BEFORE THE HEARING PANEL

IN THE MATTER OF	The Resource Management Act 1991 ("the Act")
and	
IN THE MATTER OF	an Application by Weston Lea Limited for land use and subdivision consents for the development of approximately 105 hectares of land at 337 – 461 Peacockes Road, Hamilton

AND

IN THE MATTER OF	a submission on this application by the Director-General of Conservation.

FURTHER STATEMENT OF EVIDENCE OF MOIRA ANNE PRYDE FOR THE DIRECTOR-GENERAL OF CONSERVATION

13 May 2019

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Submission Number: 59

INTRODUCTION

1. My name is Moira Anne Pryde and I work as a Technical Advisor for the Department of Conservation and I am based in Nelson. I prepared a Statement of Evidence dated 23 April 2019 which sets out my qualifications and experience.
2. This is a further statement of evidence prepared after reading the Evidence in Reply (EIR) by Dr. Flynn, Ms. Cummings and Mr. Sergeant and after receiving the Davidson-Watts radiotracking report 2019.
3. I do not make any amendments or alterations to the analysis and conclusions I make in my evidence. Rather, I provide some additional clarity around the rationale leading to them.
4. The scope of this further evidence is to revisit the significance of long-tailed bats in the Amberfield site to clarify points and provide further information for managing adverse effects on the Nationally Critical long-tailed bat population.

THE CONSERVATION STATUS OF LONG-TAILED BATS

5. Long-tailed bats are nationally critical which is the highest threat category for New Zealand species.
6. In the early 1900's bats were regularly seen in all our cities and there were reports of seeing them in their hundreds and thousands. Since then there have been significant declines and in the areas that they survive they are still in decline and are now threatened with extinction. Hamilton is one of the last cities where bats persist. In the colonies that have been studied the rate of decline is far greater in populations that have no management. This decline is between 5 and 9% per annum (Pryde et al. 2005, Pryde et al. 2006).
7. Declines in bats are from a combination of threats including habitat loss through land clearance, predation and competition by introduced predators, habitat degradation, fragmentation and disturbance at roosts. Introduced predators including stoats, rats, cats and possums have all been implicated in the decline.

THE SPECIALIST REQUIREMENTS OF LONG-TAILED BATS

8. Long-tailed bats have very specialist requirements in terms of breeding sites, home range and foraging requirements (Slide 1).
9. Long-tailed bats are long-lived (>20 years) therefore they can persist in the population for a long time but that may not mean that they are doing well.
10. Long-tailed bats breed once a year and generally have one pup. An adult female can start breeding between 1 to 3 years. This means that populations can take a long time to recover.

11. Adult females congregate in maternity roosts between November and February, generally moving to a new roost and carrying their young with them. Clusters of reproductive females form small social groups of about 50-100 bats. Often several social groups will be found in a bat landscape. Each group tends to have a distinct roosting area, but the foraging area will be shared with all the social groups (O'Donnell 2001).
12. Foraging areas are large and in the Eglinton the colony of bats range over 12,000 ha (O'Donnell 2001). In Hamilton the accumulated data shows that the range width is 9.5 km and covers 7000 ha (Slide 2).
13. Long-tailed bats shelter and breed in roost trees. The cavities they select are very specific and these can be quite rare in the landscape even in native forest. In a study in the Eglinton Valley in Fiordland only 1.3% of random trees above 20cm DBH (Diameter at Breast Height) had optimum characteristics for breeding which extrapolates to 3.8 cavity bearing trees/ha (Sedgeley & O'Donnell 1999). A forest in the Eglinton Valley provides enough possible roosting trees for bats and allows a choice of roost trees.
14. Roost cavities tend to be well insulated with preferred roosts increasing in temperature during the day reaching a peak at dusk allowing the lactating females to leave the young alone and forage, while the temperature is maintained in the roost until the mothers return.
15. Bats surviving in a modified landscape such as Hamilton will still tend to choose the largest and oldest trees available – this tends to be the exotics as shown in the Davidson-Watts 2019 report.
16. In a study in South Canterbury, the trees that the bats were forced to use were suboptimal for breeding and poorly insulated. Juvenile survival was much lower than in Fiordland studies, 24% surviving compared to virtually all young surviving to flying. The five-year study showed that the population was declining by 9% per annum and the population was at risk of extinction. Reducing the number of available roosts in an already stressed population is a significant risk. For example, in South Canterbury one social group, 25% of the trees were felled which led to the local extinction of that social group.
17. The Hamilton bats have survived in the peri-urban fragmented landscape and it is likely that they are on a similar trajectory to the South Canterbury bats. Loss of habitat and habitat degradation is the greatest threat to these bats as well as introduced predators.
18. The Southern Links radiotracking project provides a small snapshot of time to show how the bats are using the landscape. The project has identified 54 roosts with 82% in exotic trees, 15 of which are definitely maternity roosts. 24 bats have been radio-tracked and a total number of 79 bats have been identified. This is a fantastic result, but it must be noted it is only a fraction of time in the year of the bats. It can take several years of bat work to understand how bats are using the landscape (Slide 3).

THE SIGNIFICANCE OF THE AMBERFIELD SITE AND THE POTENTIAL IMPACTS ON BATS

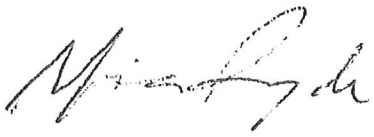
19. Acoustic surveys have been done in the Amberfield subdivision and the surrounding area (Slide 4). In my experience of acoustic survey work, the activity levels are high and greater in the northern part of the subdivision compared to the south. Acoustic recorders are however notoriously difficult to interpret and often you can only say with certain the times of the calls and whether bats were present or absent. The surveys showed that bats were present in the majority of the sites surveyed.
20. As there are so few trees within the Amberfield subdivision and it is likely that bats are limited for roosting sites over the whole of South Hamilton, in my opinion all the trees should be considered for avoidance of removal.
21. Three roosts were found on the Amberfield project site (Slide 5) and a maternity roost was found nearby. The north-west shelter belt is likely to have roosts, one roost has been found in the ornamental gardens and there are likely to be more. The significance of the individual trees in the pasture land is unknown as they have not been surveyed. In my experience in South Canterbury, we found several roosts in individual trees in a pastoral landscape.
22. Ms Cummings stated that the roosts are solitary but only one roost was watched at dusk. The radiotracking that was done in the Amberfield area was done in late February/March which is when the bats are beginning to disperse so IF the roosts were solitary then this is not surprising. The bats that were followed were males which do not spend a lot of time in maternity roosts unless they are juveniles, so they are unlikely to provide much information on communal roosts.
23. As stated before, the radiotracking study is only a tiny snapshot of what is happening with the bats in the site. Radiotracking of adult reproductive females within the breeding season in this area is required to assess the likelihood of maternity roosts.
24. The habitat analysis done by Davidson-Watts 2019, clearly showed that trees and waterways were significant for bats, agricultural land was utilised, and the least important habitats were urban and industrial. In terms of the agricultural land, there are various studies where we have radiotracked and observed bats feeding and flying over agricultural land eg. Eglinton, South Canterbury.
25. The potential impacts of the Amberfield subdivision are direct deaths through felling of roosts trees, loss and fragmentation of feeding habitat and shelter within the subdivision, the loss of present and future roost trees, increased noise and lighting in the subdivision impacting on foraging, drinking, feeding and commuting of bats, impacts of construction noise on feeding, impacts of increased traffic and the increase of urban predators eg. cats.

THE ADEQUACY OF THE PROPOSED MITIGATION AND CONDITIONS OFFERED

26. I consider that there has not been enough focus on avoidance of bat habitat and the confidence on the mitigation offered is unreasonably optimistic given that the methods used are mainly experimental for bats. Dr Flynn disagrees that the methods are experimental, but in my opinion vegetation planting for mitigation for bats is still experimental.
27. The over-reliance of the east-west shelter belt, the gully and the river margins providing adequate quality for the bats using the Amberfield area whilst removing the pasture, the north/south shelter belt, the clusters of trees by the ornamental gardens, the single trees and replacing them with houses is in my opinion high risk.
28. Given the small amount of suitable bat habitat that is on the Amberfield site, I consider that there has to be greater consideration to a design where the houses can be built around the existing vegetation. Allowing the current vegetation to remain and enhancing that vegetation within the housing design is more likely in my opinion to lead to more positive results rather than clearing the site and relying on planting.
29. The consideration of only light levels in determining the width of the buffers does not allow for quality of habitat hence the reason I agree with the recommendation for larger buffers of at least 100 m.
30. In my opinion an adaptive management approach as advocated by Dr Flynn is not appropriate for this project as once the housing is in place it cannot be reversed. Monitoring of bats is difficult and even with detailed mark recapture data, survival estimates for the current season rely on the data from the following season. Acoustic recorder data will only give presence or absence for that year and at least six years of data is required to detect trends.
31. I am unclear what triggers the applicant is intending to use and what they are going to do. In my work with long-tailed bats I have watched at least two social groups go extinct and this process is slow and hard to detect and respond to. Social colonies decline to a low number which eventually becomes non-functional.
32. Artificial roosts are a mitigation option and two of the boxes were used as a communal roost in the Hamilton radiotracking project. This shows they are a promising tool in bat management. I still however see artificial roosts as experimental rather than a solution. We do not know if they provide adequate conditions for adult females and juvenile bats to achieve high survival rates to allow the colony to persist.
33. Predators are a significant issue for bats. I agree with Dr Flynn that ideally predator control should be considered at a landscape level but would encourage the applicant to think pro-actively and promote the subdivision as bat friendly and not allow owners to have cats. Cats are a significant issue for bats in fragmented and forested environments.

34. In South Canterbury, a large proportion of the early bat records come from cat owners when their cat brought in a bat. Cats are capable of killing bats in flight, so it is not just at roosts but also when they are foraging or drinking that they are vulnerable (Slide 6).
35. Overall, I consider that the applicant is overly confident of the proposed mitigation and relies on an adaptive management approach which is in my view inappropriate for managing a nationally critically species in this situation.

Moira Pryde



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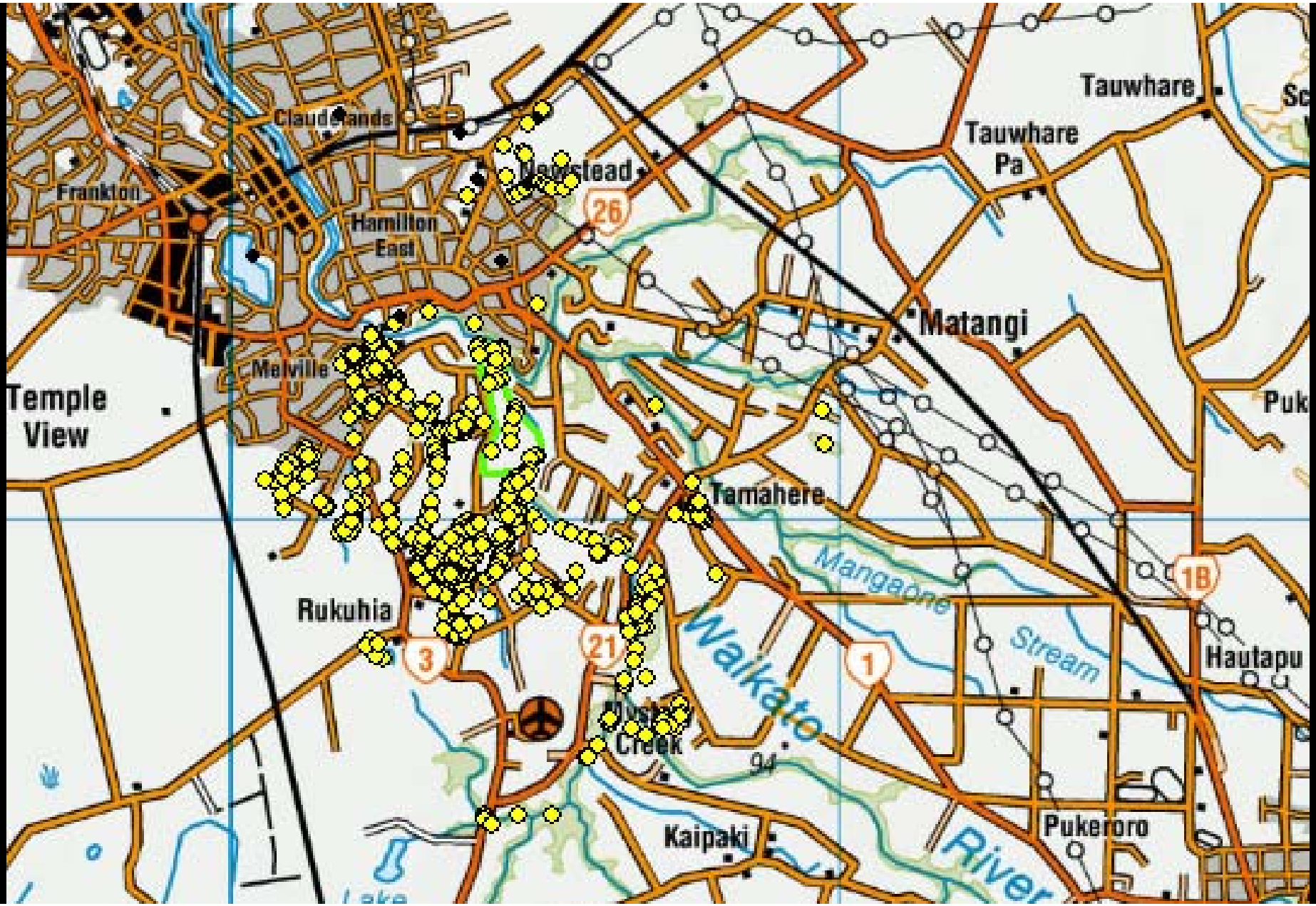
Tauwhare
Tauwhare Pa
Claudelands
Newstead
Frankton
Hamilton East
26
Matangi
Melville
Temple View
Tamahere
Rukuhia
Mangaone Stream
Waikato River
1B
3
21
1
Hautapu
Creek
94
Kaipaki
Pukeroro

Table E2 – Number of fixes during night tracking, nights of tracking and roosts per bat.

Bat No	Total bat fixes	Days / part nights tracking	Nights full tracking	Number of day roosts
1	56	13	4	6
2	16	8	4	5
3	27	2	3	1
4	118	15	4	5
5	47	8	2	4
6	89	10	4	1
7	77	6	4	2
8	63	6	4	3
9	92	8	3	1
10	74	5	2	4
11	52	5	2	2
12	93	8	4	2
13	50	9	3	3
14	45	8	3	4
15	12	1	0	0
16	18	8	2	2