

MEMORANDUM

TO: Heather McKay, Tai Poutini Resources
FROM: Dr Gary Bramley
SUBJECT: Westland Mineral Sands Company Limited, Proposed Nine Mile mine, RC 20210095
DATE: 30 August 2021
CC:

1. BACKGROUND AND SCOPE

Westland Mineral Sands Company Limited has applied for resource consents from the West Coast Regional Council (**WCRC**) and Buller District Council (**BDC**) to authorize mineral sand mining, along with processing and associated facilities, within approximately 25 hectares of land located at Okari Road, south of Cape Foulwind and covered by Prospecting Permit PP60494. Consents from both councils allowing mineral sands mining were granted for the site in 2013 with a 15-year term (RC13036 and RC130035), however the current application supersedes the two existing consents which were for a slower rate of mining and a smaller total extraction.

The proposed mining activity would involve the removal of topsoil, excavation of sands and transporting to an onsite processing plant. Following extraction of the Heavy Mineral Content (**HMC**), excess material would be returned to the pit and the site would be progressively rehabilitated to pasture for farming. A total of approximately 5ha would be disturbed at the site at any one time, including approximately 2ha affected by active mining. The mineral sands would be processed via the onsite plant with resulting HMC trucked off site for shipping. No chemicals are used during the process. Approximately 100,000 – 120,000 tonnes of HMC per annum is expected to be removed from the site at peak production up to a total approximate 500,000 tonnes of HMC. Mine life is expected to be five – seven years and consents have been sought for a period of 10 years.

WCRC and BDC have assessed the application and identified that they require further information pursuant to section 92(1) of the Resource Management Act 1991. The councils have requested the following information with regard to ecological matters in relation to the consent application to allow them to complete their assessment:

- i) Provide details on how earthworks and stormwater run-off will be managed to ensure there will be no adverse effects on adjoining sensitive areas (i.e. the 2 wetlands, indigenous vegetation along the eastern boundary and Blind River). Please provide details on specific control measures and provide input from an

ecologist that these measures will avoid adverse effects on the wetlands, river and adjoining indigenous vegetation.

- ii) Provide input from an ecologist on any potential adverse effects for little blue penguin. Also provide input from an ecologist on whether there are any other bird species that may be affected by the proposal and to what extent.

In addition, you have also asked me to consider whether the proposal is consistent with Policy 9.1 of the West Coast Regional Policy Statement and Policy 11 of the New Zealand Coastal Policy Statement. This memo serves to address these matters, each of which considered in more detail below.

2. STORMWATER MANAGEMENT

The strategy for dealing with stormwater run-off is to direct all run-off to the pit in the first instance so as to minimise uncontrolled water discharging to wetlands or other sensitive areas (indigenous vegetation, Blind River) outside the mine pit. This will be achieved via cut-off drains (up to 3m deep) established as necessary along the perimeter of the pit crest.

Within the pit, water will be directed from the perimeter drains to internal pit drains constructed on each working bench. The internal drains will discharge water within the pit where it will infiltrate to ground water. Drains and diversions will be continually advanced as mining progresses.

No dewatering of the water table is proposed and where necessary (i.e. where the resource is below the water table) "wet mining" will be conducted and any inaccessible resource will be left in place. A maximum excavation rate of 100 m³/d is proposed, which would limit net water removal from the water table to 20 m³/day. In addition, a water management plan is proposed to manage effects. This plan is expected to maintain the natural water tables, including in the wetlands, and protect surrounding areas from runoff. On that basis adverse effects on the wetlands and Blind River are not expected.

3. POTENTIAL EFFECTS ON BIRDS

3.1 Birds Present

A search of the eBird database revealed 1958 records of 61 species within approximately 10km of the site as shown in Appendix 1. Little blue penguin and Westland petrel have not been recorded at the site, but that does not mean that they are not present.

Of the species listed in Appendix 1, only one (New Zealand pipit, *Anthus novaeseelandiae*) is dependent on the type of pastoral habitats present within the mining footprint and if present may be affected. New Zealand pipit are regarded as "At risk (Declining)" (Robertson et al. 2017). A further four species which may be present are known to use the types of habitats available nearby and again, might potentially be affected if (or when) present. These species are tāiko (Westland petrel, *Procellaria westlandica*), māātā

(South Island fernbird, *Bowdleria punctata punctata*), matuku (Australasian bittern, *Botaurus poiciloptilus*) and kororā (little blue penguin, *Eudyptula minor*).

Tāiko (Westland petrel) are seabirds and the only known nesting colony is located near Punakaiki. Tāiko leaving the colony can be disoriented by lighting at night and birds grounded by lighting have been recorded from between south of Hokitika and Westport, although the majority of groundings occur between Greymouth and Punakaiki.

Both mātātā (South Island fernbird) and matuku (Australasian bittern) use wetland habitats of the type which adjoin the mining area to the north. Both species might be affected by noise, human or mechanical activities or other types of disturbance during mining. The assessment of noise effects by Marshall Day Acoustics (2021) indicates that the level of noise expected at the boundary of the public conservation land is 50dB during the day and 39dB at night. There are no published noise limits beyond which adverse effects are expected for native species in New Zealand, however bittern in particular are very secretive birds which are easily disturbed and fernbirds are territorial, so may not be able to readily move out of range of disturbing activities.

Kororā (little blue penguin) are widely distributed around the New Zealand coastline and are nocturnal on land. They are potentially put at risk because they nest in burrows or cavities located at some distance from the coast and may need to cross Okari Road when they would be at risk of vehicle strike.

3.2 Proposed Mitigations

In relation to pipit, the most relevant consideration is the extent of disturbed ground at any one time, since pipits will likely make use of areas rehabilitated to pasture as they become available and also readily make use of disturbed soils for feeding and resting. Pipit densities in the area are unknown, but at high density North Island populations 6 – 9 birds per km have been recorded along transects (Beauchamp 2009). It is unlikely that birds are that common at the Okari Road site, but if they were, then a maximum disturbed area of 2ha would equate to habitat for at most one pair of birds. Given the likely lower density, 2ha would form part of the home range of a pair of birds and depending on how much of their habitat mining would remove, resident birds might either move to another part of their range or relocate completely to suitable habitat nearby. Given the limited extent and temporary nature of the proposed mining, effects on pipit would be negligible at the scale of the Foulwind Ecological District.

With respect to kororā, it remains unknown how many birds are present or are likely to be put at risk by the proposal. Kororā nest in colonies ranging in size from a few birds to many hundreds and return to their nests at dusk, often in groups. If kororā are detected crossing the road, their site fidelity makes it likely that they will use the same crossing site repeatedly. Movement of traffic per se would not prevent birds from crossing the road to reach their nesting areas, but it may delay them slightly, or in the worst-case result in adult and chick mortality. As a precautionary measure, trucks associated with the proposal will be limited to 50km along the coastal stretch of Okari Road. In addition, driver education in relation to penguins is proposed, to ensure drivers are aware of penguin presence and movements. This is all that can realistically be done to protect kororā with the available information. The magnitude of effects on kororā is likely to be low, but it depends on the

number of birds present and ultimately the number of birds killed by vehicle strikes. I recommend monitoring of birds be undertaken to assist in understanding where the birds are most likely to be encountered and how kororā might be managed in the event such management is required.

In relation to tāiko, since the mining would run 24 hours a day, lighting will be needed during the hours of darkness. As well as being within District Plan compliance limits, plant lighting will be designed to be directed downwards and shrouded as needed to minimise any potential effects of artificial lighting on Westland petrel.

Moving lights from machinery operating will be in accordance with District Plan limits and will be moving as vehicles and machinery move. This use is in keeping with what can normally be expected in the rural environment (e.g., from tractors and other vehicles operating in the dark). Again, the number of birds expected to be passing through the area is low, and the magnitude of effects would be correspondingly low, but there is a risk that for some reason a number of petrels might be attracted to the lights at the site and effects could escalate.

With regard to South Island fernbirds and Australasian bittern, the proposed works would be set back at least 40m from the nearest suitable habitats. Birds at Okari Wetland would be separated by more than 40m, whilst birds at Silverstream Wetland would have 40m of separation. This is expected to reduce the level of noise and disturbance they experience. In addition, because of the local topography, part of the pit wall would be at a higher elevation than Silverstream wetland¹. This would act as a physical barrier between the pit and Silverstream Wetland, which would also serve to reduce noise and disturbance. The haul road would also be located on the side furthest from Silverstream wetland, reducing traffic disturbance. Again, it remains unknown if bittern and fernbird are present in the areas immediately adjoining the site. Bittern are highly mobile and are thought to make use of a number of wetlands over an area of several square kilometres for their foraging and breeding activities. It is most likely that if the activities disturbed bittern they would relocate from the site for the duration of mining. Fernbird are more site attached, but also generally more tolerant of disturbance than bitterns. Given the widespread distribution of fernbirds in the Westland Ecological Region, including the Foulwind and Ngakawau Ecological Districts, any effects due to mining at this site would be negligible. Bitterns have the highest possible threat ranking, and there are thought to be only very low numbers nationally. If bittern were present the level of effects would likely be moderate given the initial mitigations proposed by the applicant. Further recommendations are made below to address potential effects.

3.3 Additional Recommendations

We recommend an Avian Management Plan is required to be prepared by a suitably qualified and experienced ecologist prior to the commencement of mining activity. This Avian Management Plan should include provisions for monitoring of kororā, tāiko, matuku and māātātā and managing those species as required. This Avian Management Plan should be reviewed annually during mining taking into account annual mine planning.

¹ See cross section E – EE contained in the memorandum from K. Goh, Mine Planning and Design Services Limited, 17 August 2021.

In relation to tāiko, one additional mitigation measure which is likely to be helpful is making use of light in the orange – yellow spectrum for night lighting, rather than white – blue. Again, we recommend monitoring of any grounded birds and a contingency plan which can be activated if required would form part of the Avian Management Plan.

In relation to bittern and fernbird, the physical separation from the mine along with the elevation difference at Silverstream Wetland will assist in reducing noise and other disturbance from the site. Given both wetland areas are located at the northern end of the site they would be among the last to be mined according to the current mine schedule and monitoring could be used to detect whether these species are in fact present and likely to be disturbed before mining near them takes place. If required, I expect that effects on both species could be managed via the proposed Avian Management Plan.

4. RELEVANT POLICIES

Policy 9.1 of the Regional Policy Statement is as follows:

1. Within the coastal environment protect indigenous biological diversity, and natural character, natural features and natural landscapes from inappropriate subdivision, use and development by:
 - a) Identifying in regional and district plans areas of significant indigenous biological diversity, outstanding and high natural character and outstanding natural features and landscapes, recognising the matters set out in Policies 11, 13 and 15 of the NZCPS;
 - b) Avoiding adverse effects on significant indigenous biological diversity, areas of outstanding natural character and outstanding natural landscapes and features; and
 - c) Avoiding significant adverse effects and avoiding, remedying or mitigating other adverse effects on indigenous biological diversity, natural character, natural features and natural landscapes;

The proposed mine is located within an area of farmland and includes a 40m physical separation from the nearest areas of significant indigenous biological diversity (the two wetlands which are both identified as Schedule 2 wetlands in the Regional Land and Water Plan). Only approximately 5ha would be disturbed at any one time and mined areas would be rehabilitated to pasture as mining moves across the site. Although there might be effects beyond the boundary of the site, depending on the species present and their habitat use, these effects are not expected to be significant and can be avoided, remedied or mitigated further so that they are low – very low in magnitude.

Roper-Lindsay et al. (2018) considers that low and very low categories of effect should not normally be of concern, although normal construction and operational care should be exercised to minimize adverse effects. If effects are assessed taking impact management developed during project shaping into consideration, then it is essential that prescribed impact management is carried out to ensure low or very low level effects. Very low level effects can generally be classed as “not more than minor” effects.

Policy 11 of the New Zealand Coastal Policy Statement is as follows:

To protect indigenous biological diversity in the coastal environment:

- (a) avoid adverse effects of activities on:
 - (i) indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists;
 - (ii) taxa that are listed by the International Union for Conservation of Nature and Natural Resources as threatened;
 - (iii) indigenous ecosystems and vegetation types that are threatened in the coastal environment, or are naturally rare;
 - (iv) habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare;
 - (v) areas containing nationally significant examples of indigenous community types; and
 - (vi) areas set aside for full or partial protection of indigenous biological diversity under other legislation; and
- (b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on:
 - (i) areas of predominantly indigenous vegetation in the coastal environment;
 - (ii) habitats in the coastal environment that are important during the vulnerable life stages of indigenous species;
 - (iii) indigenous ecosystems and habitats that are only found in the coastal environment and are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass and saltmarsh;
 - (iv) habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes;
 - (v) habitats, including areas and routes, important to migratory species; and
 - (vi) ecological corridors, and areas important for linking or maintaining biological values identified under this policy.

The threatened and at risk species recorded in the eBird database within 10km of the Site are shown in Appendix 1, and the other species likely to be affected by the proposal. are discussed in Section 3.1 above. Some of those species (tāiko, matuku) are also considered threatened by the IUCN. Wetlands are threatened environments and the covenanted areas outside the footprint (on the Landcorp farm) and adjoining public

conservation land have been set aside for full or partial protection of indigenous biological diversity under other legislation. Policy 11 requires effects on these values to be avoided. With respect to the wetlands and protected areas, the only way that those areas might be affected is if there were substantial changes in the water table, such that they became drier or wetter and that change in hydrology led to a change in vegetation composition. As set out in Section 2 above, this is not expected to occur and a water management plan for the site will be used to monitor and manage the water table so that effects on these areas are avoided.

With respect to the species which may be affected, better knowledge about the bird species present and how they use the site should enable management via an Avian Management Plan to ensure that adverse effects can be avoided.

In relation to Policy 11b, the areas of predominantly indigenous vegetation, habitats which are important to indigenous species and habitats vulnerable to modification (wetlands) are outside the footprint and effects would be managed via the water management plan. As described above, this is expected to avoid effects on those areas and habitats. The short mine life is also a relevant consideration which will reduce the level of any effects that might arise. The habitats are not known to be important to migratory species and do not form part of an ecological corridor or linkage.

On that basis the proposal is consistent with Policy 9.1 of the RPS and Policy 11 of the New Zealand Coastal Policy Statement.

5. CONCLUSION

Based on existing knowledge, it is possible that kororā, Australasian bittern, tāiko and mātātā might be present in the areas surrounding the proposed mine site and may be affected by the proposed mining if the human activity, noise and other disturbance extend beyond the mine site boundary to the habitats where they live. Any effects would be mitigated by the (at least) 40m separation from the mining and the local topography, both of which will buffer the natural habitats from activities at the mine. The level of effects on these high or very high value species is likely to be low to negligible, but depends on the number of individuals present and their use of the habitat, which remains unknown. Provided that bird species using the area are monitored prior to mining commencing in the northern area (nearest the two wetlands) and if required, managed in accordance with an Avian Management Plan prepared prior to mining commences, effects on the species of concern will be able to be avoided, remedied or mitigated as appropriate. On that basis, with the mitigation proposed by the applicant and the addition of the recommended Avian Management Plan, the level of effects would be low – very low, which is equivalent to “not more than minor”.

6. REFERENCES

Beauchamp, A.J. 2009. Distribution and habitat use by New Zealand pipits (*Anthus n. novaeseelandiae*) on the Volcanic Plateau. *Notornis* 56:183 – 189.

Robertson, H.A., Baird, K., Dowding, J.E., Elliott, G.P., Hitchmough, R.A., Miskelly, C.M., McArthur, N., O'Donnell, C.F.J., Sagar, P.M., Scofield, R.P., Taylor, G.A. 2017: Conservation status of New Zealand birds, 2016. New Zealand Threat Classification Series 19. Department of Conservation, Wellington. 23 p.

Roper-Lindsay, J., Fuller, S.A., Hooson, S., Saunders, M.D., Ussher, G.T. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition. 119pp + appendices.

Ebird Database records within approximately 10km of the proposed mine site

Species	Common name	Threat Status (Robertson et al. 2017)	Habitat	Number of records
<i>Alauda arvensis</i> *	skylark	Naturalised exotic	Farmland, open habitats	31
<i>Anas platyrhynchos</i> *	mallard	Naturalised exotic	Widespread, farms and urban areas	1
<i>Anas superciliosa</i>	grey duck	Threatened (Nationally critical)	Remote areas away from mallards	2
<i>Anthornis melanura</i>	bellbird	Not threatened	Forest, shrublands, farms and gardens	5
<i>Anthus novaeseelandiae</i>	New Zealand pipit	At risk (Declining)	Farmland, open habitats	10
<i>Ardea ibis</i>	cattle egret	migrant	Damp farmland	1
<i>Ardea modesta</i>	white heron, kōtuku	Threatened (Nationally critical)	Harbours, estuaries and wetlands	9
<i>Bowdleria punctata punctata</i>	South Island fernbird	At Risk (Declining)	Dense vegetation, shrubland and wetland	5
<i>Branta canadensis</i> *	Canada goose	Naturalised exotic	Widespread	1
<i>Carduelis chloris</i> *	greenfinch	Naturalised exotic	Farmland, gardens and urban areas	4
<i>Carduelis flammea</i> *	redpoll	Naturalised exotic	Open habitats and shrublands	3
<i>Charadrius bicinctus</i>	banded dotterel	Threatened (Nationally vulnerable)	Riverbeds, beaches and farmland	5
<i>Chlidonias albobriatus</i>	black-fronted tern	Threatened (Naturally endangered)	Braided rivers and coastal areas	5
<i>Chrysococcyx lucidus</i>	shining cuckoo	Not threatened	widespread	2
<i>Cygnus attratus</i> *	black swan	Naturalised exotic	Lakes, ponds and estuaries	6

<i>Circus approximans</i>	swamp harrier	Not threatened	Widespread, uncommon in forest	27
<i>Emberiza citrinella</i> *	yellowhammer	Naturalised exotic	Open country and farmland	18
<i>Egretta novaehollandiae</i>	white-faced heron	Not threatened	Coastal areas and farm ponds	26
<i>Fringella coelops</i> *	chaffinch	Naturalised exotic	Widespread	114
<i>Fulica atra</i>	Australasian coot	At Risk (Naturally uncommon)	Lakes and ponds	2
<i>Gallirallus australis australis</i>	western weka	Not threatened	Widespread, associated with dense cover	190
<i>Gerygone igata</i>	grey warbler	Not threatened	Widespread	4
<i>Gymnorhina tibicen</i>	Australian magpie	Naturalised exotic	Farmland and urban parks	3
<i>Haematopus finschii</i>	South Island pied oystercatcher	At Risk (Declining)	Estuaries and harbours	24
<i>Haematopus unicolor</i>	variable oystercatcher	At Risk (Recovering)	Coastal habitats	166
<i>Hemiphaga novaeseelandiae</i>	kereru, New Zealand pigeon	Not threatened	Forest and rural areas	6
<i>Himantopus himantopus</i>	pied stilt	Not threatened	Wetlands, braided rivers and estuaries	16
<i>Hirundo neoxena</i>	welcome swallow	Not threatened	Widespread	47
<i>Hydroprogne caspia</i>	Caspian tern	Threatened (Nationally vulnerable)	Harbours, lakes and rivers	20
<i>Larus bullerii</i>	black-billed gull	Threatened (Nationally critical)	Rivers and coastal areas	38
<i>Larus dominicanus</i>	kelp gull, black-backed gull	Not threatened	Widespread, most common near coastal areas and rivers	177
<i>Larus novaehollandiae</i>	red-billed gull	At risk (Declining)	Coastal areas	177

<i>Limosa lapponica</i>	bar-tailed godwit	At risk (Declining)	Harbours and estuaries	13
<i>Phalacrocorax carbo</i>	black shag	At risk (Naturally uncommon)	Coastal, rivers, streams, lakes and ponds	11
<i>Phalacrocorax melanoleucos</i>	little pied shag	Not threatened	Coastal, rivers, streams, lakes and ponds	9
<i>Phalacrocorax sulcirostris</i>	little black shag	At risk (Naturally uncommon)	Harbours, lakes rivers and ponds	2
<i>Phalacrocorax varius</i>	pied shag	At risk (Recovering)	Coastal areas	14
<i>Plegadis falcinellus</i>	glossy ibis	coloniser	Wetlands and rough pasture	1
<i>Porphyrio melanotus</i>	pukeko	Not threatened	Widespread, wetlands and pasture	13
<i>Rhipidura fuliginosa</i>	fantail	Not threatened	Widespread	18
<i>Passer domesticus</i>	house sparrow	Naturalised exotic	Widespread	36
<i>Platalea regia</i>	royal spoonbill	At Risk (Naturally uncommon)	Estuaries and wetlands	7
<i>Prunella modularis</i> *	dunnock	Naturalised exotic	Widespread south of Waikato	19
<i>Puffinus gavia</i>	fluttering shearwater	At Risk (Relict)	Oceanic. Breed on offshore islands	11
<i>Puffinus griseus</i>	sooty shearwater	At Risk (Declining)	Oceanic. Breed on offshore islands	26
<i>Sterna striata</i>	White-fronted tern	At Risk (Declining)	Coastal	167
<i>Sturnus vulgaris</i> *	starling	Naturalised exotic	Widespread, uncommon in native forest	40
<i>Tadorna variegata</i>	paradise shelduck	Not threatened	Widespread, farmland	19
<i>Thalassarche cauta</i>	White-capped mollymawk	At Risk (Declining)	Oceanic. Breed on offshore islands	4

<i>Todiramphus sancta</i>	sacred kingfisher	Not threatened	Widespread	18
<i>Prothemadera novaeseelandiae</i>	tui	Not threatened	Widespread	12
Small albatross species			Oceanic. Breed on offshore islands	25
<i>Turdus merula</i>	blackbird	Naturalised exotic	Widespread	24
<i>Turdus philomelos</i>	song thrush	Naturalised exotic	Widespread	12
<i>Morus serrator</i>	Australasian gannet	Not threatened	Oceanic. Breed on the mainland including at Farewell Spit, Cape Kidnappers and Muriwai.	82
<i>Stercorarius parasiticus</i>	parasitic jaeger, arctic skua	migrant	Oceanic. Breed in the arctic.	24
<i>Stictocarbo punctatus</i>	spotted shag	Not threatened	Coastal	55
Storm petrel			Oceanic.	2
<i>Vanellus miles</i>	spur-winged plover	Not threatened	Widespread	31
<i>Zosterops lateralis</i>	waxeye	Not threatened	Widespread	103