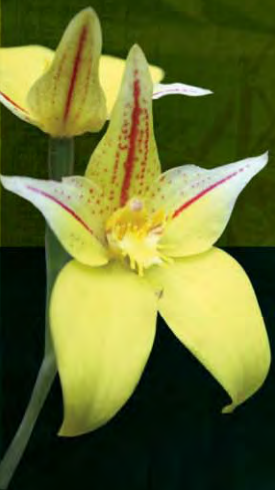


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**OAKAJEE PORT AND RAIL  
MALLEEFOWL HABITAT ASSESSMENT  
RAIL ALIGNMENT**

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# **OAKAJEE PORT AND RAIL MALLEEFOWL HABITAT ASSESSMENT RAIL ALIGNMENT**



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## EXECUTIVE SUMMARY

Oakajee Port and Rail (OPR) proposes to construct approximately 570 km of rail formation from mines in the northern mid-west to an export port at Oakajee, 24 km north of Geraldton. Evidence of the Malleefowl (*Leipoa ocellata*), listed as Vulnerable under the *Environment Protection and Biodiversity Act 1999*, has been recorded within 4 km of the proposed rail alignment. As part of a referral to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), a request was made for more information on the condition and size of potential habitat for Malleefowl within the proposed Rail Corridor.

Native vegetation within the impact areas of the Rail Corridor area were surveyed for Malleefowl habitat. Vegetation type, condition, and habitat specific factors such as substrate type, canopy and understorey density and leaf litter abundance were recorded.

One vegetation unit (Yy1) is potentially suitable as Malleefowl habitat based on assessment of its structure and within the rail corridor only 33.9 ha was assessed as being suitable Malleefowl habitat. Evidence of Malleefowl activity has been recorded in areas up to 30 km from the rail corridor indicating that suitable habitat is available in the local region.

**Table S.1 – Relevance of the Significant Impact Criteria (from DEWHA 2006).**

Significant Impact Criteria	Relevant	Comment
Long-term decrease in the size of a population	No	Individuals will only occasionally visit the project area. Little, if any, important habitat will be impacted.
Reduction in the area of occupancy of the species	No	The small size of the impact area and similar habitat present in the surrounding area will not significantly reduce the area of occupancy for this species.
Fragmentation of an existing population into two or more populations	No	Project area is near the north western extent of the species distribution and the impact area is only 33.9 ha. Therefore fragmentation highly unlikely to occur.
Adverse effect to habitat critical to the survival of a species	No	The habitat that occurs within the rail corridor is not thought to be regionally significant due to its limited extent and availability of similar habitat in the surrounding region.
Disruption to the breeding cycle of a population	No	All potential habitat areas within the rail corridor were surveyed and Malleefowl mounds were not recorded. This project is not considered likely to disrupt any breeding cycles for this species.
Modification, destruction, removal, isolation or reduction of the availability or quality of habitat to the extent that the species is likely to decline	No	The area of suitable habitat that is expected to be impacted does not constitute regionally significant habitat and the removal of this vegetation is not expected to result in further decline of the species.
Establishment of invasive species that are harmful to an endangered species in the endangered species' habitat	No	Feral fauna and flora are already well established within the project area.
Introduction of disease that may cause the species to decline	No	The area is already surrounded by grazed rangelands and cleared agricultural land, hence no new diseases are likely to be introduced
Interference with the recovery of the species	No	The project area is not anticipated to represent important habitat for the recovery of this species.

## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

Oakajee Port and Rail (OPR) proposes to construct approximately 570 km of rail formation within a rail transport corridor from mines in the northern mid-west of Western Australia to an export port at Oakajee located approximately 24 km north of Geraldton. As part of the Environmental Impact Assessment (EIA) for the project, *ecologia* Environment (*ecologia*) was commissioned to undertake flora and fauna assessments of the terrestrial component of the proposed Terrestrial Port Development (*ecologia* 2010b, a) and the proposed rail alignment (*ecologia* 2010d, c). As a result of these assessments, some areas of the rail alignment were thought to have the potential to provide habitat for Malleefowl, which is listed as Vulnerable in the *Environmental Protection and Biodiversity Conservation Act 1999*.

As part of a referral to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), a request was made for further information in relation to Malleefowl habitat. Subsequently OPR commissioned *ecologia* to conduct a habitat assessment of vegetation communities that potentially provide suitable habitat for Malleefowl.

### 1.2 MALLEEFOWL DISTRIBUTION WITHIN THE PROJECT AREA

The Malleefowl is widespread, but patchily distributed, throughout the semi-arid zone of southern Australia. Malleefowl are generally rare to uncommon throughout their range, but can be locally common (Johnstone *et al.* 1998). In these areas Malleefowl occur in scrubs and thickets of mallee (*Eucalyptus* spp.), boree (*Melaleuca lanceolata*) and bowgada (*Acacia ramulosa* var. *linophylla*).

Malleefowl mounds and tracks have been recorded in the region away from the proposal area during previous surveys by *ecologia* (*ecologia* 2010d). Additionally, a call was heard in the Freehold section of the Rail study area that was likely to be that of a Malleefowl. However, the preferred habitat of Malleefowl within the project area is limited to a small area in the Rangelands area (Figure 3.7).

### 1.3 MALLEEFOWL BIOLOGY AND ECOLOGY

Malleefowl are large ground-dwelling birds, well known for constructing large mounds of soil and vegetation in which they incubate their eggs. Once common and widespread across semi-arid southern Australia, Malleefowl have declined severely in the last century, with a 20% decrease in abundance and 50% decrease in area of occupancy (Garnett *et al.* 2000; Benshemesh 2005). Their current distribution is highly fragmented, increasing the risk of extinction (Benshemesh 2005).

Malleefowl prefer habitat consisting of thickets of mallee, mulga or other dense litter-forming shrublands as well as dry forest dominated by other eucalypts, mulga and other *Acacia* species (Johnstone *et al.* 1998; Benshemesh 2005). They require a sandy substrate with leaf litter to build their nesting mounds (Frith 1976) and hence highest breeding densities appear to occur in vegetation that is at least 40 years post fire (Woinarski 1989; Benshemesh 1990; Benshemesh 1992). They rarely breed in vegetation that has been burnt within the last 15 years (Tarr 1965; Crowley *et al.* 1969). Pairs occupy permanent territories (Benshemesh 2005).

The decline of this species is mainly due to loss and fragmentation of habitat due to agricultural clearing, degradation of remnant patches by grazing and predation by foxes (Priddel *et al.* 1989; Johnstone *et al.* 1998; Garnett *et al.* 2000). In the arid zone, cessation of traditional burning practices,



homogenisation of the once fine-scale burning mosaic and fires on a unprecedented scale seem to be primary causes of extinctions (Benshemesh 2005).

## 2 SURVEY METHODS

Based on previous records, it was determined that Malleefowl are most likely to occur within the Talling, Yuin and Murgoo pastoral leases (Figure 3.7). Vegetation associations mapped by ecologia (2010a) and landsystems mapped by Payne *et al* (1998) within these areas were assessed for the presence of suitable vegetation attributes (acacia scrub) and soil attributes (sandy soils). Based on this assessment the following associations were identified.

**Vegetation Association Yy1:** *Acacia ramulosa* var. *linophylla* and *Acacia ramulosa* var. *ramulosa* open tall shrubland.

**Vegetation Association Yf5:** *Acacia eremaea* sparse tall shrubland, over mixed *Chenopod* spp. low shrubland

To provide more information regarding these vegetation associations, an additional site visit was conducted between 7<sup>th</sup> – 9<sup>th</sup> October 2010. An ornithologist conducted transects within the above mentioned vegetation associations recording the habitat type, condition, and habitat suitability for Malleefowl. These areas were traversed on foot and GPS coordinates and photographs were recorded. Vegetation condition was assessed using the scale produced by Keighery (Government of Western Australia 2000). Vegetation associations adjacent to these associations were also assessed to ensure no other vegetation associations were suitable as Malleefowl habitat within the rail alignment.

**Table 2.1 – Vegetation condition scale produced by Keighery (2000)**

Vegetation Condition Rating	Condition Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

### 3 RESULTS

The assessment of the habitats along the rail indicates that only a single vegetation unit (Yy1) contains suitable Malleefowl habitat (Figure 3.7). Based on observations during the site visit and habitat attributes associated with Malleefowl habitat (dense leaf litter and suitable understorey), only 33.90 ha of this vegetation unit, within the rail corridor, is of sufficient quality to be potential habitat for Malleefowl (Figure 3.8). This vegetation type is described below and summarised in Table 3.1.

Vegetation Unit, Yf5, was also predicted to be suitable, but all habitat assessed was found to be too open, and lacked the understorey and leaf litter density components required by Malleefowl for breeding.

**Table 3.1 – Summary of total area of Malleefowl habitat proposed to be cleared.**

Vegetation Unit	Vegetation Unit Name	Area of Yy1 within Rail corridor (ha)	Total area of habitat (ha)
Yy1	<i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Acacia ramulosa</i> var. <i>ramulosa</i> open tall shrubland.	111 ha	33.90

#### 3.1 ACACIA SHRUBLAND

*Acacia ramulosa* var. *linophylla* and *Acacia ramulosa* var. *ramulosa* open tall shrubland (Vegetation Unit Yy1) is present in several locations along the rail corridor, mainly within the rangelands sections of the rail alignment (Figure 3.7). Throughout the study area, the condition of this habitat was assessed as being 'very good' due to the vegetation structure only being slightly impacted by disturbances from grazing and it is expected that this can be treated as an indication of the vegetation condition of this habitat that occurs outside of the rail corridor. The canopy level was generally less than 4m, and varied from open to closed in terms of density. A moderately open to closed understorey was present at all sites. The soil substrate was generally sandy, with some firmer soils present. Leaf-litter presence varied from isolated to extensive, but was generally patchily distributed (Figure 3.1 and Figure 3.2). Anecdotal evidence from local station owners suggests Malleefowl occasionally visit this habitat type within the rail corridor, although no recently used (within the last 10 years) Malleefowl mounds are known to occur.

It is not possible to determine the extent of this habitat type in the surrounding region, as only the initial 4 km wide corridor was vegetation mapped (*ecologia* 2010c), although based on observations in the field and the sightings of Malleefowl, their tracks and mounds (Figure 3.7), this habitat is expected to extend well away from the rail corridor.



Figure 3.1 – *Acacia* shrubland vegetation.



Figure 3.2 – Vegetation Yy1: Potential Habitat for Malleefowl within the Rail Alignment area.





**Figure 3.3 – Very old Malleefowl mound recorded in 2007**



**Figure 3.4 – Recently used Malleefowl mound recorded in 2007**



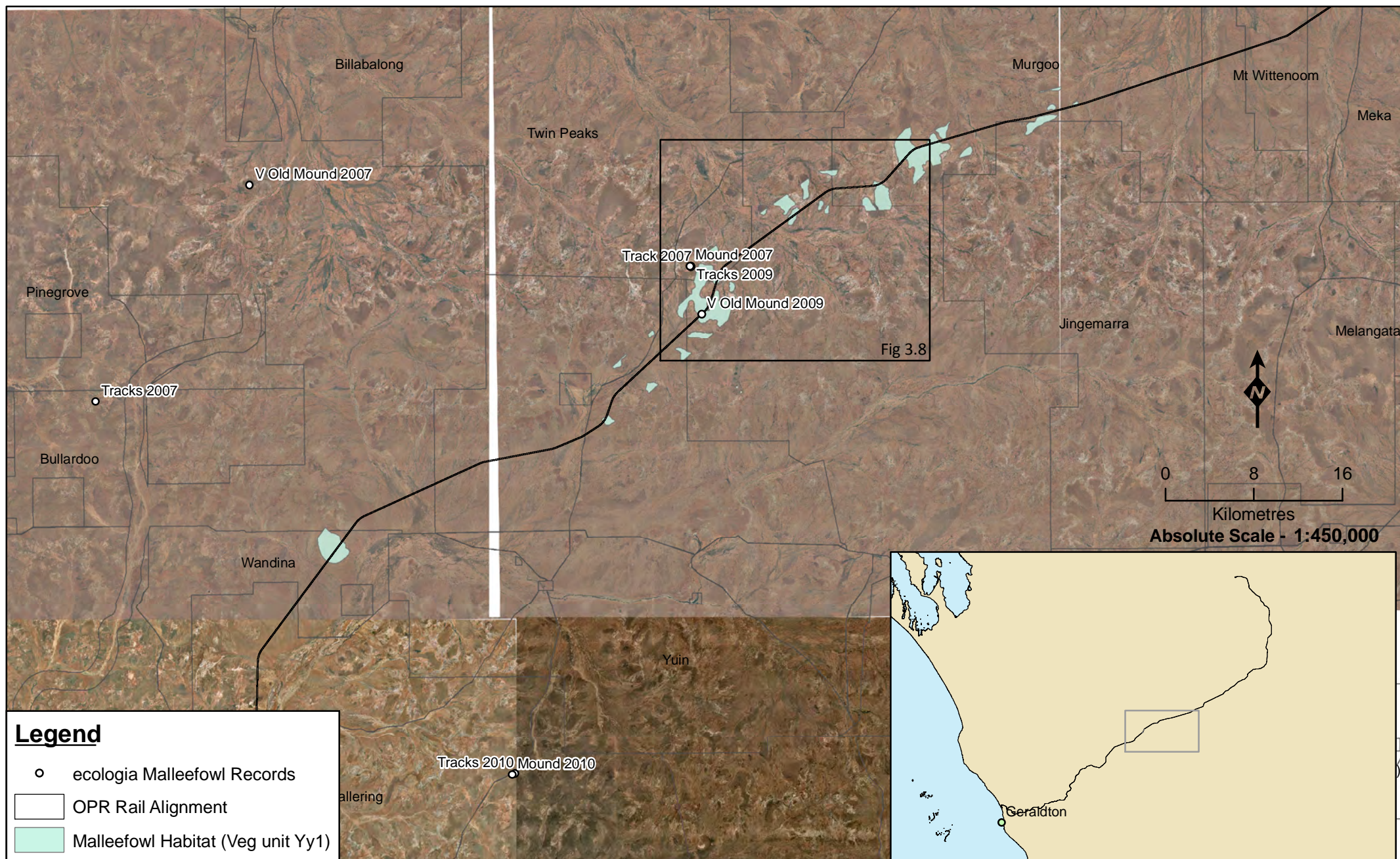


Figure 3.5 – Malleefowl tracks recorded in 2007 (a) and 2010 (b&c)



Figure 3.6 – Recently active Malleefowl mound recorded in 2010





**Legend**

- ecologia Malleefowl Records
- OPR Rail Alignment
- Malleefowl Habitat (Veg unit Yy1)



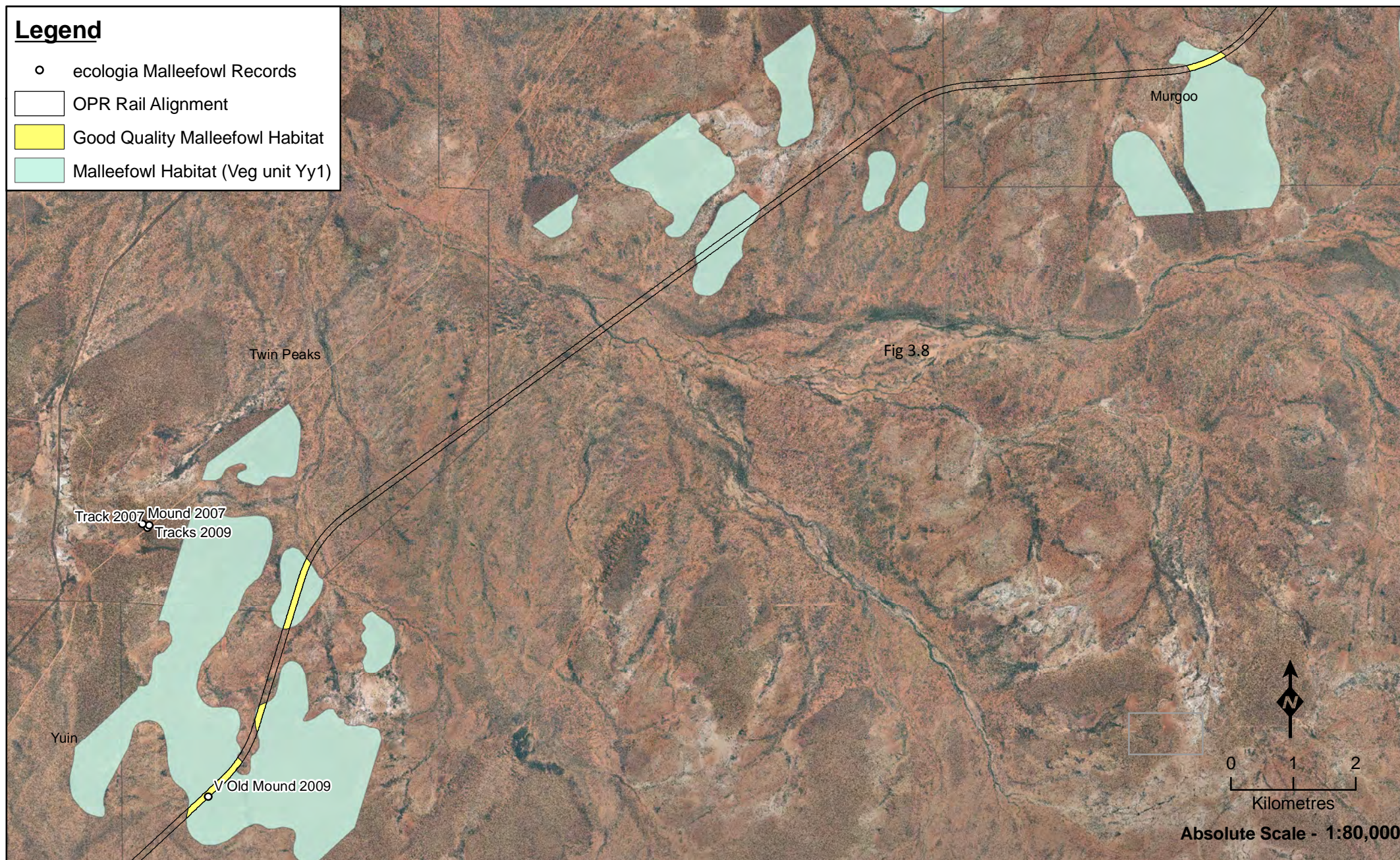
## Location of Malleefowl Observations and Vegetation Unit Yy1

<b>Figure: 3.7</b> Project ID: 1299	Drawn: DC Date: 01/12/10
Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994	
Unique Map ID: DC014	



## Legend

- ecologia Malleefowl Records
- OPR Rail Alignment
- Good Quality Malleefowl Habitat
- Malleefowl Habitat (Veg unit Yy1)





## 4 CONCLUSIONS

Based on the assessment of habitat within the rail corridor, it is expected that approximately 33.90 ha of suitable Malleefowl habitat will be impacted by the construction of the proposed OPR rail corridor, although no evidence of individuals or recently used mounds were recorded in the rail corridor (a very old mound was recorded in the rail corridor in 2009, but this is expected to over 30 years old as it was in similar condition to the very old mound recorded in 2007). Malleefowl tracks and a recently active mound were recorded approximately 2 km west of the rail corridor in 2007 and approximately 20 km east of the proposed rail corridor during this assessment and old mounds and tracks have also been recorded 20-30 km to the west of the rail corridor indicating that areas of suitable habitat exist away from the rail.

Although Malleefowl are known to occur in the region around the rail corridor near Yuin station, only one very old mound Malleefowl was recorded within the OPR rail corridor. Due to the thin linear nature of the rail corridor and the expected extent of suitable habitat outside of the rail corridor, based on sightings and secondary evidence (Figure 3.7), no significant impacts on Malleefowl are expected. Three proposed conservation reserves (Twin Peaks, Woologorong and Narloo former pastoral leases) are also located in this area providing protected areas of habitat for this species.



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