

The issue of Protection of class I and class II soils in the One Plan

Alan Palmer
Soil and Earth Sciences
Massey University
Palmerston North

What is the problem?

- Horizons appears to have backed away from direct protection of class I and class II soils
- Report 05-235

“Redraft the section from the One Plan that deals with soils specifically, and the rule stream that may flow from them, so that the discussion on soils is more general in nature and that the outcomes achieved are consistent with environmental management, as opposed to the protection of production values. It is worth noting that there is much in common between these two outcomes”.

- A motion to this effect was passed
- Appears to have removed protection of class I and II soils
- What signal does this send to District and City Councils?

What is the problem?

- A slippery slide from the Town and Country Planning Act 1973 which protected the best soils for the production of food.
- Not specifically mentioned in RMA 1977.

But

- RMA pt III section 9

"No person may USE land in a manner that contravenes a rule in a district plan or proposed district plan unless the activity is expressly allowed by a resource consent."

- Section 11

"No person may SUBDIVIDE land unless the subdivision is expressly allowed by a rule in a district plan or resource consent."

How do we define our best soils for food production?

- Two main concepts:
 1. Land Use Capability
 2. Versatility

A highly versatile soil is one that is capable of growing a wide range of crops suited to its particular climate. In terms of its *physical* characteristics, a highly versatile soil is one which:

- Occurs on flat land or very gentle slopes ($<5^\circ$)
- Has a potential rooting depth of at least 0.75 m
- Offers little resistance to root penetration
- Suffers very few days of soil-water deficit

How do we define our best soils for food production?

- Suffers very few days of water-logging
- Has enough large interconnected pores to ensure good drainage and aeration
- Has a low content of stones
- Is capable of being cultivated by machines throughout most of the spring period
- Has high structural stability, and
- Is not likely to suffer from erosion, flooding or salt contamination.

(Molloy 1998)

How do we define our best soils for food production?

Land Use Capability

- Rates land on scale I –VIII
- Arable land rated I – IV
- Class I is the most versatile multiple-use land with virtually no limitations to arable use (deep, well drained, fine textured, naturally fertile and flood free).
- Class II is very good land with slight limitations to arable use. Slight limitations include texture, structure, potential erosion, potential flooding).

Some Facts....

- Many NZ provincial towns and cities were established on Recent alluvial soils
- Urban areas in NZ occupy about 500,000 ha.
- 180,000 ha of this is of high value for food production
- Area in lifestyle blocks is currently not well known
- 8 million ha of NZ has slope $< 12^\circ$ (potentially arable).
- 1.5 million ha of this is stony
- Other soils are poorly drained or drought prone
- Others have limitations for roots
- Some are infertile (very acid or leached)
- Some occur at high altitude

- Leaves only 2.6 million ha (10% of NZ land area) as high value for food production.
- Only a small proportion of this is actually readily suited to vegetable production

SOIL MAP OF PALMERSTON NORTH CITY AND ENVIRONS, NEW ZEALAND

LEGEND OF SOILS

SOILS OF THE MAIN PLATS

MOIST SOILS - moderately to excessively wet season

- Moist very low soil
- Moist low soil
- Moist low to high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist low to high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil

SOILS OF THE STERILE LITER

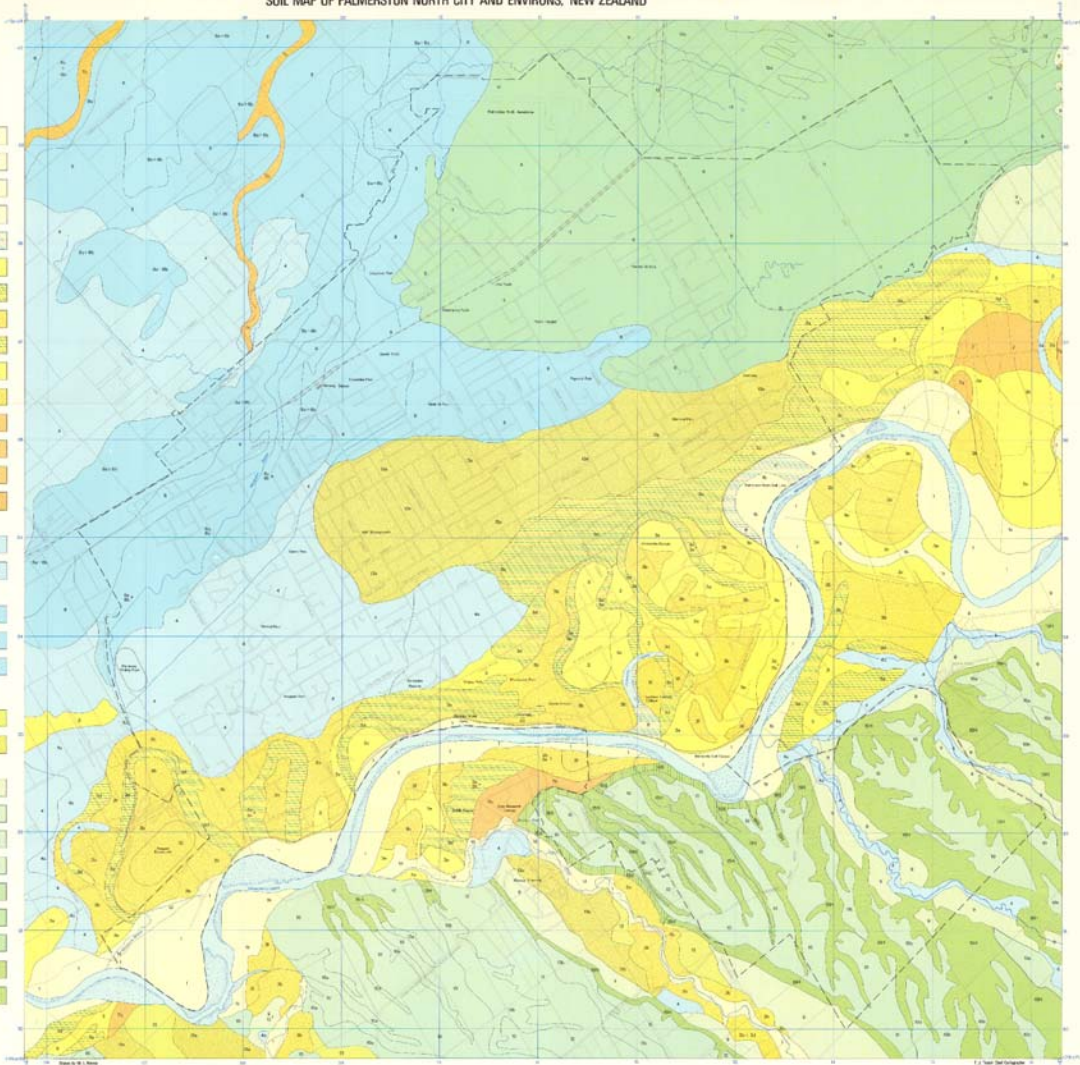
- Moist high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil

SOILS OF THE STERILE LITER

- Moist high soil
- Moist high to very high soil
- Moist very high soil

SOILS OF THE STERILE LITER

- Moist high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil
- Moist high soil
- Moist high to very high soil
- Moist very high soil



Soil Survey of Palmerston North
1:100,000
Scale 1:100,000
1:100,000
1:100,000



Wise Options



**Tokomaru silt loam
High Terraces
Low value for food
production**

**The Tokomaru Soil (left)
does not need to be saved
for food production but
the Manawatu soil (right)
does**



**Manawatu fine sandy
loam. Low Terraces
with potential to flood,
but valuable for food
production**

The case against protection of versatile soils

- The free market will provide positive resource management under the RMA (let the market decide)
- New technology can improve poor quality soils
- Because of new technology there is now more potentially valuable soil
- The reduction in social well being when citizens are not permitted to sell or purchase what they desire
- The increased cost of subdivision on poor quality land.

The case for protection

- The cumulative effects of subdivision
- Versatile soils once built on are a non-renewable resource
- The market cannot predict future values and needs
(for example climate change, war, foot and mouth disease, BSE, food preferences)
- Versatile soils are scarce in NZ
- In almost every case, planning could be applied so that poorer quality soils are subdivided in preference
- The natural attributes of versatile soils cannot be replaced by technology without considerable cost and energy.
- Versatile soils grow better food more cheaply and with fewer environmental consequences
- Retaining versatile soils close to urban areas lowers produce transport costs, creates local economy

The crops being grown on the Heretaunga Plains cannot be grown on the hills behind.



The case for protection

- Subdivision is an irreversible loss of land versatile land.
- Some lifestyle blocks too (size, infrastructure, intolerance of farming activities next door, rate increases).
- If the current rate of loss is only 5% over 10 years, (0.5% /yr), versatile soils will all be gone in 200 years.
- This loss rate has some equivalence to the rate of soil loss on class VI, VII and VIII land in the Region, deemed unacceptable by Horizons.
- Soil loss due to erosion is being addressed in the One Plan.
- The current state of the One Plan will allow continued loss of our best land.
- It is equally impossible to return eroded topsoil lost to beds of rivers and the sea or flood plains back to the hills as it is to remove houses back to towns or cities or on to lower class soils.

The case for protection

- Horizons should reinstitute protection for versatile soils (or class I and II land) in the One Plan
- Protection has environmental (as well as social and financial) benefits
- Protection of class II lands from subdivision saves communities from flooding (e.g Te Matai Road).



Proposal

To protect the sustainable future of our very limited amount of high quality class I and II land, the following rule is sought:

- The subdivision of class I and class II land is permitted in areas outside of urban and industrial zoned land under the following conditions/standards terms:
 1. For one subdivision of title size 0.1 ha or less
 2. For title size 20 ha or more
 3. For a title that has had an occupied residence on the title for ten years or more
 4. Where the amount of class I and II land on a title represents less than 10 % of the total area of the title.
- Subdivision of class I and II land outside of urban and industrial zoned land and not complying with the above rule is a non-complying activity
- Class I and Class II land should not normally be sought for expansion of urban or industrial zones.