

# 11. KIWI MANAGEMENT PLAN

## 11.1 INTRODUCTION

The proposed Cypress Mine lies within the range of the threatened great spotted kiwi *Apteryx haastii*. Mining activities, including vegetation removal, noise, lights, the establishment of new roads, and the increased presence of people, will have a direct effect on kiwi in the area of the mine and an indirect effect on the wider population living nearby (McLennan 2003).

This plan addresses methods to mitigate the effects of the proposed Cypress Mine on great spotted kiwi living within or near the area of the proposed pits. The mitigation of effects on kiwi comprises several elements. These include:

- The creation of a 1000 hectare predator control area in an area east of the Cypress Mine site. Within this area, predators (stoats, possums, rats) will be controlled for a period of at least 30 years (the ten years within which mining operations are expected to take place, and for twenty years thereafter). Details of this programme are contained within the Predator Control Plan.
- The use of a 20 hectare predator exclusion area for the rearing of great spotted kiwi chicks. This area will be fenced and maintained for 30 years in a predator-free state. Details of this exclusion area are contained within the Predator Control Plan.
- The identification and tracking of kiwi presently living within the mine site. A process for determining whether any of these birds should be removed from the mine site has also been developed. This and all other aspects of the great spotted kiwi mitigation work will be carried out in consultation with the Department of Conservation. These matters are set out in this plan.

Prior to this plan becoming operational, the details will be confirmed with the Department of Conservation and Ngati Waewae.

## 11.2 OBJECTIVES

The overall objectives of the great spotted kiwi mitigation proposals (including predator control ) are:

- To minimise the effects of mining activities on great spotted kiwi numbers by assessing whether it is necessary to move the individuals living in or near the mine, and doing that if it proves to be in their best interests.
- To maintain and enhance the wider kiwi population in the area using predator control and creching to increase survival rates.
- To manage the restoration of vegetation in the mined area so that it once again becomes available for re-occupation by great spotted kiwi.
- To monitor effects of the predator control programme.

### 11.3 PERFORMANCE STANDARDS / CONDITIONS

Buller District Council Land Use Consent No. RC03/164 has the following requirements relating to great spotted kiwi:

Condition 32:

*“The Consent Holder shall undertake a programme of great spotted kiwi management which shall have two objectives:*

- (a) To minimise the effects from mining activities on great spotted kiwi living within or immediately alongside Cypress Mine; and*
- (b) To enhance the survival rates of great spotted kiwi within the treatment area shown on Attachment 3 while mining operations are in progress, and for a period of 20 years following cessation of coal extraction from the site.”*

Condition 33:

*“A Kiwi Management Plan shall be prepared in consultation with the Department of Conservation and Te Runanga o Ngati Waewae, which sets out the practices and procedures to be adopted to ensure compliance with the conditions of this consent.”*

Condition 34 sets out the requirements of the plan:

*“The plan shall, as a minimum, address the following:*

- (a) The options for management of kiwi present within the mine site, including but not limited to:*
- (b) The monitoring and tracking of kiwi present within the site and surrounds;*
- (c) Management of birds within the vicinity of the site should the decision be taken to leave them there;*
- (d) The capture and/or removal of those birds within the proposed mine area should the decision be made to remove them from the site; and*
- (e) The management and destination of captured birds should the decision be made to remove the birds from the site.*
- (f) The mechanism for determining which of the options addressed under a. above is expected to hold the best outcome for kiwi.*
- (g) Kiwi habitat enhancement measures to be carried out within the pit during rehabilitation (for example, construction measures to integrate the highwall benches with the adjacent forest).*
- (h) Contingencies to review the size of the predator control area or implement protective rearing in the event that management targets are not achieved.*

- (i) *The monitoring that will be undertaken to assess progress towards the objectives of the management plan”.*

This Management Plan sets out all matters required under the above conditions.

### **Reporting:**

As set out in General Condition A.17.2 reports on the activities and monitoring carried out under this plan are required as follows:

*A17.2 The Consent Holder shall prepare and submit to the Consent Authority and to the Peer Review Panel an Annual Environmental Monitoring Report one month prior to each anniversary of the commencement of these consents. The monitoring period to be included in each report shall be for the 12-month period ending two months prior to the anniversary of the commencement of these consents. A copy shall also be provided to the Department of Conservation.*

In addition, the Department of Conservation will be provided with a six-monthly update on any monitoring carried out in relation to this plan since the last Annual Environmental Monitoring Report was provided.

Prior to implementing this plan the Consent Holder will obtain all necessary approvals under the Wildlife Act 1957.

## **11.4 CONTEXT**

Great spotted kiwi are relatively common in the Waimangaroa Valley and have a Category B conservation status (Molloy & Davis, 1994). Surveys undertaken within the Upper Waimangaroa Mining Permit Area have detected up to 90 birds in the forests on the true left bank of the Waimangaroa River and a further ten in the sandstone pavement habitats on the true right bank, representing approximately 6% of the estimated total population (1,800) in the Ngakawau and Buller Ecological Districts. Ten individual great spotted kiwi (four pairs and two males) have been identified within the area of the proposed Cypress Mine pits, in the forested habitats on the western slopes of the Mt William Range. This density is similar to those in equivalent forest habitats elsewhere in the Ngakawau and Buller Ecological Districts.

Kiwi are declining on mainland New Zealand because of predation by introduced mammals. Rates of decline vary from place to place depending on the mix of predators present, as well as whether they are preying on adults as well as young kiwi. Counts by the Department of Conservation indicate great spotted kiwi are declining at an average rate of 1%-2% per year. The birds appear to be holding on in some areas, but declining quite quickly in others. Counts in the vicinity of the Mt William Range indicate the population there is declining at approximately 5% per annum, at a rate some two to five times faster than the 'national' average (H. Robertson, Department of Conservation, Wellington, unpublished data).

The removal of vegetation from the proposed pit areas is likely to denude most or all of the territories of the resident adults. The Mt William Range could probably accommodate more kiwi, but most of the displaced birds would have to re-settle in areas already occupied by other kiwi. Displacement will therefore reduce survival and

reproductive rates. It is also likely to cause social disruption among pairs elsewhere on the Mt William Range.

Great spotted kiwi are expected to re-occupy some of the rehabilitated mine surfaces, with the majority of the mine surfaces becoming suitable for re-occupation within 30-50 years of rehabilitation. Whether or not re-occupation occurs will depend largely on the availability of dispersing juveniles.

## **11.5 PROPOSED MITIGATION**

### **11.5.1 Introduction**

Surveys in 1997 indicated there were about ten adult kiwi (four pairs and two males) living in or alongside the sites of the proposed pits, however, numbers are unlikely to have changed much since then. Removal of vegetation from the proposed pits is likely to denude some or all of the territories of the resident adults and make them uninhabitable. Mining will also expose kiwi living alongside the pits to variable levels of noise for about ten years. The procedures described below have been designed to minimise the potential harm of these impacts, and/or to provide information that will help decide the best course of action.

To determine the best outcome for kiwi, the following strategy is proposed:

1. Conduct a field study to determine the layout of territories and the extent to which they overlap with the mine.
2. Undertake consultation with Ngati Waewae and the Department of Conservation to determine which (if any) birds should be relocated.
3. Carry out on-going monitoring of all kiwi irrespective of whether they are transferred or not.
4. Develop a new management plan, if necessary, for managing kiwi in the area of the southern pit when mining starts there.

### **11.5.2 Capture and Monitoring of Kiwi in the Mine Area**

The mining plan proposes that coal will be extracted over a ten-year period from two pits in Cypress Stream, covering a total of 105 ha. The northern pit, of about 60-70 ha, will be mined first. Surveys indicate there are about ten adult kiwi living in or alongside the sites of the proposed pits. All of these birds will be caught and radio-tagged two months before mining begins, and then monitored over the following six weeks to determine the layout of their territories.

There are no established rules for deciding how much habitat loss kiwi can tolerate without undue harm, but it seems reasonable to consider moving only those individuals who have a small territory, neighbours on all sides, and a high probability of losing more than 50% of their territory during mining. Ngati Waewae and the Department of Conservation will be consulted to help identify which birds should be moved.

The fate of birds living in the vicinity of the northern pit will be decided first. Irrespective of whether they are left in the mine area or moved to another place, these birds will

continue to be monitored for at least 12 months in order to learn how to best manage the kiwi in the southern pit.

Decisions about the fate of the kiwi resident in the southern pit will be made just before the area is stripped, about six years after mining commences. In the meantime the birds will be left there, with radio-transmitters on so their exact whereabouts can be established at any time. Any bird that strays into an area where vegetation is being stripped will be uplifted and moved to another part of its territory.

### **Relocation of kiwi living within the mine area**

Clearly, any decision regarding kiwi relocation must include consideration of potential release sites. The plan is to again consult with both Ngati Waewae and the Department of Conservation to determine where birds should be released if it proves necessary to move them. Current information suggests the managed mainland reserve at Lake Rotoiti, Nelson Lakes National Park, is potentially the best of all available options. Efforts to re-establish great spotted kiwi in the reserve are already underway, with encouraging results. Nine adults, which were transferred from northwest Nelson into the reserve in May 2004, are still alive and still near their release sites. It is early days yet, but these preliminary findings indicate that adult great spotted kiwi can be moved successfully from one place to another.

If this site is not acceptable, advice will be sought from the Department of Conservation as to other sites that could be used for release.

If it does prove necessary to move kiwi out of the mine area, the transfers will be undertaken only between January and May. This is designed to avoid the main breeding period and therefore minimise loss of eggs and young chicks. Members of bonded pairs will be collected at the same time and released together in the same place. Permission to catch, handle and remove great spotted kiwi from the area of the proposed pits will need to be obtained from the Department of Conservation.

### **11.5.3 Predator Control Scheme**

The proposed predator control scheme has two parts: intensive predator control for 30 years over a 1000 hectare area east of the proposed mine site; and a fenced 20 hectare predator exclusion area for raising chicks in years when predators are especially numerous.

Predator control in a 1000 hectare area near the mine aims to provide great spotted kiwi with year-round protection from stoats, the main predator of young kiwi is less than 800 g in weight. Possums will also be controlled, which may further benefit great spotted kiwi by reducing egg losses. Possums eat kiwi eggs infrequently, but they do enter nests occasionally and may cause desertions.

The specific goals of the programme are to increase rates of juvenile survival from existing levels (probably < 10%) to 50% per annum, and to arrest population decline in the treatment area. The second goal may be difficult to achieve if young kiwi disperse away from natal areas and settle outside the treatment area. The specific management target is to ensure that an average of nine chicks survive each year in the treatment area to the safe-size of 800 g. Population stability will be achieved if three of these chicks go on to reach adulthood and remain within the treatment area. Full details pertaining to predator control are provided in the Predator Control Plan.

#### **11.5.4 Disturbance Resulting From Noise**

The kiwi living in the immediate vicinity of the mine should habituate rapidly to the loud noises associated with mining, and no mitigation measures are required.

#### **11.5.5 Predation from Dogs**

All dogs will be banned from the mine site, unless they are: 1) certified and approved for use on kiwi, or 2) approved for pest control work, and have received kiwi-aversion training.

#### **11.5.6 Monitoring the Effects of Predator Control and Protective Rearing of Juveniles**

Trained dog-handlers will survey the 1000 hectare treatment area at three to five year intervals to determine if juveniles are present. The surveys will be undertaken in summers when beech and/or podocarp species mast heavily. These seeding/fruiting events usually occur on a regional scale, are highly visible, and require no special sampling procedures to detect them. They trigger rodent irruptions during the following winter, which are in turn followed by an irruption of stoats a few months later. The surveys will therefore assess juvenile abundance at times when stoats are at 'normal' levels, and may have been so for several years. Juveniles, identified from measurements, should comprise approximately one-quarter to one-third of the population if the predator control programme is operating effectively. Adult males will also be radio-tagged during these surveys so that they can be located again some six to eight months later, when they next breed.

The radio-tagged males will be tracked again in late spring, a few weeks before the impending stoat irruption in early summer. By then, most of the males will be incubating eggs in the late stages of development. The eggs will be collected and hatched in captivity, and the chicks will be transferred to the 20 hectare enclosure when they reach an age of 20-30 days. They will remain in the enclosure until they reach 800 g in weight, and then will be transferred back to either the treatment area or the rehabilitated mine surfaces.

If the surveys reveal that juveniles are not at expected levels of abundance in the treatment area, two processes will be initiated: 1) the predator control programme will be reviewed and upgraded by experts; and 2) the frequency of protective-rearing will be increased (initially to two years on, followed by three-four years off).

The review of the predator control programme will include an evaluation of its scale as well as its methodology. Both aspects of the programme will be changed if necessary. If protective-rearing needs to be undertaken two years in a row, the radio-transmitters will be left on the adult males for two consecutive years (with annual replacement). The transmitters will be removed after the second bout of egg collection, and then attached again to a new sample of males in three to five years time when the treatment area is next surveyed. If necessary, males living alongside the treatment area will also be captured and radio-tagged from time to time, so that each sample includes a proportion of males that have not been tracked before. This will minimise disturbance to individual males and ensure that each one of them has long periods completely free of human contact.

### **11.5.7 Rehabilitation of Kiwi Habitat**

The Rehabilitation Management Plan describes in detail the procedures that will be used to restore vegetation on the pit surfaces. Rehabilitation aims to establish a 100% vegetative cover in the two pits, with plant communities ranging from one - ten years of age at mine closure. Parts of the pit area are likely to be suitable for kiwi immediately following rehabilitation (tussock) or within a few years afterwards (transferred scrub/forest). The remaining areas, which comprise about 70% of the pits, are likely to be suitable for re-occupation by kiwi 30-50 years after rehabilitation.

The return of kiwi to the rehabilitated pit areas is likely to be slow, intermittent, and achieved entirely as a result of natural processes. Dispersing juveniles may settle there, and some of the adults living alongside the pits will probably expand their territories out onto the rehabilitated surfaces. If natural processes are not sufficient on their own to complete re-colonisation, juveniles that have been reared in the crèche (see below) will be released into the pit areas 15 - 20 years after mine closure.

In most places, the rehabilitated mine surfaces will grade naturally into the surrounding landforms providing easy access for kiwi. Ramps will be constructed in the highwalls in the north pit to enable kiwi to travel between the Mount William Range and the valley floor. All of the benches on the highwall will be shaped so that they mould into the landform at each end, and thus provide exit and entry points for the birds. Mining will permanently change the landform in Cypress Valley, but it should not reduce the quantity and quality of the habitat available for great spotted kiwi over the longer-term.

#### **References**

- McLennan, J. A. 2003. Assessment of effects of the proposed Cypress Coal Mine on Great Spotted Kiwi. Solid Energy New Zealand Ltd. Westport. 14 p.
- Molloy, J.; Davis, A. 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. Second edition. Collated by C. Tisdall. Department of Conservation, Wellington.

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