-set of the carbon emitted.

(d) The cumulative obligation declared as a total to March 31st of each year shall be discharged by the cumulative planting matching the obligation by 3 1 October of the same year.

(e) The areas required to be planted shall be nett of unplanted areas which may need to be left in a land area for access, or tire security or like reasons relating to forest operations.

(f) Planting must establish long-term forest vegetation with canopy trees exceeding 15m in height.

(g) The land used for such planting shall either be free of woody plants or have low woody vegetation of less than 5m height, generally lacking indigenous trees.

(h) Unless indigenous forest is being planted in a national park, on a reserve held under the Reserves Act 1977 or on land ~~being created~~vested as permanent reserve by special legislation, any areas of indigenous vegetation planted to achieve an off-set of emissions are to be covenanted in perpetuity. This could be done

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by agreement with the Minister of Conservation under s36 of the Reserves Act, or through another suitable party which could include the Minister of Conservation, local or regional councils or the Queen Elizabeth II National Trust or by a private covenant registered, against the title(s) to th.e land being planted. The covenant in each case shall be approved by the Group Manager, ARC.

(i) Exotic forest shall be new exotic forest grown for production purposes at normal stocking densities for production forestry. If a different form of production forestry is proposed with lower stocking densities (eg, forest farming) the available credit will be adjusted to account for the lower number of trees per hectare. There is no restriction on harvesting exotic forest within the period covered by this agreement. ~~The land used for such forest shall not have previously had exotic forest, be free of woody plants or has low woody vegetation of less than 5m height, generally lacking indigenous trees~~. Forest when clear felled at the end of the production cycle shall be replanted in forest species.

(j) The consent holder will be required to 'prepare and submit for approval of the Group Manager, ARC a Forest Management Plan ("FMP") covering:

- Location or locations of areas proposed to be planted, during the life of the discharge permits on a year by year or other periodic basis, but at the least for the following 12 months in order to meet the required omission offsetting.

- Details of the planting regime including plant species, plant density and planting procedures and management.

- A planting management plan sufficient to ensure that the planting established such that assuming normal weather and other circumstances the long-term forest vegetation involving canopy trees exceeding 15m in height will, be achieved within expected normal timeframes.

- With indigenous planting the Management Plan must set out details of the planting regime to achieve the required succession of indigenous vegetation to ensure not just canopy trees but also the establishment of a natural and diverse range of species as found in indigenous vegetation in the chosen location.

- where *planting of forestry* intended for harvesting is involved the ~~Management Plan~~ FMP shall cover the proposed procedures for harvesting followed by replanting,

- ~~An appropriate bond will be required to ensure completion of the planting and its management to the point where maturity to achieve full canopy tree development is assured.~~

- For exotic forestry plantings ~~T~~the consent holder is to provide upon commencement of the planting regime for each proposed location evidence that insurance cover has been arranged sufficient to ensure that replanting can be achieved in the event of tire or other event that destroys the whole or any part of the area of forestry concerned.

(k) An appropriate bond. will he required, to ensure completion, of the planting and its management to the point where maturity to achieve full canopy tree development is assured,

~~(k)~~(l) The consent holder *may* at any time ~~seek to increase~~ propose an amendment to the sequestration allowance per hectare set down in (b)(i)-(ii) above for any specific area. A ~~Forest Management Plan~~ FMP as required by Clause (k) of this condition for the specific area shall be prepared. The plan is to be submitted to the ARC who shall refer the proposed management plan to a panel of two people, independent of the consent holder and the ARC, one being an expert on forestry biomass accumulation. They are to assess whether the proposed figure for sequestration on average over a cycle for production forest, or at climax for indigenous forest will achieve the required sequestration and provide a report to the ARC certifying that the proposal meets the requirement of the consent conditions in respect of off-setting the CO_2 emissions. The consent holder shall meet the costs of processing this alteration.

~~(l)~~(m) Where the consent holder contracts with other parties to meet its *offset* obligations through forestry planting (whether indigenous or exotic), the contractual arrangements and provisions shall be shall be made available to the Group Manager, ARC.

~~(m)~~(n) Credit for carbon sequestered under this provision in compensation for Otahuhu C emissions, shall not be claimed in support of permitting any green house gas emissions from any other source.

(n)(o) The consent holder shall maintain a registry of carbon emissions from Otahuhu C and forests planted under this provision containing the data as set. out in the schedule. This registry shall be provided to the Croup Manager, ARC, complete to March of each year, no later than 31 May of that year. The offset register shall be completed following the requirements set out in the Schedule to this consent.

(o)(p) In the event that during the term of the discharge permit New Zealand legislation is introduced which requires carbon offset obligations to be met by the permit holder in substitution for any obligations under a resource consent (or in substitution for the specific obligations under this discharge permit), then that shall be a circumstance which enables the consent authority at any time during the term of the discharge permit to review the consent conditions pursuant to section 128 of the Act. This provision shall not be seen as affecting the Consent Holder's right to seek a change or cancellation of the consent conditions requiring offsetting of carbon emissions pursuant to section 127 of the Act.

Schedule

offset Register

The register shall contain an inventory of:

- The carbon emitted up to date
- A reconciliation of the areas planted in offset

The register shall contain the following information on each piece of planted land.

This list may be added to at the request of any of the ARC parties where further information is reasonably needed to ensure the integrity of the scheme.

- A location description
- A unique identifier to a forestry block
- Land title description for the title(s) it is within and the owners
- Reference to the covenant arrangement (indigenous)
- Date planted
- Species planted

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- The sequestration allowance per hectare ~~(section 2.1 and 2.4 if raised for a particular block)~~
- If production felled the proposed replanting date (exotic)
- Planting sequence stage reached description (indigenous)
- Insurance certification (exotic)

A plan of each identified block shall also be entered into a single GIS system in common use in New Zealand with the identifier as above linked to each block with block perimeters located in a map projection in common use with a precision of better than ± 5.0m horizontally, and delineating to the same precision the perimeter of any contiguous unplanted area within a block which exceeds 0.1 ha.

or alternatively

A condition using the wording set out in paragraph 9.68 of the Board of Inquiry Report on the Proposed Taranaki Power Station dated February 1995.