

22. Matters of National Environmental Significance

This chapter documents potential impacts of the Mt Todd Gold Project on Matters of National Environmental Significance (MNES) identified under the EPBC Act. The potential impacts and associated management measures identified in this chapter also contribute to the flora and fauna components of the project risk assessment undertaken in Chapter 5. The project risk assessment includes consequence; likelihood and residual risk ratings for impacts associated with flora and fauna after management measures are implemented.

Detailed assessments of the ecological values of the Project area are provided in Appendices M, N and O. These contain the results of desktop investigations, field surveys and likelihood of occurrence assessments. The outcomes of this work are presented in this chapter as it relates to MNES. This chapter should be read in conjunction with Chapters 13 (Flora and Vegetation) and 14 (Fauna).

22.1 Introduction

The EPBC Act prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and management of MNES. Actions that may have a significant impact on MNES are identified as "controlled actions" and cannot be undertaken without approval under the EPBC Act.

A referral under the EPBC Act was submitted to SEWPaC on 21 April 2011.

The Commonwealth Minister for SEWPaC declared the action (Project) a "controlled action" on the 30 June 2011. The environmental assessment process will be conducted under the Northern Territory / Commonwealth accredited environmental assessment process. The EPBC Act controlling provisions were identified as listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).

22.2 Impact Assessment Process

The level of risk posed to the MNES by each source of impact is assessed using standard semi-qualitative risk assessment procedures. The process is consistent with AS/NZS ISO 31000:2009 'Risk Management – Principles and guidelines'. The likelihood of a particular consequence to flora and / or fauna from a source of potential impact is determined (five levels, "Rare" to "Almost Certain"), as is the severity of that consequence (five levels, "Minor" to "Critical"). These together determine the level of risk on a scale of five levels, "Very Low" to "Extreme". Risk assessments assume standard mitigation of potential impacts has been implemented.

The qualitative assessment matrix, level of likelihood and severity of consequences are defined in Table 22-1 to Table 22-3.

Table 22-1 Qualitative Risk Analysis Matrix

		Severity of Consequence				
		Critical (5)	Major (4)	Significant (3)	Moderate (2)	Minor (1)
Likelihood of Consequence	Almost Certain (5)	Extreme	Extreme	High	High	Medium
	Likely (4)	Extreme	High	High	Medium	Medium
	Possible (3)	Extreme	High	Medium	Medium	Low
	Unlikely (2)	High	Medium	Medium	Low	Very Low
	Rare (1)	Medium	Medium	Low	Low	Very Low

Table 22-2 Definition of Likelihood

Level of Likelihood	Definitions
Almost certain	The event is expected to occur in most circumstances (The event is likely to occur once per year).
Likely	The event will probably occur in most circumstances (The event is likely to occur once every 1 – 2 years).
Possible	The event might occur at some time (The event is likely to occur once every 2 – 5 years).
Unlikely	The event could occur at some time (The event is likely to occur once every 5 – 10 years).
Rare	The event may occur only in exceptional circumstances (The event is unlikely to occur in any to year period).

Table 22-3 Definitions of Consequence

Levels of Consequence	Definitions*
Extreme	Extensive long term environmental harm and / or harm that is extremely widespread. Impacts unlikely to be reversible within 10 years.
Major	Major or widespread, unplanned environmental impact on or off the site. Significant resources required to respond and rehabilitate.
Significant	Significant, unplanned environmental impact contained within the site or minor impact that is off the site.
Moderate	Moderate, unplanned localised environmental impact (maybe of a temporary nature) or discharge contained on-site or with negligible off-site impact.
Minor	Minor environmental impact. Any impacts are contained on-site and short term in nature. No detrimental effect on the environment.

22.2.1 Protected Matters Search Tool Results

The PMST database was used to identify MNES within the Leases and a surrounding 10km buffer. A summary of the MNES search results and potential impact of the Project is provided in Table 22-4.

Table 22-4 PMST Search Results and Impact of Project on Matters of National Environmental Significance

Matter of National Environmental Significance	Significant Impact Risk Rating	Impact of the Project
Nationally Threatened Species	High risk	<p>The 10km buffer search identified ten threatened fauna species. No flora species of significance are listed within 10km of the study area.</p> <p>Two EPBC listed threatened species were seen or heard on-site: the Gouldian finch (<i>Erythrura gouldiae</i>) and the crested shrike-tit (Northern) (<i>Falcunculus frontatus whitei</i>) (heard twice but unconfirmed). The partridge pigeon (<i>Geophaps smithii</i>) possibly occurs in the area.</p> <p>The remaining seven threatened fauna species identified by the PMST are considered unlikely to occur in the project area (Appendices N and O).</p> <p>A summary of assessment against significance criteria is provided in Section 22.2.1. The Project is expected to have a “High” risk of significant impact on one threatened species, the Gouldian finch.</p>
Nationally Threatened Ecological Communities	No	No nationally threatened ecological communities were identified in the study area or within the 10km buffer.
Marine and / or Migratory Species Protected under International Agreements	No	<p>The 10km buffer search identified 14 migratory and 10 marine fauna species. This included the Gouldian finch. This species is assessed according to the EPBC guidelines for critically endangered and endangered species. Other migratory and marine species identified are not known to occur and most likely do not occur in the Mineral Leases and so were not assessed.</p> <p>Assessments of migratory species in terms of the significance criteria are provided in Section 22.2.3.</p>
Ramsar Wetlands of International Importance	No	The PMST indicates that Kakadu Stages 1 & 3 (a RAMSAR listed wetland) is downstream from the Mineral Leases (project area plus a 10km buffer). The Mineral Leases are wholly enclosed in a catchment separate from any Kakadu catchment, with all flows entering the Edith River which flows west, away from Kakadu. Kakadu is unlikely to receive winds from the Mineral Leases area as prevailing winds are from the east and southeast. The Ramsar site will not be impacted.
The Commonwealth Marine Environment	No	The PMST did not identify any Commonwealth Marine Areas in or near the project area.
World Heritage Properties	No	The PMST did not identify any World Heritage properties in or near the project area.
National Heritage Places	No	The PMST did not identify any registered National Heritage Place in or near the project area. The Mineral Leases are wholly enclosed by the Yinberrie Hills.
The Great Barrier Reef Marine Park	No	The project area is not located near or adjacent to the Great Barrier Reef Marine Park. It will not impact this marine park.
Nuclear actions	No	No nuclear actions will be undertaken as part of the Mt Todd Gold Project.

22.2.2 Nationally Threatened Species and Ecological Communities

The potential impact on threatened species was assessed against SEWPaC Significant Impact Guidelines 1.1 (DEWHA 2009). Detailed risk assessment for each threatened species was carried out examining the potential for significant risk of a consequence (each Significant Impact Guideline) from clearing of habitat, dust, noise, wildfire, poisoning from tailings dam water and contamination / alteration of the water table (Appendix N).

A combination of literature reviews, species database record searches and the PMST identified ten EPBC listed threatened species that potentially occur within 10km of the project area (Table 22-4).

Two EPBC listed threatened species, the Gouldian finch and crested shrike-tit, were recorded on-site (crested shrike-tit calls were heard twice but not confirmed). The partridge pigeon was not recorded, but may be present on-site occasionally. The remaining seven threatened fauna species identified by the PMST database are not considered likely to occur in the project area (Appendices M, N and O).

The PMST did not predict the occurrence of any flora species or ecological community of national significance within 10km of the Mineral Leases.

Gouldian Finch

The residual risk to the Yinberrie Hills population of the Gouldian finch is “High” (Table 22-5). A risk of “High” was assessed for the potential for dust to cause population decline, interfere with the recovery of the species and adversely affecting habitat critical to the survival of this species.

Table 22-5 Gouldian Finch Risk Assessment

Consequence According to the Significant Impact Guidelines	Severity of consequence	Likelihood of consequence	Risk
Long-term decrease in the size of a population	Major	Possible	High
Reduce the area of occupancy of the species	Major	Possible	High
Adversely affect habitat critical to the survival of a species	Major	Possible	High
Fragment an existing population into two or more populations	Minor	Unlikely	Very Low
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Moderate	Possible	Medium
Result in invasive species that are harmful to Gouldian finch	Moderate	Unlikely	Low
Introduce disease that may cause the species to decline	Minor	Rare	Very Low
Interfere with the recovery of the species	Major	Possible	High

The predicted quantity of ground level dust is high but based on a conservative scenario of possibly a higher generation of dust than may occur. Together with uncertainties about the potential effects of high dust levels on individual finches, the varying effects of various levels of dust concentration, possible pattern of dust distribution through the breeding habitats and the limited knowledge of other potential

breeding areas in the Yinberrie Hills indicate that a precautionary approach be taken. This is described in section 22.3.

Crested Shrike-tit (Northern)

All but two of the risk levels to the crested shrike-tit are “Very Low” (Table 22-6). The two instances of “Low” are attributed to the potential impacts of wildfire on the habitat. This possibly reflects the existing situation where fire may favour food resources for the Gouldian finch (e.g. native sorghum and Wet Season seeding grasses), and impact negatively on the crested shrike-tit’s habitat. The shrike-tit is rarely recorded in the area and seems unlikely to be significantly impacted by the proposed Project.

Table 22-6 Crested Shrike-tit (Northern) Risk Assessment

Consequence According to the Significant Impact Guidelines	Severity of consequence	Likelihood of Consequence	Risk
Long-term decrease in the size of a population	Minor	Unlikely	Very Low
Reduce the area of occupancy of the species	Minor	Rare	Very Low
Adversely affect habitat critical to the survival of a species	Minor	Unlikely	Very Low
Fragment an existing population into two or more populations	Minor	Rare	Very Low
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Minor	Rare	Very Low
Result in invasive species that are harmful to the Crested shrike-tit	Moderate	Unlikely	Low
Introduce disease that may cause the species to decline	Minor	Rare	Very Low
Interfere with the recovery of the species	Moderate	Unlikely	Low

Partridge Pigeon

The maximum risk to the Yinberrie Hills population of the partridge pigeon is “Low” (Table 22-7). The two instances of “Low” are attributed to the potential impacts of wildfire on the habitat. This is largely due to this species not having been recorded in the study area i.e. consequences cannot be severe and likelihoods of impacts are low.

Table 22-7 Partridge Pigeon Risk Assessment

Consequence According to the Significant Impact Guidelines	Severity of Consequence	Likelihood of Consequence	Risk
Long-term decrease in the size of a population	Minor	Unlikely	Very Low
Reduce the area of occupancy of the species	Minor	Rare	Very Low
Adversely affect habitat critical to the survival of a species	Minor	Unlikely	Very Low
Fragment an existing population into two or more populations	Minor	Rare	Very Low
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Minor	Rare	Very Low
Result in invasive species that are harmful to the Partridge pigeon	Moderate	Unlikely	Low
Introduce disease that may cause the species to decline	Minor	Rare	Very Low
Interfere with the recovery of the species	Moderate	Unlikely	Low

22.2.3 Migratory and / or Marine Species Protected under International Agreements

The PMST database predicted 14 migratory species would occur within 10km of the project area, all were birds. Ten migratory species have been recorded on the Mineral Leases. This does not include species listed as threatened but includes species also listed as marine. There is no evidence to suggest that the Mineral Leases provide “important habitat” for a migratory species, or support an “ecologically significant proportion” of a migratory species population as defined in the guidelines on significance of impacts to migratory species.

Seven listed marine species were predicted to occur with 10km of the project area, not including species also listed as migratory. This included six bird species and one reptile species. The freshwater crocodile was recorded in the Mineral Leases. None of these species is likely to suffer a high risk of impact from the proposed development.

22.2.4 National Heritage Places

The Yinberrie Hills SOCS was placed on the Interim Register of the National Estate for its natural values. However, in 2007 the Register of the National Estate was declared to be no longer a statutory list.

Potential for significant impacts on the area’s vegetation and flora, fauna and macroinvertebrates are assessed in Appendices M, N and O respectively.

Assessments of risk of impact on vegetation and flora were made for impacts caused by clearing in various forms, dust, weeds and contamination / alteration of the water table (Appendix M).

Assessments of risk of potential for impacts on the fauna as a whole were made for impacts caused by clearing, dust, noise, wildfire, poisoning from tailings dam water, and contamination / alteration of the water table (Appendix N).

The assessments were made using the Significant Impact Guidelines 1.1: Matters of National Environmental Significance (National Heritage Places with Natural Heritage Values: Biological and Ecological Values). Assessments of the cumulative risks of all sources of impact on vegetation and flora, and on fauna are provided below. In no case is it thought the impacts are additive or synergistic.

Yinberrie Hills Flora and Vegetation

Levels of risk to the Yinberrie Hills flora and vegetation are “Medium” (Table 22-8).

Table 22-8 Yinberrie Hills Flora and Vegetation Risk Assessment

Consequence According to the Significant Impact Guidelines	Severity of Consequence	Likelihood of Consequence	Risk
Modify or inhibit ecological processes in a National Heritage place	Significant	Possible	Medium
Reduce the diversity or modify the composition of plant and animal species in a National Heritage place	Significant	Possible	Medium
Fragment or damage habitat important for the conservation of biological diversity in a National Heritage place	Significant	Possible	Medium
Cause a long-term reduction in rare, endemic or unique plant or animal populations or species in a National Heritage place	Significant	Possible	Medium
Fragment, isolate or substantially damage habitat for rare, endemic or unique animal populations or species in a National Heritage place	Significant	Possible	Medium

Yinberrie Hills Fauna

The consequences of the mine’s re-development have two consequences with “High” risk values. The “High” risks are associated with the potential impacts of dust on the Gouldian finch, and possibly other fauna (Table 22-9).

Table 22-9 Yinberrie Hills Fauna Risk Assessment

Consequence According to the Significant Impact Guidelines	Severity of Consequence	Likelihood of Consequence	Risk
Modify or inhibit ecological processes in a National Heritage place	Significant	Possible	Medium
Reduce the diversity or modify the composition of plant and animal species in a National Heritage place	Major	Possible	High
Fragment or damage habitat important for the conservation of biological diversity in a National Heritage place	Minor	Rare	Very Low
Cause a long-term reduction in rare, endemic or unique plant or animal populations or species in a National Heritage place	Major	Possible	High
Fragment, isolate or substantially damage habitat for rare, endemic or unique animal populations or species in a National Heritage place	Minor	Rare	Very Low

22.3 Mitigation Measures

The uncertainties of potential effects of high dust levels on individual finches, the varying effects of various levels of dust concentration, the possible pattern of dust distribution through the Gouldian finch breeding habitats, and the limited knowledge of other potential breeding areas in the Yinberrie Hills indicate that a precautionary approach be taken. This involves:

- ▶ a carefully constructed and appropriately designed dust monitoring program to allow assessment of the effects of distance from the mine and habitat features on dust levels;
- ▶ monitoring of nesting frequency and success using large numbers of artificial nest boxes throughout the area potentially subject to $>50\mu\text{g}/\text{m}^3$ levels of dust concentration. It is critical that the plan of establishment be soundly statistically designed prior to establishment. This should be done in conjunction with the design of the dust monitoring and allow analysis of the effects on habitat, dust levels and distance from the mine on nesting frequency and success; and
- ▶ continuation and expansion of the long term monitoring conducted by DLRM (formerly NRETAS) to determine presence and size of populations adjacent to large areas of suitable breeding habitat in the Yinberrie Hills and / or Mt Todd to Pine Creek region, following desk-top examination of the attributes of these other possible breeding areas in comparison with the known area adjacent to the mine.

22.4 Summary

The Project was declared a controlled action with 'listed threatened species and communities (sections 18 and 18A)' and 'listed migratory species (sections 20 and 20A)' as the relevant controlling provisions of the EPBC Act. Threatened species considered likely to occur with the Mineral Leases were assessed against the 'SEWPaC Significant Impact Guidelines 1.1' (DEWHA 2009).

The endangered Gouldian finch population in the Yinberrie Hills is assessed as being at a “High” risk of experiencing a long-term decrease in the size. This would not be conducive to the recovery of the species. The assessment of “High” risk to the Gouldian finch is associated with a predicted high level of ground level dust as determined using a conservative scenario of possibly a higher generation of dust than may occur.

No other threatened species was assessed as being at more than a “Medium” risk of impact.

No listed migratory species in the Mineral Leases was likely to be an “ecologically significant proportion” of a population or to occupy “important habitat”.

The Yinberrie Hills contains vegetation and flora that was assessed as being under a “Medium” risk of impact from the proposed mine, and fauna under a “High” risk. This latter risk is largely associated with the previously discussed level of risk to the endangered Gouldian finch.