Submission on Regional Policy Statement Working Draft 2009

- This feedback is from An individual

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General:

Congratulations for beginning this process to develop a regional policy statement concerning natural resources. I thoroughly support the initiative and consider that a great start has been made by EW for this huge undertaking.

Insect life
Most of the objectives are limited to indigenous biodiversity and it was not obvious whether there is the intention to take account of the importance of insects in maintaining healthy biodiversity, and our agricultural and horticultural industries. This year there has been a marked absence of honey bees and a species of cicada in our area. EW should include objectives to foster beneficial insect life, and develop policies which would prevent or mitigate practices that have a large scale detrimental effect on them. For instance, I understand that some crop seeds may be treated with insecticides that will kill insects throughout the entire life of the plant. However, this may be having far-reaching effects on a range of insect populations and therefore its use should not be allowed until such detrimental effects are assessed.

Triple Bottom Line Reporting for Businesses to promote sustainable practices
If it is within the auspices of the Regional Policy, I would like to see triple bottom line reporting encouraged for Waikato businesses, as this would create an indirect benefit for the general environment.

Biological diversity –background
Insect life should be expressly included in this section. Insects pollinate crops and gardens, they are an important link in the ecological foodchain, and many of them, such as butterflies are regarded as having high aesthetic value.

I wish to see Mt Pirongia recognised in the strategy as the largest tract of unbroken native bush left in the Waikato and a native biodiversity stronghold, in terms of Section 6(c) of the Resource Management Act.

4.2 Indigenous Biodiversity

4.2.1 Policy: Significant Natural Area protection

I prefer the first option:

Significant indigenous vegetation and the significant habitats of indigenous fauna shall be protected by ensuring that the characteristics that identify the area as significant are not adversely affected.

I wish to see Mt Pirongia recognised in the strategy as a Significant Natural Area because it is the largest tract of unbroken native bush left in the Waikato and a native biodiversity stronghold, in terms of Section 6(c) of the Resource Management Act.

I agree with the proposals for the following:.

4.2.2 Policy: Promote the maintenance of biodiversity
4.2.3 Policy: Avoiding, remedying, mitigating adverse effects
4.2.5 Policy: Remediation and mitigation

4.2.6 Policy: Allocation of functions in relation to indigenous biodiversity
I support option 2.

I agree with the proposals for the following:.

4.2.7 Policy: Collaborative management
4.2.8 Policy: Protection of aquatic ecological health of freshwater bodies
4.2.9 Policy: Safeguard coastal/marine ecosystems

4.2.10 Policy: Monitoring state of biodiversity
At present, only limited short term and trend monitoring is undertaken following possum control operations using aerial 1080, eg possum population levels using RTC indices and vegetation monitoring. Yet, broadcast 1080 can also affect other components of ecosystems, and is implicated in rat population explosions about 2 years post operation (Sweetapple, Nugent, Poutu and Horton, (2006), Effect of reduced possum density on rodent and stoat abundance in podocarp hardwood Forests, Department of Conservation publication). This research indicated that rat population explosions 48 times the pretreatment level occurred for aerial 1080 operations, whereas ground control methods saw only a 9 fold increase for the same period. Therefore, longer term harm may be occurring within an ecosystem subject to aerial 1080 operations which is presently outside the usual monitoring. It is important that more measures of ecosystem status are collected to assess the effectiveness of the treatment, and an integral part of this assessment is the widening of the time frame allowed for monitoring activities. Usually monitoring post operation is limited to RTCI and vegetation monitoring immediately following the operation. Yet, rats are identified as the most serious predator of forest birds in mixed broadleaf forest (Brown & Urlich, (2005) Aerial 1080 operations to maximise biodiversity protection, Department of Conservation, p 13) so monitoring their levels over time constitutes an important measure of both effectiveness of control as well as for forest health.

Funding the monitoring of additional species should be possible within existing budgets if methods covering multiple species are utilised. RTCI monitoring is only capable of assessing possum population levels, however WaxTag monitoring is 30% to 40% cheaper than RTCI monitoring (Commins, (2005), Matea WaxTag Trial) and is capable of simultaneously measuring population levels of multiple species including possums and rats.

EW should investigate options such as WaxTag monitoring as a cost effective method to extend the collection of information relating to ecosystems and pest populations.

Implementation methods
4.2.10.1 Information and monitoring
4.2.11 Policy: Develop monitoring methodology

Further development of monitoring methodology is needed to provide a more detailed assessment of ecosystem health. I suggest a more comprehensive methodology based on 6 key elements:

- Possums
- Rats
- Stoats
- Invertebrates
- Birds
- Vegetation

The separately attached spreadsheet (Appendix 1) provides a comparison between different pest control methods using a simple scoring system for the 6 elements as well as a cost comparison. This allows an appreciation of the effectiveness of the control treatment. Perhaps a matrix of this nature could be developed by EW as part of Policy 4.2.11.

Details of the Matrix

Score system:

Effect	**Symbol**	**Value**
Improvement	↑	0.5
Strong improvement	↑	1
Adverse effect	↓	-0.5
Strong adverse effect	↓	-1

Assumptions
Aerial 1080 method:
Possum populations reduce sharply in the first year of treatment, and remain low until year 4 where there an adverse effect caused by population buildup.
Rat populations reduce sharply in the first year of treatment, then build up. By year 3 and 4 the large increase in populations, per Sweetapple research is causing strong adverse effects.
Stoat populations reduce sharply in each year of treatment.
Invertebrate populations (covering all stages of lifecycle) are adversely affected in the year of treatment due to the toxic effect of 1080, which continues in the following year. As rat populations build up, invertebrate populations are adversely affected.
Bird populations benefit in the year of treatment due to reduction in predators, but also suffer adverse effects through non-target mortality and lack of invertebrates as food source (as most small forest birds are insectivores (Brown & Urlich, (2005) quoted above)). As rat populations build and impact invertebrate numbers, birds are also adversely affected.

Vegetation improves in the year following treatment, but then increasing rat populations followed by increasing possum populations cause adverse effects.

Possum Ground Control Method

Possum populations reduce sharply in the first year of control but do not remain low for as long as the aerial 1080 method.
Rat populations are not targeted but Sweetapple research (2005) shows a reduction in rat levels in the year following control, then a surge followed by a reduction in numbers. Values have been allocated to reflect this pattern.
Stoats are not targeted and no values are allocated. Because the other methods receive positive values for stoat effects, the comparison hopefully maintains integrity.
Invertebrates benefit from reduced rat levels, but as rat populations grow invertebrates are detrimentally affected.
Bird populations benefit in the year following treatment due to reduction in possums taking longer to achieve compared to the other methods of control. Birds benefit from reduced rat populations and the consequent increase in invertebrate population (through less predation by rats).
Vegetation improves in the year following treatment, but then increasing rat populations followed by increasing possum populations cause adverse effects.

Bait station Grid targeting possum and rats Control Method

Possum populations reduce sharply in the first year of control, and remain low due to the ongoing nature of the control method. However, because possum numbers may increase more than the aerial 1080 method, no positive value has been given for three of the four years in the aerial 1080 control cycle used for comparison purposes.
Rat populations are reduced sharply for all the years of control due to the ongoing nature of the control method, producing a strong positive benefit.
Stoat populations may experience some adverse effects through reduced rat populations, but this has only been given a mild, intermittent positive value in the matrix as stoats are not specifically targeted via this method.
Invertebrates show strong positive effects following the initial year of control due to the continual reduction in rat populations which predate on them.
Birds and vegetation show strong beneficial effects in every year of control due to the ongoing nature of the control method.

Costings:

The matrix has been calculated on the basis of 1000ha being subject to pest control.

Costings for the Aerial 1080 method and the possum ground control method were based on the 3 year average of possum control costs provided in the EW Memo dated 2 December 2009, # 95 08 10. Costs from Table 1 were divided by area detailed in Table 2 to arrive at a per hectare rate for aerial 1080 and other methods of control (ie ground based).

Costings for the Bait Station grid targeting possums and rats were based on financial data from Pirongia Te Aroaro o Kahu Restoration Society's pest control project on Mt Pirongia which covers 470ha. Cost of establishment of 100ha was multiplied by 10 to arrive at a figure for 1000ha and allocated to the first year of the matrix. Annual cost of control for 2009, covering track maintenance, signage and Pindone purchase, was used as a basis for

calculating a per hectare cost, and this was multiplied by 1000 and allocated to each year in the matrix.

Annualised costs of the different control methods:

Aerial 1080:	$32.31
Possum ground control:	$16.26
Bait station grid	$32.15

Results:

Method	Cost over 10 years	Ecosystem Score
Aerial 1080	$96,930	-17.5
Possum ground control	$48,780	11.0
Bait station grid (Possum & Rat)	$142,900	39.5

These results show that ongoing control of possums and rats produces much greater ecosystem benefits. If costs are annualised over 10 years the bait station grid method compares favourably with aerial 1080 costs.

Appendix 1: Comparison of Pest Control Methods

Method	Cost per hectare *	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Aerial 1080: 4 year cycle	**$32.31**	$32,310				$32,310				$32,310		$96,930
Possums		↑	↑	↑	↗	↑	↑	↑	↗	↑	↑	
Rats		↑		↓	↓↓	↑		↓	↓↓	↑		
Stoats		↑				↑				↑		
Invertebrates		↓	↓	↓	↓↓	↓	↓	↓↓	↓↓↓	↓↓	↓↓	
Birds		↓↑	↓	↓	↓↓	↓↑	↓	↓↓	↓↓↓	↓	↓↓	
Vegetation		↑	↑	↓	↓	↑		↓	↓	↑		
Ecosystem Score		3	0	-2.5	-5	3	-1	-4.5	-8.5	1	-3	-17.5
Possum ground control	**$16.26**	$16,260				$16,260				$16,260		$48,780
Possums		↑	↑	↗	↓	↑	↑	↗	↓	↑	↑	
Rats			↑	↓	↓		↑	↓	↓		↑	
Stoats												
Invertebrates			↑	↓			↑	↓			↑	
Birds			↑	↓	↓		↑	↓	↓		↑	
Vegetation		↑	↑	↓	↓	↑	↑	↓	↓	↑	↑	
Ecosystem Score		2	5	-2.5	-2.5	2	5	-2.5	-2.5	2	5	11
Bait station grid:Possum and rats	**$32.15 pa**	$74,680	$7,580	$7,580	$7,580	$7,580	$7,580	$7,580	$7,580	$7,580	$7,580	$142,900
Possums		↑				↑				↑		
Rats		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
Stoats				↗			↗			↗		
Invertebrates			↑	↑	↑	↑	↑	↑	↑	↑	↑	
Birds		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
Vegetation		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
Ecosystem Score		4	4	4.5	4	5	4.5	4	4	5.5	4	39.5

Notes:

Ecosystem Score:
The ecosystem score is calculated by adding up the positive or negative effects on the individual indicator components of the ecosystem for each type of control method, and the sum of those effects is recorded as a score for each year.

The magnitude of the positive and negative effects is depicted by the heaviness of the arrows, and the following numerical scores are allocated to them:

Effect	Symbol	Score
Positive - weak	↑	0.5
Positive - strong	↑	1
Negative - weak	↓	- 0.5
Negative - strong	↓	-1

Costings

The matrix has been calculated on the basis of 1000ha being subject to pest control.

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