

An Environmental Appraisal

GREENPLAN FORESTRY LIMITED

Guy Salmon, Environmental Consultant, and Executive Director of the Ecologic Foundation, was commissioned to carry out an environmental appraisal of Greenplan's activities in September 2002.

This is the summary of his report published in March 2003.

The full report can be viewed at www.greenplan.co.nz.



1. INTRODUCTION

Greenplan Forestry Limited is a forest management company based in the King Country, with management responsibility for about 6,300 ha of planted radiata pine forests. It plants an additional 800-1,000 ha of new forest each year.

The forests are located at more than 20 separate sites, predominantly centred around Te Kuiti, but extending widely from near Ngaruawahia in the north to near Taumarunui in the south.

The Greenplan forests are still young, and harvesting will not begin until 2016 at the earliest. The company's present activities consist of establishing new forests, and managing those already planted. Management includes pruning of all stands, fire protection, and the control of weeds, pests and diseases.

The process followed during the land acquisition process is important from an environmental point of view. Greenplan uses the services of professional forestry consultants, P F Olsen and Company Ltd. Aerial photography is followed up with a walk-over survey in which GPS technology is used to record data and plot areas that should be excluded from afforestation.

The main areas excluded are in three categories: significant areas of indigenous vegetation, whose clearance would breach the NZ Forests Accord; areas that are too steep or erosion prone to be safely afforested and harvested, that need to be simply left to regenerate; and areas of high quality land that are better suited to farming or rural residential use.

Land in the first two categories is reserved within the forest development, while land in the third category is sold or exchanged, usually with adjoining landowners. Measures are also taken to protect waahi tapu (Maori sacred sites).

The land use pattern is thus being rationalised, to better reflect its inherent suitability for different uses.

2. CONTEXT OF GREENPLAN'S ACTIVITIES

Plantation forestry in New Zealand

We are now moving into the fifth rotation of successful, large-scale radiata pine forestry in New Zealand. A large amount of information and experience has been accumulated. Growers benefit from a large 'knowledge economy' investment in the species, and from the nation's biosecurity management system.

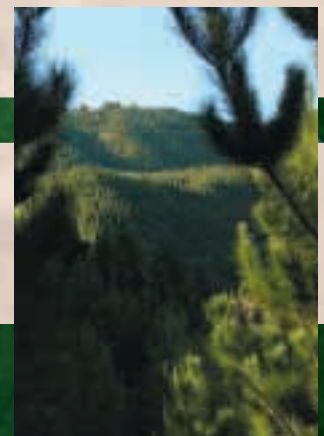
During the 1970s and 1980s, there was strong community resistance to the clearance of native forest for pine plantations. Debate on this issue culminated in negotiations between the forest industries and most environmental groups, leading in 1991 to the signing by these parties of the NZ Forests Accord.

The Accord has largely ended the practice of native forest clearance, and has established a clear, widely agreed definition of the boundary between vegetation which may be cleared and that which may not be.

The NZ Forests Accord was extended in 1995 by a further agreement known as 'Principles for Commercial Plantation Forest Management in New Zealand.' These two documents have provided a general basis for agreement as to the acceptable environmental parameters of plantation forest activity in New Zealand.

Physical environment of the King Country

The King Country climate is particularly favourable for forest growth, with annual averages for both rainfall and temperature being in the top third of New Zealand sites. Rainfall is also well-distributed throughout the year, and has low year-to-year variability.



GREENPLAN
FORESTRY INVESTMENTS

The soils on which the Greenplan forests are established were originally formed under forest cover, and are generally very well suited to re-forestation. They have moderate to severe limitations for pastoral use due mainly to their potential for erosion, and are in fact, better maintained in trees.

The land use pattern of the area is characterised by an historical heritage of excessive forest clearing for agriculture. The complexity of the soil and topography pattern means that it is not appropriate to convert vast tracts to forestry in a wholesale manner, as proposed in the past by corporate forestry interests.

What is emerging instead through Greenplan's activities in the King Country is an intimate pattern of mixed land uses, with small plantation forests adjoining areas of regenerating indigenous forest reserves, farmlands consolidated on the better soils, and other rural land uses including new rural settlements.

This is better attuned to the complex pattern of the land's potential than the blanket farming or blanket forestry approaches of earlier times.

Socio-economic environment of the King Country

The King Country's past prosperity has rested heavily on pastoral agriculture. With the long run decline in pastoral commodity prices, there has been a strong trend of farm amalgamations in recent decades, with an associated decline in the rural population.

Greenplan's afforestation activities strengthen the rural economy in two ways. First, they provide a way of attracting investment and generating a better income on areas of land that would otherwise be making a marginal or negative contribution to the viability of farming in the King Country.

Second, local business benefits directly from the company's operations – benefits that will expand once harvesting begins. At present, the majority of the planting and pruning workforce has to be brought in on contract from towns outside the King Country, towns where the forest industry is more developed.

Greenplan is a family company with strong roots and many connections in the King Country. It is better placed than a large foreign corporation would be, to understand community aspirations, and show commitment to community concerns in the face of competing considerations.

3. ENVIRONMENTAL EFFECTS OF GREENPLAN'S ACTIVITIES

Impact on soils

In general, the conversion of pastoral hill country slopes to plantation forestry will markedly reduce soil loss, and maintain soil nutrients. Greenplan's practice of having each site examined in a walk-over by qualified personnel should ensure that sites not well-suited to forestry are excluded at the planning stages.

Assuming that Greenplan's site selection process continues to operate to a high standard, and that harvesting is carried out to best practice standards, the overall effect of the company's afforestation and reservation activities in the region will enhance soil resources. It will produce a greatly improved match across the region, between land capabilities and actual land use.

Impact on watercourses

The impact of afforestation on freshwater quality is very positive during the period prior to harvest. Indeed, there are a number of examples where streams running clear from Greenplan forests can be contrasted with silty or slimy watercourses draining from farmland.

Evidence from many studies emphasises that levels of nutrient, sediment and pathogens – the key drivers of water quality deterioration – are much lower in streams flowing from intact forested catchments than in those draining pastoral agriculture catchments.

The native fish that are present in New Zealand streams evolved in a forested environment and have a strong preference for clear, cool, shaded streams. Woody debris, originating from forested stream margins, is an integral and important component of healthy natural stream ecosystems. Where trout are present, they also benefit from these habitat conditions.

The key question is whether the health of the streams draining the company's forests can be maintained through the forest harvesting phase, and during the years which follow prior to regrowth of the next forest crop.

The impact of harvesting activities on water courses can be reduced by three steps: first, selecting planting sites which are not prone to soil erosion; second, retaining streamside protection strips; and third, using best practices in harvest operations, especially in the construction of logging roads.

Greenplan uses a procedure for site selection, which avoids erosion-prone sites. We did find early Greenplan planting sites without streamside protection strips, but noted that recent practice has improved. The third issue – relating to harvest operations – has not been tested yet, as the company's trees are all more than a decade from harvest.

Performance at harvest will be a critical test of the company's capacity to safely manage the impacts of its activities on the region's waterways. In the meantime we recommend that the company provide effective riparian protection on all permanent waterways, with an emphasis on use of suitable indigenous species.

Some reduction in low flows can be expected, compared to streamflows under pasture. Overall, afforestation is likely to reduce total water yields to the levels that existed naturally, prior to widespread deforestation of the land by humans.

Impact on biodiversity

Over most of the area where Greenplan forests are located, there is no authoritative data regarding sites of special importance for biodiversity conservation. However, it is very unlikely that Greenplan's activities are having an adverse effect on biodiversity. This is because most indigenous vegetation, stream margin vegetation, and any areas of wetland, are routinely excluded by the company from clearance and afforestation.



In addition, the company consults the Department of Conservation on areas that may be of conservation significance. This has led, for example, to the company setting its forests well back from sinkholes and fissures on limestone landscapes, to ensure that debris does not enter cave systems.

Greenplan's pest control and fire protection activities – although aimed to protect its planted forests – actually play an important role in improving the environmental security of adjoining or enclosed areas of indigenous habitat. This affords a significant benefit for the long term sustainability of the region's biodiversity.

Biodiversity is almost certainly better off under the new land use pattern than it was under the old.

Impact on climate change

The impact of greenhouse gas emissions – notably carbon dioxide, methane and nitrous oxide – in warming and destabilising the global climate is now widely accepted in the scientific and policy-making communities. The Kyoto Protocol requires New Zealand to stabilise its net emissions of greenhouse gases at 1990 levels over the years 2008-2012.

The conversion of pastoral land to forestry can make an important contribution to achieving this objective. Where there is a consequent reduction in livestock numbers, emissions of methane and nitrous oxide are reduced. In addition, the establishment of a plantation forest absorbs large quantities of carbon dioxide and – provided the forest is permanently managed on a sustained yield basis – stores it away from the atmosphere.

The contribution that planted forests can make in this way is formally recognised in the Kyoto Protocol. Planting trees is not an alternative to the need to reduce fossil fuel and agricultural emissions, but it is a recognised and valued complement to such efforts.

Wood processing industries can, however, increase carbon dioxide emissions. No detailed life cycle analysis has yet been done of the greenhouse gas impacts of wood production and use. Yet there are important opportunities for forestry and wood processing companies to contribute to emissions reduction efforts; and if these are implemented, the expansion of planted forestry can be climate-friendly in its overall impact.

Through its expanding planting activities, Greenplan is making a useful contribution to New Zealand's climate stabilisation efforts. By pruning its trees, the company is also taking the most important single step it can take at present to minimise future emissions associated with wood processing.

Impact on recreation

The company makes its land available on a controlled basis for recreational uses, notably hunting and fishing activities. The company's growing land ownership, in conjunction with its liberal access policies, has probably increased the area of land readily available for recreation in the King Country.

4. ENVIRONMENTAL RISKS

Drought, fire and wind

The historic incidence of fire losses in New Zealand's planted forests is minuscule, and very largely confined to dry and drought-prone regions. The King Country is essentially a drought-free region, the fire risk is negligible, and it is an area of below-average windthrow risk.

Biosecurity risks

Radiata pine forests have done extremely well in New Zealand and other southern hemisphere countries in part because the trees are grown in an environment which is largely free of the pests and diseases that the same species has to cope with in its indigenous environment in North America.

There has been growing concern recently about the arrival of potentially damaging forest pests in several southern hemisphere countries. Auckland suburbs have twice in the last five years been subject to aerial spraying activities designed to eliminate dangerous forest insect pests that have arrived in New Zealand from abroad.

The risk of such incursions grows with international trade and visitor movements, but it can be substantially reduced by effective biosecurity management. Nonetheless, zero incursions cannot realistically be expected. Reliance is placed on back-up systems that can seek to eliminate a pest once it has arrived; to slow its progress through New Zealand; and to reduce its impacts on forests if it reaches them.

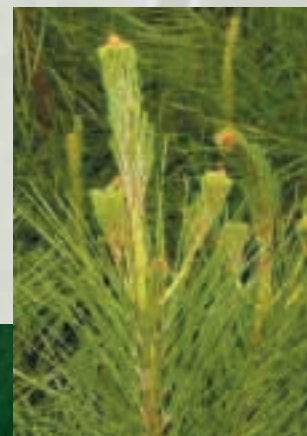
Most of the country's radiata pine plantations have an excellent record of health and disease resistance. Where problems have developed, the substantial research establishment which stands behind radiata pine has so far, been able to find solutions.

In Greenplan's case, the relative isolation and dispersal of its forests in the King Country provides a further practical safeguard in the event that a new weed, pest or disease does become established in New Zealand. Existing problem weeds such as gorse are carefully managed to prevent their spread.

Hazardous chemical risks

The company makes sparing use of a few chemicals for particular purposes, including copper oxychloride to control a fungal disease of trees; and the herbicides Gardoprim (terbuthylazine) and Velpar (hexazinone) to protect growing trees from gorse and other competing plants. None of these uses need be regarded as a matter of concern.

The pesticide 1080 is also used in the company's forests, and indeed widely throughout New Zealand. Its purpose is to control populations of an introduced animal, the possum, which can prevent forest regeneration, damage biodiversity, and spread disease to livestock.



1080 is a naturally occurring substance, which quickly biodegrades to harmless products once in contact with water. Correctly applied, it poses negligible risk to either humans or bird populations. However, 1080 can kill dogs and livestock, if these are not excluded from the treated area.

The key issue with 1080 is safe application. Operators using chemicals in the company's forests are trained in the NZ Agrichemical Users' Code of Practice.

The reasons for using 1080, and the very minor nature of its environmental effects if safely applied, are sufficiently well understood in the King Country that its use has not been a controversial issue in recent years.

Other stakeholder concerns

Inquiries made of district and regional councils, representatives of tangata whenua, environmental and conservation interests have confirmed that there are no active concerns being expressed in the community about the way Greenplan conducts its business.

In general, those respondents with more regular dealings with the company expressed a more favourable view than those with relatively little contact. In other words, the more people got to know the company, the more they liked it.

However, the potential for environmental problems or compliance issues to arise will be greater when the company commences the harvesting of its forests.

There are some issues emerging at the national level that could have a bearing on the company's relations with stakeholders in future. The company will need to maintain high standards and a pro-active stance on these issues.

They include the need to improve freshwater quality and stream health, especially through good stream protection; and the expectation that forestry companies will seek third party certification of the wood they are marketing, in accordance with a yet-to-be-agreed, national standard for responsible forest management.

5. OVERALL ASSESSMENT

Greenplan is an agent of change in the landscape of the King Country. This is a landscape where much forest was unwisely cleared in the past, and where traditional land uses were blanketed across broad tracts of land without much regard to land suitability, erosion risks, water quality impacts, or biodiversity conservation.

Greenplan's contemporary activities are much more closely attuned to the land's potential and its risks. This is the result of a planned approach that reflects enlightened policies and makes good use of land information.

What is emerging through Greenplan's activities in the King Country is an intimate pattern of mixed land uses, with small plantation forests adjoining areas of regenerating indigenous forest reserves, farmlands consolidated on to the better soils, and other rural land uses including rural residential settlements.

From an environmental perspective, the net effect of this emerging pattern is to enhance the quality of the region's soil, water and biodiversity resources, and to reduce the risks of erosion, siltation, flood, fire and pest damage.

By expanding its plantings, Greenplan is making a useful contribution to New Zealand's climate change stabilisation efforts. By growing pruned trees for solid wood markets, the company is also taking the most important single step it can take at present to minimise future greenhouse gas emissions associated with wood processing.

Any land use activity gives rise to environmental risks. To the extent that such risks arise from Greenplan's activities, they are being effectively managed using recognised best practices.

Looking to emerging issues that will be increasingly important in the future, we make two particular recommendations:

- ▶ That Greenplan continue to enhance its stream protection activities, with an emphasis on developing the planting of indigenous species in permanent protective buffer strips along streamsides;
- ▶ That as the time of its timber harvest approaches, Greenplan seek certification of its forests as well-managed forests, in accordance with the national standard which we expect will have been agreed at that time.

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