

IN THE MATTER

of the Resource Management
Act 1991

AND

IN THE MATTER

of Proposed Plan Change 28 to
the Partially Operative
Christchurch City Plan

STATEMENT OF EVIDENCE OF DR PETER HARPER

1. INTRODUCTION

Qualifications and Experience

- 1.1 My name is Peter Harper. I hold a B.Sc. (Hons) First Class in Zoology and a PhD in Zoology (specifically ornithology), both from Victoria University of Wellington. I was a member of the Ornithological Society of New Zealand for 30 years, and have been scientifically researching birds for 50 years. I have written more than 30 scientific papers plus two identification guides on birds, and have been involved with long-term ornithological research in Antarctica, South America, United Kingdom & United States. I have been employed as an ornithological consultant to the Smithsonian Institution, Washington, D.C for 4 years, and as a Senior Lecturer at the University of Canterbury (1979 to 2002 when I retired) where I have taught a wide range of biological subjects including ornithology, evolution, genetics, animal behaviour, and biogeography. I still teach at the university.
- 1.2 I am familiar with the Code of Conduct for Expert Witnesses and I agree to comply with this code. The evidence I will present today is within my area of expertise, except where I state that I am relying on information provided by another party. I have not knowingly omitted facts of information that might alter or detract from the opinions I express.

Scope of evidence

- 1.3 My evidence is presented on behalf of Kennaway Park Joint Venture Partnership (**Kennaway**).
- 1.4 I have been asked to identify existing bird populations at the site and to advise on the likely effect on birds of developing the site in accordance with the proposed Plan Change Request, compared with the existing environment and zoning that is currently in place.

- 1.5 Firstly, I thank Andrew Crossland (CCC) for the helpful discussions that we have had together on birds over several years, and would like to acknowledge the valuable work that Andrew has done with the birds in the Heathcote area since the 1980s.
- 1.6 My evidence is in four parts:
- Methodology;
 - The existing environment, including a brief description of the surrounding bird habitat and species identified on the site;
 - The likely effect on bird populations during site construction;
 - The likely effect on bird populations on completion of development of the site and establishment of landscape provisions.

Summary of findings

- 1.7 The bird population at and around the site are typical of a coastal pastoral landscape with a small tidal river running through it. A population of little cormorants, which roost in a few *Pinus radiata* trees overlooking the river, is clearly the ornithological highlight of the site, but none of the breeding birds I found there, are nationally rare or threatened. The water birds are what one would expect in such a site. The number and species diversity suggests that the Heathcote river is a useful resource for them.
- 1.8 Provided that the Plan Change proposal proceeds in the form proposed by Kennaway (including the retention of the cormorant roosting trees and the substantive plantings of indigenous shrubs and trees, in accordance with the plans that I have seen), I believe the long-term outlook for both water and indigenous bush birds is much more promising than if the site were left in its current state. In my opinion, the rezoning provides an opportunity to enhance the site for the benefit of bird populations.



Little Cormorant at Kennaway

2. **METHODOLOGY**

- 2.1 I made 54 weekly ornithological observations during the interval from November 2006 to March 2008. As such, my observations provide a brief snapshot of ornithological events at the site, solely over that period. The additional bird species in the neighbouring estuary are interesting, but outside my brief. My observations were made at differing times of the day, and at changing tidal levels in the Heathcote River, as this affects the behaviour of the birds at the site.

3. **EXISTING ENVIRONMENT**

- 3.1 I understand that this hearing is to decide what zoning is more appropriate – a form of rural zone with no protection of the Heathcote river margin; compared with a business zone with the additional measures proposed by the applicant. I have therefore had regard to the environment as it currently exists when undertaking my assessment.

- 3.2 The present site is a mixed offering for birds. It has exotic roosting trees, some cover, weed seeds, and pastoral lands for birds to feed on invertebrates found there. The farmland pastures provide food, and shelter for pukeko, spur-winged plover, and white-faced heron. However, the current pastoral use is also conducive to mammalian predators such as rats, ferrets. I saw three rats feeding at the outfall of the fish factory, and suspect that rats are rife along the river margins. Mice are numerous.
- 3.3 Shrub trees, outbuildings, rank grasses and weeds currently provide food and shelter for finches, starlings, blackbirds, thrushes, paradise shelducks, and sparrows. Stumps and water-tanks provide male territorial shelducks with vantage points overlooking their nests and young.
- 3.4 Mr Crossland in his report notes that April-May 2009 pastoral crop harvesting at the site provided a large number of Paradise Shelduck with food. I accept this observation, but would note that such harvesting occurs all over the Canterbury plains, such that Paradise Shelduck have a great many places when farming practices provide them with foraging opportunities. Pukeko are also plentiful in Canterbury, and the Spur-winged Plover has successfully invaded New Zealand, and along with the Canada Goose which is now regarded by some as a pest species.
- 3.5 Only a small percentage of the original indigenous forest remains at the site. This means most of the bird species present are introduced species.
- 3.6 Small passerine birds, especially black and pied fantails, visit the site during the winter, when the colder Port Hills temperatures drive such birds into the lower warmer microhabitats. The present vegetation on the site is not conducive to these indigenous birds staying there.
- 3.7 The numerous exotic trees (mostly pinus and eucalypts) on and adjacent to the site provide roosting and resting sites for cormorants and herons. The tall mature trees (macrocarpa, pine, eucalypt, and

oak) provide nesting, shelter, and roosting places for starlings, magpies, herons, feral pigeons, and finches. I understand that none of the trees within or adjacent to the site are currently protected from being felled.



Little cormorants using pines overlooking the Heathcote River for roosting in late summer.

- 3.8 The Heathcote river, which flows around part of the boundary, provides habitat to birds for food, water and bathing. The Heathcote river and its contiguous vegetation, tidal at this point, provides food and shelter for paradise shelduck, ducks, comorants, herons, thrush, blackbird, white-eyes and swallows.
- 3.9 Forty-eight species/subspecies were recorded as part of my assessment. A species list is provided in Appendix A. This contains 16 endemic (found only in NZ), 12 native (self-introduced - mostly from Australia), and 18 species introduced by humans. Two records of rare visitors/stragglers (reef heron & spine-tailed swift) were made. The species list would appear to be a good figure for such a site, largely because it reflects the favourable contiguous estuary and pastures where birds come and go from the site.

4. **POSSIBLE BIRD POPULATION CHANGES DURING THE CONSTRUCTION PHASE**

- 4.1 I understand that this hearing is to determine the appropriate zoning for the site. I have however also considered the potential effect on bird populations during development of the site, following its rezoning.
- 4.2 In my opinion, the construction phase of development has the potential to affect bird populations in the short term unless the activities are appropriately managed. Effects can arise from noise, dust generation, and light spill from the use of machinery. Pastoral bird species can be expected to move away from immediate areas of excavation and construction. Some species, on the other hand, cope very well with construction activity and the presence of heavy machinery.
- 4.3 It may be that the majority of resident and visiting birds are displaced over this period. Some species will move into neighbouring pastures, the estuary, the Charlesworth Reserve, or may indeed be displaced into the wider city. This has the potential to constrict the breeding territories of some adjacent species near the site over the short term. However, based on observations of the wider area, I think it unlikely that major constriction will arise, as the site itself does not appear to be densely populated with birds.
- 4.4 Birds fly into roost sites at dusk and are away again as dawn approaches. The effects of noise, dust and lighting on roosting birds, such as little cormorants, could be avoided by ceasing earth working and machinery operations on areas of the site in close proximity to the Heathcote river during these times - preferably one hour after sunrise and one hour before sunset. This is, in my view, an important proviso to prevent some bird species leaving the area in the short to medium term. I understand that a rule is proposed to manage any potential effect on roosting birds, by restricting construction activities to one hour before sunset and one hour after sunrise. I support this approach.

- 4.5 I expect that the little cormorants will leave their longstanding roosting site while the noise and disturbance takes place. They are particularly prone to human disturbance, and I would anticipate that these birds will move to roost in another locality during construction at the site - even though the pines and their roosting trees might be retained. Adult pied cormorants are more tolerant of human disturbance, and might remain, provided that some trees overhanging the river are not removed. Cormorant roosts in other parts of the City occur in close proximity to urban activity, and I would expect the trees adjacent to the Heathcote river to be used in the future by these birds. Cormorants are very resilient to changes in their environment, as many of their trees used for nesting are either killed off by their voluminous guano, or subside and drop into the sea because of storm and wind damage. The birds simply move to the nearest suitable trees.
- 4.6 The site is relatively large, and as I am advised that development and use of such sites typically occurs in a staged and piecemeal manner. I understand that it is unlikely that construction will occur along the entire length of the Heathcote river being exposed to noise and dust at the same time. This may limit the potential displacement of birds from the entire site as birds will be able to move some distance up or down the river margin adjacent to the site. This will allow birds to adapt to the changes, while allowing the proposed indigenous plantings of trees and shrubs to become well established.
- 4.7 I also understand that it may be several years before the site is fully developed. However, the planting regime will begin earlier, once the site is rezoned. Perhaps a decision on the new wetland habitats in the CCC-owned land on the opposite (eastern) side of Tunnel Road will have also been made by then.
- 4.8 Mr Crossland has stated in his report that a commitment and funding allocation to the creation of wetlands has not yet been made, and it may be several years before the wetlands are completed and ready to accommodate bird populations. That may be the case. However the

advantage, as I see it, of rezoning this site is that the planting of river margins can be undertaken to complement the long-term vision held by CCC if that is also given effect to. I see this as a positive outcome for the wider area, if both proposals eventuate. That opportunity will be lost if the site is not rezoned and left in its current state. It would be disappointing if CCC does not take the opportunity to develop its land on the opposite site of Tunnel Road, to complement what Kennaway is proposing for this site.

5. EFFECTS FOLLOWING SITE DEVELOPMENT

- 5.1 I agree with Mr Crossland that the bird life along the Heathcote river margins should be protected. Of course, from the point of view of an ornithologist, it is easy to say the more habitat the better. I also note Dr Zollhoefer's comments in his evidence, where he considers the issue of increased habitat. I am also aware that there is some debate as to the likely extent of river erosion that may occur over time.
- 5.2 However, my understanding is that we are to compare the current and proposed rezoning option. In my view, a 20 metre buffer would be more than sufficient, simply because it would represent an improvement on the existing situation. I note that the plans now show an increased area with a varying overall width of 20 to 40 metres along the Heathcote river. I am also aware that additional native vegetation will be planted around the existing mature oak trees on the site. The range of measures proposed suggest that the rezoning will provide the opportunity to enhance habitat for bird populations. In my view, it is likely to provide a better outcome in the long term than if the site remains in its current state.
- 5.3 The applicant proposes, as part of the development of the site, to provide additional plantings, undertake riverbank restoration, water channelling, and to provide a leafy walking track. These aspects of the proposal will, I believe, assist in improving the habitat and attracting native bush birds back to the site. The proposed indigenous tree and shrub margins could provide a useful habitat corridor for birds to move into the site. The water channels will

provide habitat suitable for waterfowl to roost and preen while allowing other birds to drink from the water provided. I also note that it would be preferable if the proposed walkway did not run directly underneath the cormorant roosting trees.

- 5.4 The proposed vegetation planting at the river's edge should ideally reflect the species originally found at the site. The indigenous vegetation will provide shelter, food and nesting opportunities for arboreal birds, while also providing suitable thick screening for water birds using the river. Grey warbler and fantail prefer to nest in shrubs and small trees (manuka is a favourite) from where fantails can hawk for insects over the water.
- 5.5 Such plantings at the site could, I believe, produce a positive effect on species composition and numbers within the area and allow greater numbers of fantail, tui, bellbird, kereru, grey warbler and others into the site - to replace the present introduced pastoral birds species (and some pest) bird species, including sparrow, blackbird, thrush, starling, magpie, pheasant, spur-winged plover, and Canada geese. This would be a highly desirable outcome. The adjacent estuary has a variety of waterbirds that could take advantage of the site once it is fully completed.
- 5.6 Attracting birds to the site, and keeping them there, will be important to any ongoing success. The planting of indigenous trees and shrubs, together with other berry and nectar -producing plants, in such a way as to provide a vegetative screen for the water birds, while providing nesting sites for bush birds, should allow endemic and native bush species of birds to visit and breed more freely at the site. Without winter food trees, for example, birds will move away and forage elsewhere. Kereru (native pigeon) will fly 5+ km to find kowhai flowers, "cabbage tree" berries or karaka drupes. These tree species could easily be grown at the site.
- 5.7 The site is currently beset by mammalian predators, chiefly rats and mice. This is not aided by the current rural use of the site. I also understand that the site could be developed as a series of lifestyle

blocks with no requirement for planting or restrictions on the keeping of cats or other predators. Ideally, I would like to see some form of effective pest management for the area. However I understand that this may not be a rezoning matter. I simply note that this would be a beneficial outcome for those properties on both sides of the Heathcote river.

6. CONCLUSION

- 6.1 I welcome and fully support the development plan with changes to the green spaces, particularly along the riverbanks where extensive additional planting is proposed. More trees will invite more birds to feed and breed in the habitat provided for them. I also understand that existing trees within the site will be protected. It is clearly a much better opportunity for bush and water birds than is currently present at the site.
- 6.2 The development resulting from the rezoning of the site will naturally result in most of the pastoral species of bird leaving the site. I will welcome the departure of the Canada Goose and spur-winged plovers – both are becoming avian pests in this country.
- 6.3 I expect that the water birds will move into adjacent suitable habitat in the short term. The little cormorants, which have a longstanding roost at the site, will be inconvenienced, but provided their conspicuous roosting trees are spared from the axe, the birds will, I believe, return to them. The trees must not be removed, and adjacent pine trees could be easily pruned to provide further cormorant roost sites if necessary. The effects of noise dust and lighting on roosting little cormorants – and other species - could be avoided by ceasing earth working and machinery operations in close proximity to the Heathcote river during one hour after sunrise and one hour before sunset. This is important.
- 6.4 In my opinion, the rezoning of this land is likely lead to a better long term outcome for bird populations, than if the site were simply left idle

as a rural block or developed for lifestyle purposes with no habitat enhancement or protection of existing vegetation.

Dr Peter Harper

June 2009

Appendix A

Species list & maximum numbers observed at any one time

| | | |
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| Black cormorant (<i>Phalacrocorax carbo</i>) | native | 4 visitor |
| Little black cormorant (<i>P. sulcirostris</i>) | native | 6 visitor |
| Little cormorant (<i>P. melanoleucos</i>) | endemic | 32 roosting |
| Pied cormorant (<i>P. varius</i>) | endemic | 6 visitor |
| White-faced heron (<i>Ardea n.novaehollandiae</i>) | native | 9 in paddocks |
| Reef heron (<i>Egretta sacra</i>) | endemic | 1 straggler (seen twice) |
| Black swan (<i>Cygnus atratus</i>) | native | 14 visitor |
| Giant Canada goose (<i>Branta canadensis maxima</i>) | introduced | 91 visitor |
| Paradise shelduck (<i>Tadorna variegata</i>) | endemic | 6 pr resident |
| NZ Shoveler (<i>Anas rhyncholtis variegata</i>) | endemic | 6 pr |
| Mallard (<i>Anas p. platyhynchos</i>) | introduced | 24 in flooded paddocks; 17 on river |
| Grey duck (<i>A. s. superciliosa</i>) | endemic | 23 visitor |
| Grey teal (<i>Anas gibberifrons</i>) | native | 17 visitor |
| NZ Scaup (<i>Aythya novaeseelandiae</i>) | endemic | 5 pr resident |
| Turnstone (<i>Arenaria interpres</i>) | migrant | 3 visitor |
| Banded dotterel (<i>Charadrius bicinctus</i>) | endemic | 5 visitor |
| Harrier (<i>Circus approximans</i>) | native | 9 birds, no breeding on site |
| Californian quail (<i>Lophortyx californica</i>) | introduced | 1pr with 7 young |
| Pheasant (<i>Phasianus colchicus</i>) | introduced | 2 seen |
| Pukeko (<i>Porphyrio p. melanotus</i>) | native | 14 pr resident |
| Oyster catcher (<i>Haematopus ostralegus</i>) | endemic | 5 visitor |
| Spur-winged plover (<i>Vanellus miles novaehollandiae</i>) | native | 22 in paddocks |
| Pied stilt (<i>Himantopus h. leucocephalus</i>) | native | 6 visitor |
| Black-backed gull (<i>Larus dominicanus</i>) | native | frequent transient |
| Black-billed Gull (<i>L. bulleri</i>) | endemic | frequent transient |
| Red-billed gull (<i>L. novaehollandiae</i>) | endemic | frequent transient |
| Shining cuckoo (<i>Chrysococcyx l. lucidus</i>) | endemic | 8 visitor, heard |
| Little owl (<i>Athene noctus</i>) | introduced | 1 pr resident |
| NZ Kingfisher (<i>Halcyon sancta vegans</i>) | endemic | 4 pr resident |
| Skylark (<i>Alauda a. arvensis</i>) | introduced | up to 16 resident |
| Pipit (<i>Anthus novaeseelandiae</i>) | endemic | up to 7 pr |
| Welcome swallow (<i>Hirundo tahitica neoxena</i>) | native | up to 17 |
| Spine-tailed swift (<i>Hirundapus caudacutis</i>) | straggler | 2 transiting during westerly gale |

| | | |
|--|------------|-------------------------------|
| Song thrush (<i>Turdus philomelos clarkei</i>) | introduced | 9 pr resident |
| Blackbird (<i>Turdus m. merula</i>) | introduced | 11 pr resident |
| Fantail (<i>Rhipidura fuliginosa</i>) | endemic | 16 visitor |
| White-eye (<i>Zosterops l. lateralis</i>) | native | up to 33 |
| Grey warbler (<i>Gerygone igata</i>) | endemic | 6 pairs resident |
| Yellowhammer (<i>Emberiza citrinella caliginosa</i>) | introduced | 9 pr |
| Cirl Bunting (<i>Emberiza cirlus</i>) | introduced | 1 straggler |
| Chaffinch (<i>Fringilla coelebs gengleri</i>) | introduced | 3 pr resident |
| Greenfinch (<i>Carduelis c. chloris</i>) | introduced | up to 350 |
| Goldfinch (<i>C.c. Britannica</i>) | introduced | up to 210 |
| Redpoll (<i>C. flammea cabaret</i>) | introduced | up to 70 |
| Hedgesparrow (<i>Prunella modularis</i>) | introduced | 3 pr |
| Sparrow (<i>Passer domesticus</i>) | introduced | up to 31 |
| Starling (<i>Sturnus v. vulgaris</i>) | introduced | 450+ |
| Australian magpie (<i>Gymnorhina tibicen</i>) | introduced | 5 pr resident |
| Feral pigeon (<i>Columba livea</i>) | introduced | 19 visitor, possibly breeding |