

Plan Change 1 Hearing 2

Alec Mackay AgResearch

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Allocation

Two distinct options:

- Linked to land use
 - Waikato Regional Council's proposed Plan Change 1
- Linked directly to the land resource
 - B+LNZ proposal

Policy linked to land

- Recognizes land varies in
 - natural capital, productivity, versatility and value
- Places no restrictions on land use options, beyond limits on emissions.
- Treats the same land resource in the same manner
- Provides a framework for advancing wider resource management
 - Fundamental unit to manage
 - Greater integration
 - Monitoring and reporting (e.g. Soil quality indicators)

Fielddays Focus: Managing natural resources wisely



Fielddays is back again and with so many changes on the horizon for farmers, our Associate Director of Natural Capital Agribusiness, Dana Muir shares her perspective on the future of agribusiness in New Zealand.

RECENT POSTS

- [Fielddays Focus: The secret to Onuku Māori Lands' success](#)
- [Fielddays Focus: Tony Alexander's economic outlook](#)
- [Fielddays Focus: Managing natural resources wisely](#)
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- [A year in review](#)

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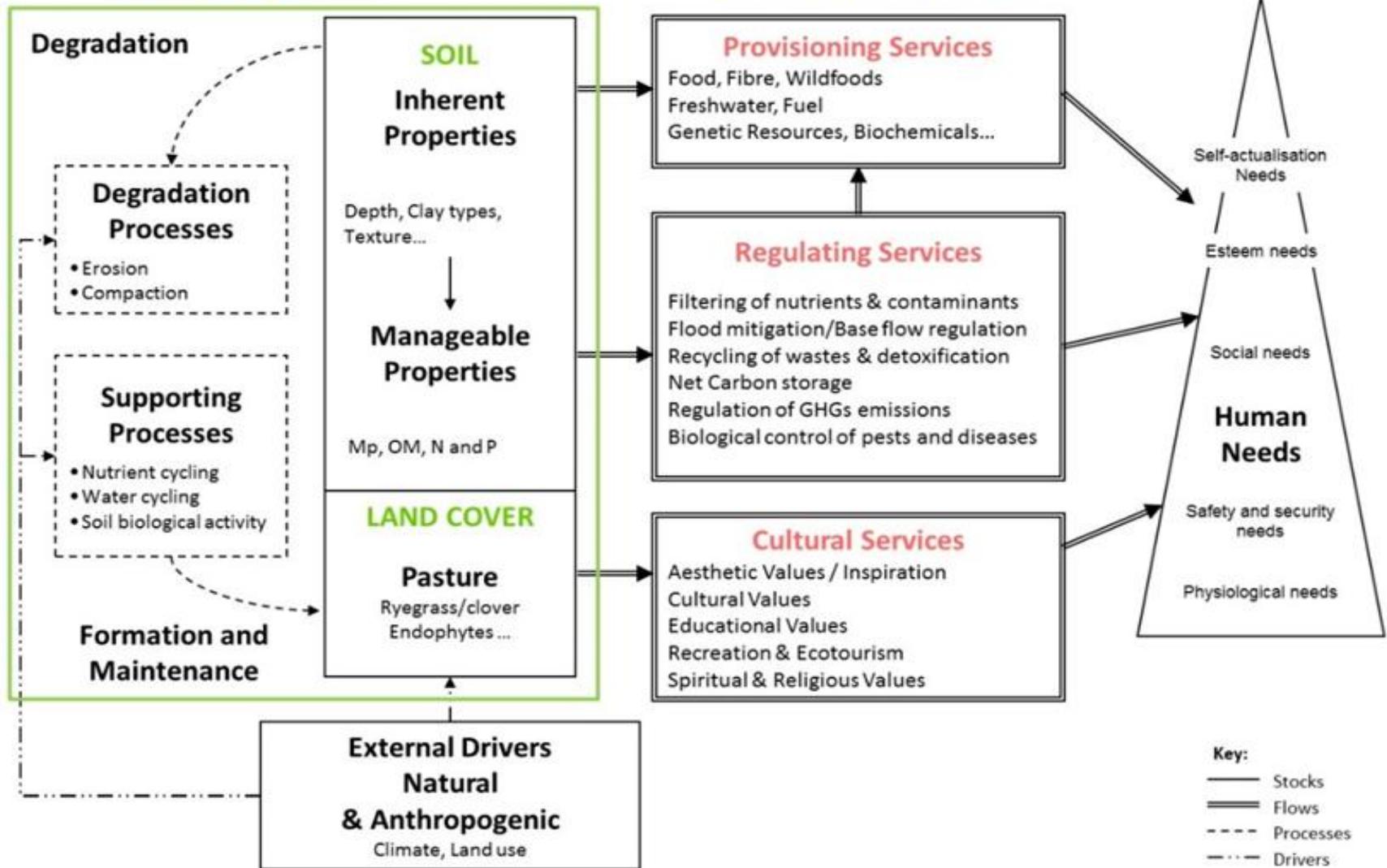
- [June 2019](#)
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Manage your natural capital

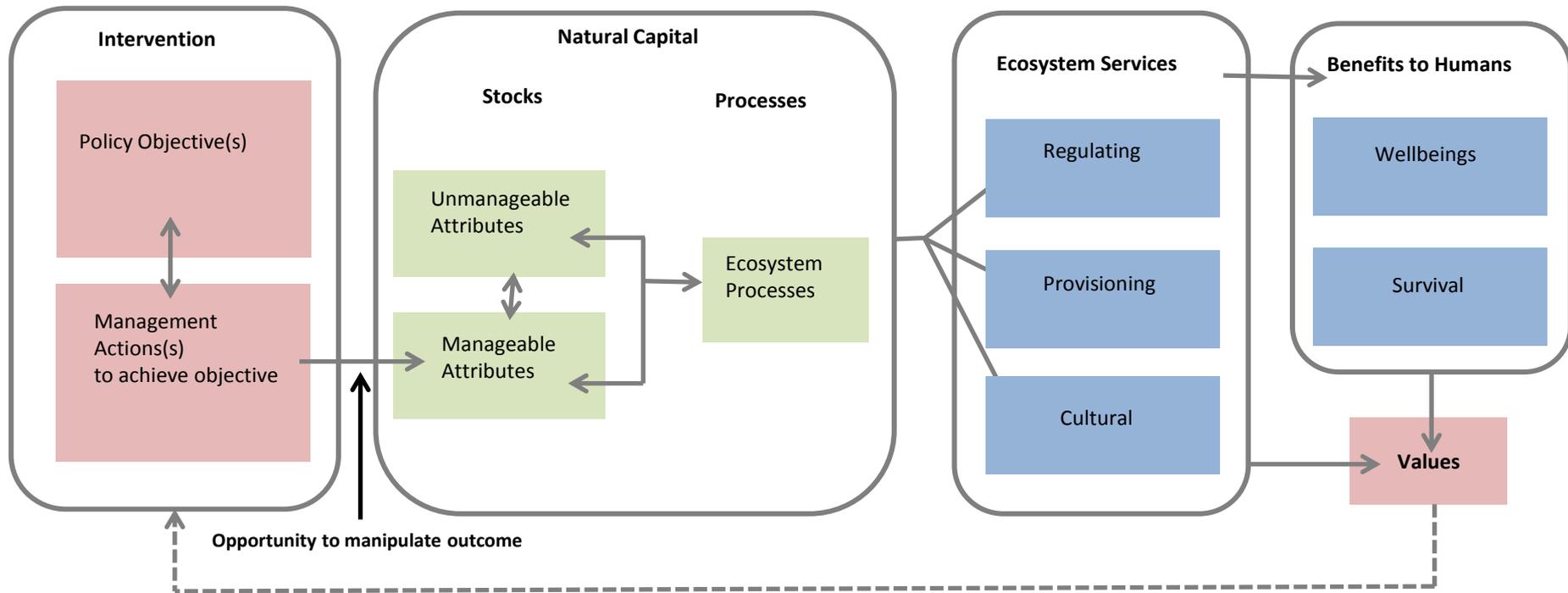
Whether you're looking to implement leading sustainability practices or ensure you meet your environmental obligations, our dedicated team of Natural Capital and Agribusiness specialists can help.

NATURAL CAPITAL

ECOSYSTEM SERVICES



How we connect ecosystem services to natural resource management?



Maseyk FJF, Mackay AD, Possingham HP, Dominati EJ, Buckley YM 2016 **Managing natural capital stocks for the provision of ecosystem services** Conservation Letters

Methods for quantifying the “value” of the stocks based on the services are still evolving

Natural capital stocks

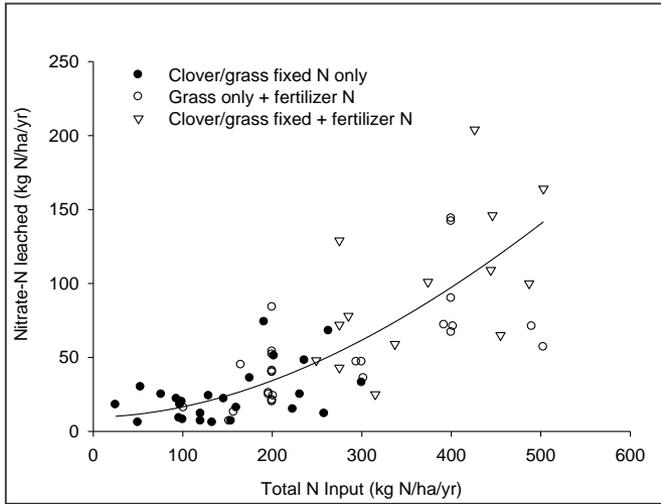
Land resource information (NZLRI)

- Soil types
- Parent materials
- Slope
- Risk of erosion
- Vegetation
- Land Use Capability Classification system
“arranges different kinds of land according to its capacity to support long-term sustained production after taking into account the physical limitations of the land”.

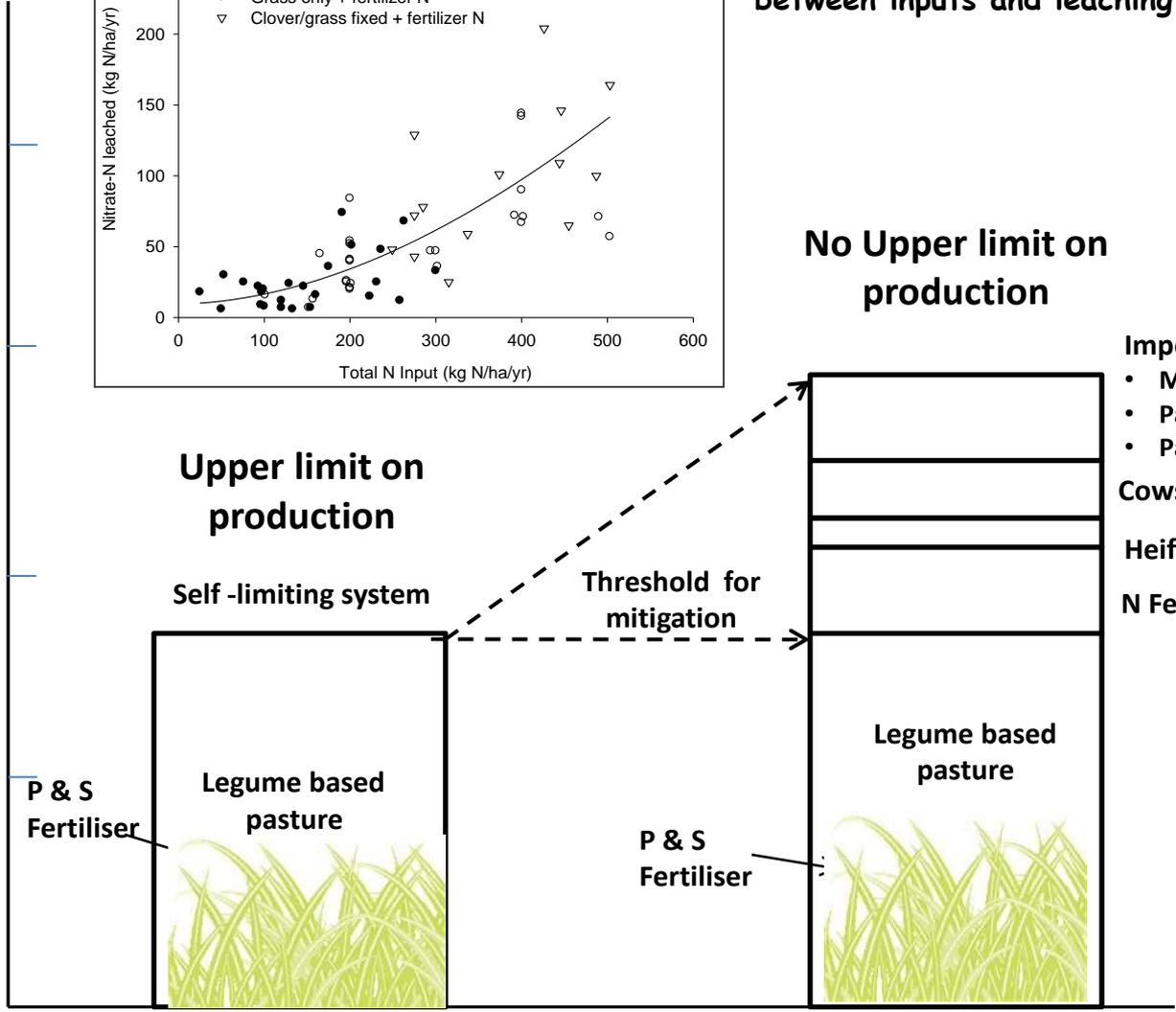
Extended legend of the LUC worksheets

- Contains an estimate of the productivity of a legume based pasture under grazing on each LUC unit throughout the country.

NZ studies showing relationship between inputs and leaching



Dairy production (milk solids/ha)



No Upper limit on production

Imported feeds

- Maize silage
- Pasture silage
- Palm Kernel

Cows wintered off

Heifers reared off farm

N Fertilizer (150-200 kg N/ha)



Past (Pre 1985)

Present (2012)

Ledgard, Stewart; R. Schils; J. Eriksen and J. Luo. 2009. "Environmental Impacts of Grazed Clover/Grass Pastures", *Irish Journal of Agricultural and Food Research*, 48:2, pp. 209-26.

Proxy for natural capital stocks

“A soils ability to sustain a legume-based pasture fixing nitrogen biologically under optimum management before introduction of additional technologies (e.g. N fertilizer, intensive cropping, imported feeds) under the pressure of grazing animal “

This proxy provides an indication of the soils underlying ability to

- produce forage for food production (provisioning service)
- sustain the physical environment under the pressure of the grazing animal (provisioning service),
- retain biological fixed N and supply that to the grass component of the sward (regulating service)
- supply water and other nutrients (regulating service)
- limit the impact of plant pests and diseases (regulating service)

Natural Capital

Ecosystem Services

Human Needs

Soils

Inherent Properties

- Slope
- Orientation
- Depth
- Texture
- Size of aggregates (subsoil)
- Stoniness
- Subsoil pans

Manageable Properties

- Soil organic matter
- Wetness
- pH
- Land cover
- Biology
- Bulk density
- Strength (topsoil)

Vegetation

- Pasture
- Trees

Water

- Quantity, quality
- In stream biology

Provisioning Services

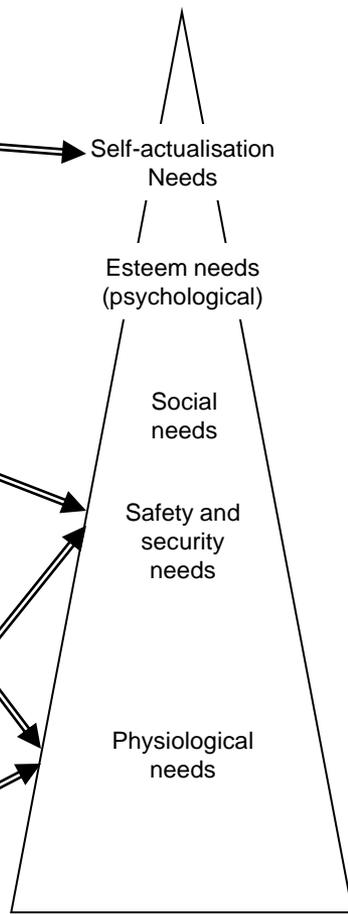
- Food, wood and fibre, water
- Physical support
- Raw materials

Regulating Services

- Filtering of nutrients & contaminants
- Flood mitigation & water regulation
- Biological control of pests and diseases
- Recycling of wastes and detoxification
- Carbon storage and regulation of N₂O and CH₄

Cultural Services

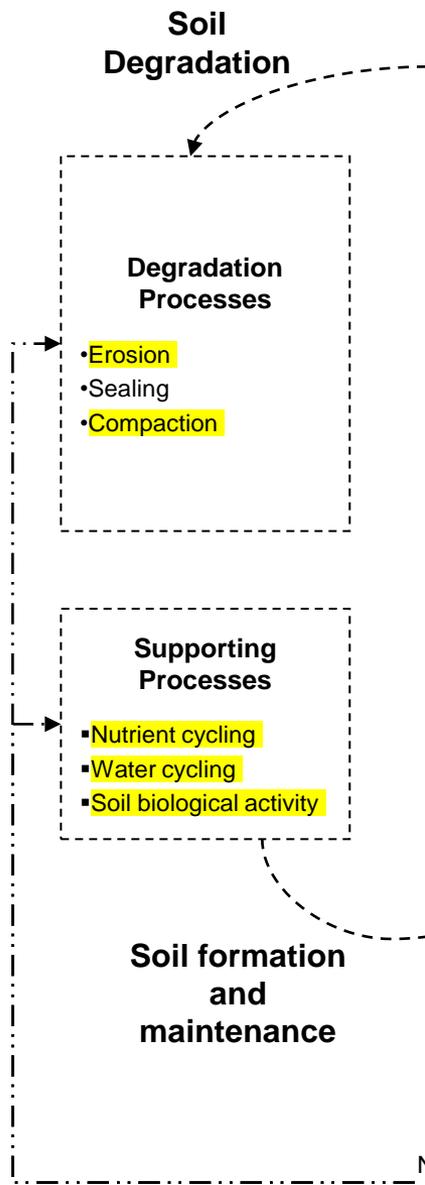
- Cultural, spiritual and religious values
- Knowledge
- Sense of place
- Aesthetics, recreation...



- External Drivers**
- Natural**
 - Climate
 - Natural hazards
 - Geology and geomorphology
 - Biodiversity
 - Anthropogenic**
 - Land use
 - Farming practises
 - Technology

Key:

- Stocks
- == Flows
- - - Processes
- · - · Drivers



Natural capital approach

Used to inform policy in three ways

- Two as a threshold indicator
 - The livestock carrying capacity of a legume based pasture provides land owners with an indication of the level of production that can be sustained by their natural capital stocks (Table 1)
 - The N leaching loss associated with the livestock carrying capacity for each LUC Class (Alison Dewes).
- Thirdly forms the basis for allocating the targeted N load in the River out across the landscape. This will ultimately determine the N allocation to each LUC Class.