The illusion of integrated impact assessment under the Resource Management Act: case studies of wind farm applications in New Zealand

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Resource Management Act: plenty of potential for integration

- ***Sustainable management:*** *managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables* ***people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety*** *while -*
  (a) …meeting the reasonably foreseeable needs of future generations; and
  (b) Safeguarding…life-supporting capacity; and
  (c) [Managing] any adverse effects on the environment.'

Resource Management Act: plenty of potential for integration

- ***Environment includes***

(a) Ecosystems and their constituent parts, ***including people and communities;*** *and*

(b) All natural and physical resources; and

(c) Amenity values; and

(d) ***The social, economic, aesthetic, and cultural conditions which affect the matters above…***

Richard Morgan: Health and impact assessment: are we seeing closer integration?

- "…the treatment of health impacts is still dominated by health risk assessments of specific emissions to air, water or soil"
- …There does not appear to have been any concerted attempt to consider impacts on health through social, economic or cultural determinants."

- *Environ Impact Assess Review* 2010

Initial assertion: noise-related health impacts are not well integrated into RMA decision-making

Method

- 3 case studies of WF application processes

Key questions:

- What are the health and wellbeing (HWB) - related noise effects resulting from wind farms?
  - Are these noise effects "just" annoyance (detracting from enjoyment or amenity*)?
- How does the nature of the affected community affect the perception of noise?
- Why are HWB-related noise effects not well integrated into RMA decision-making?
  - How could they be better integrated?

* ***Relates to people's*** **enjoyment** ***of the values of natural and physical resources.***

Types of noise-related HWB impacts

- Nuisance and annoyance caused by audible WF noise (atonal and tonal)
- Vibration-related and other “physical” effects caused by WF noise, especially at low frequency (not generally acknowledged by medical experts)
- Sleep loss and stress related to any of the above

Three case studies

- Awhitu Peninsula, South Auckland
  - 19 turbines: 18 MW
  - Consent refused; appeal allowed but WF not built
- Makara (Project West Wind), Wellington City
  - 62 turbines; 143 MW
  - Consent granted, appeal dismissed 2007, now operating
- Turitea Reserve, Palmerston North
  - 104 turbines; up to 288 MW
  - Call-in process (2009-10): decision not yet issued

Awhitu Peninsula

- Hearing and appeal 2004-5
- Many submissions about noise but not the substantive issue in hearing or appeal
- Main issues were about amenity
  - visual
  - natural character
  - (noise)
- Scheme has never proceeded – uneconomic

Awhitu Peninsula

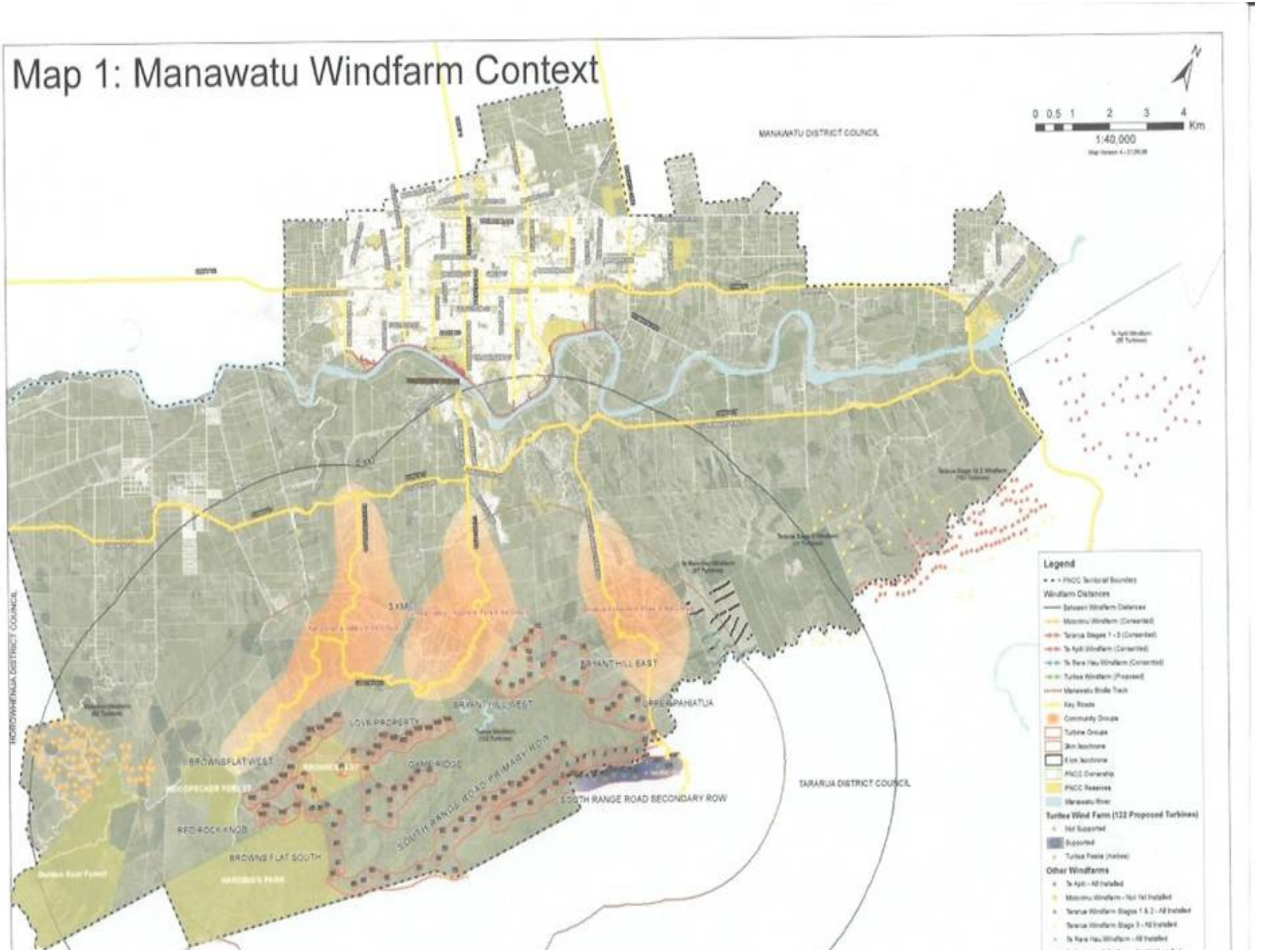
- Environment Court expressly endorsed the WF noise standard
  - Properly prepared by “people well qualified on noise and with consultation with interested sections of the community”
  - …a scientific and careful formula”
  - …given wind’s inherent noise, a specific practical noise methodology is required.”
- “This finding should avoid future debate over the appropriate noise regime applying to wind farms”

West Wind, Makara

- 2005-6; appeal 2006-7
- Many houses within 2 km of turbines.
- 800 submissions (mainly local) opposed the proposal
- Many opposing submitters cited noise effects – described as irritating and polluting, causing annoyance and loss of amenity
- Appeal decision: Noise disturbance under imposed conditions “will not be severe or disturb sleep”
- Many subsequent complaints about noise and noise measurement
- Ongoing lack of trust between WF operator and residents (and council)

Turitea Reserve, Palmerston North

- Hearing 2009-10
- 122 houses within 2km of turbines
- 702 submissions; most opposed; about 90 cited health-related concerns (wide range)
- Hearing took 10 weeks over 8 months
- Visual effects, noise and community effects were the main issues discussed
- Redesign during hearing
- Significant expert noise and health evidence.
- Noise evidence mainly related to achievement of standard rather than to health effects


Map 1: Manawatu Windfarm Context
MANAWATU DISTRICT COUNCIL
HOROWHENUA DISTRICT COUNCIL
TARARUA DISTRICT COUNCIL
0 0.5 1 2 3 4 Km
1:40,000
5 KM
BRYANT HILL EAST
BRYANT HILL WEST
LOVE PROPERTY
BROWNSFLAT WEST
DAM RIDGE
SOUTH RANGE ROAD PRIMARY ROW
SOUTH RANGE ROAD SECONDARY ROW
REDROCK KNOB
BROWNS FLAT SOUTH
Legend
Windfarm Distances
Key Roads
Community Groups
Turbine Groups
3km Isochrone
5 km Isochrone
PNCC Ownership
PNCC Reserves
Manawatu River
Turitea Wind Farm (122 Proposed Turbines)
Not Supported
Supported
Other Windfarms

Perceptions of windfarms in Manawatu

- Reported experience of the three Manawatu wind farms was largely positive
- Seen to have brought local revenue, employment and tourist interest
- Neighbours of Te Apiti wind farm reported low levels of adverse visual effects (15%) and adverse noise effects (9%)
- Predominantly positive associations for City residents

General observations from the case studies (1)

- Noise impacts more contentious over time
- Consideration of noise impacts dominated by technical matters related to standards, rather than the nature of the health impacts
- Noise generally dealt with as an amenity issue (annoying, “disturbs peace and quiet”)
- Often also regarded as a form of pollution
- Often a loss of trust between WF developers, WF opponents and councils

General observations from the case studies (2)

- Most scientific reviews do not acknowledge reliable evidence of effects of WF sound on physical health
- However some people perceive that they are experiencing these effects
- Some people state that they experience sleeplessness
- Turbine noise appears to cause stress among some people hearing it even when measured at a relatively low level
- Some people more sensitive to low-level noise than others
- May also be sensitised to noise effects by their perception of the WF development process

Conclusions - individuals

- Noise-related health impacts are not well integrated into RMA decision-making for a number of reasons
- Noise has been dealt with as an amenity effect, rather than a health effect
- The most significant HWB effects of turbine noise appear to be loss of sleep or stress caused to individuals as a result of perceptions of annoying noise
- Measuring levels of stress could be one route into systematically researching HWB effects in affected people and communities

Conclusions -communities

- When perceptions of health or other adverse effects are relatively widespread but not universally shared in a community there is evidence of a loss of community cohesion
- Assessment of the impacts of noise and other factors on the health and well-being of communities has been contentious but not systematically researched.
- The nature of communities affected by wind farms has sometimes been poorly assessed
- This makes it impossible to research the effects of wind farms on the well-being of those communities.

Causal pathways for noise effects from windfarms

NOISE

Amenity
("peace and quiet") effects

Sleep deprivation

Physical health

Mental health and well-being effects

Other effects

STRESS

People in community perceive effects differently

Social fragmentation

Some solutions - current

- More information about benefits
- Reduction of WF noise effects (tonal and non-tonal) at source
- Mitigation of WF noise effects within properties and houses

Some more solutions

- Maximising WF benefits at local or regional levels
- More meaningful community consultation or involvement at WF design stage
- More meaningful measurement and analysis of stress-related health effects
- Systematic collection of empirical data on people's actual experience of living near wind farms
- Noise standards:
  - consideration of people's experiences as well as physical noise levels
  - Monitoring noise levels and people's experience simultaneously to support the development of more relevant standards

Quotes benefits and costs?

- *"It is possible to hear and feel the turbines inside the house even over the usual household noises during the day and evenings.*
- At night, the noise is almost unbearable as it significantly disturbs my sleep patterns and this is now starting to affect my health and well-being.
- *"There are days when I simply have to remove myself and leave the area because of the noise issues“*
- *"many residents along the Makara valley continue to have their lives blighted by the noise of the turbines“*
- *"I cannot stay outside for any length of time as the rhythmic swishing, pulsing sound, (sometimes a rhythmic, roaring sound), make me feel seasick"*