

# **MELBOURNE–GEELONG INTERCONNECTION**

## **Plains Wanderer (*Pedionomus torquatus*) Targeted Survey**

*Prepared for:*

**BARWON REGION WATER CORPORATION**  
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**Limitations Statement**

The sole purpose of this report and the associated services performed by Kellogg Brown & Root Pty Ltd (KBR) is to identify biological features and associated legislative implications in accordance with the scope of services set out in the contract between KBR and Barwon Region Water Corporation ('the Client'). That scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

KBR derived the data in this report primarily from database information and visual inspection of the site. The passage of time, manifestation of latent conditions or impacts of future events may require further exploration at the site and subsequent data analysis, and re-evaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, KBR has relied upon and presumed accurate certain information (or absence thereof) relative to the site provided by government officials and authorities, the Client and others identified herein. Except as otherwise stated in the report, KBR has not attempted to verify the accuracy or completeness of any such information.

No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings, observations and conclusions are based solely upon site features and conditions in existence at the time of the investigation.

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**Revision History**

Revision	Date	Comment	Signatures		
			Originated by	Checked by	Approved by
A	17/02/10	For review	W. Jeffery	R. Macdonald	P. Harberts
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**Study area and habitat map**

# 1 Introduction

## Background

Kellogg Brown & Root Pty Ltd (KBR) was commissioned to conduct a plains wanderer (*Pedionomus torquatus*) targeted survey focussed on areas of potential habitat along the proposed alignment for the Melbourne–Geelong Interconnection (the project) pipeline. The project pipeline is located between Cowies Hill, Werribee, in Melbourne’s west and Lovely Banks in Geelong’s north. The 56.4 km underground pipeline will connect Geelong to Melbourne’s water system by the end of 2011.

A flora and fauna assessment, including net gain analysis has previously been undertaken by KBR along the entire pipeline alignment (KBR 2007, 2009). These assessments indicate remaining areas of remnant grassland and historical and current sightings of the plains wanderer (*Pedionomus torquatus*) within and adjacent to the proposed alignment.

## Objectives

The objectives of the plains wanderer (*Pedionomus torquatus*) targeted survey were to:

- determine if the bird was present within the proposed pipeline alignment, and if present, to determine the likely importance of the affected habitat for the species
- provide mitigation measures to avoid or minimise potential impacts to the species along the proposed alignment
- discuss the legislative requirements of the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

## Study area

The proposed 56.4 km pipeline, requiring a construction easement of 30 m in width will traverse a range of landforms and some areas of environmental sensitivity generally located within road reserves and private property. For approximately 25 km, the pipeline is aligned within or adjacent to an existing 220 kV overhead power transmission easement. A further 25 km of the pipeline is located within road reserves, with the remaining 6.4 km located in unencumbered private land.

Since the initial assessments, the pipeline alignment has been modified to deviate from the power line easement into road reserves to avoid areas identified in the State Government’s Strategic Impact Assessment as having high quality plains grassland native vegetation.

Some relatively small areas of remnant patch native vegetation remain along the alignment, defined as areas which have at least 25 per cent native vegetation cover in the understorey (DSE 2007), some of which may provide potentially suitable habitat for plains wanderer (*Pedionomus torquatus*). Known or potentially suitable habitat is identified in maps included in Appendix A.

The study area for the targeted survey (see Appendix A) was focussed on potentially suitable habitat identified within the 30 m pipeline alignment or within 50 m of the alignment in adjacent areas where historic records for the species occurred.

## 2 Species description and habitat requirements

Plains wanderer (*Pedionomus torquatus*) is listed under the EPBC Act as vulnerable and is also listed under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). The species is considered critically endangered in Victoria according to the Advisory List of Threatened Vertebrate Fauna in Victoria, 2007 (DSE 2007a).

Plains wanderer (*Pedionomus torquatus*) is a cryptic ground-dwelling bird approximately 10 cm in height and similar in appearance to a button-quail. The female is larger and more distinctively coloured than the male and they have longer straw-yellow legs and bills than button-quail (DSE 2003). The nest consists of a shallow scrape lined with grass and they usually nest between late August and early November, with a second clutch in January if there is summer rainfall. Chicks are independent at approximately two months of age (Maher and Baker-Gabb 1993). The species forages during the day for grass and saltbush seeds and insects (DSE 2003).

Historically, the distribution of plains wanderer (*Pedionomus torquatus*) was sparse native grasslands in eastern Australia; however, they are now most prevalent in the north-central area within Victoria. A viable population of the species is not known to occur within any existing reserves and most records of the species are from private land (DSE 2003).

The habitat preferences of plains wanderer (*Pedionomus torquatus*) appear to be areas where the topsoil has been eroded to expose the red clay subsoil which does not ever support dense pasture growth regardless of seasonal conditions. Typical characteristics of these areas include approximately 50 per cent bare ground and 10 per cent litter with most vegetation below 5 cm in height and the remainder rarely exceeding 30 cm. The species is then able to see over the vegetation, move freely during foraging and escaping from predators with their characteristic hunched posture, and avoid detection by aerial predators.

Research from populations in the Riverina suggests that a pair of plains wanderers typically occupy a home range of 18 ha in sparse native grassland (DSE 2003). The species is also known to avoid areas that contain large objects that may impede vision of their surrounds, particularly trees and man-made objects such as fences and buildings, by a distance of up to 200 m (Biosis Research 2009). The large pylons present in the power line easement may deter the species but, it is still likely to use large, open areas surrounding the pylons.

## 3 Methodology

### Desktop assessment

A database review was conducted as part of the net gain analysis (KBR 2009) to establish the potential presence of plains wanderer (*Pedionomus torquatus*) in the vicinity of the proposed pipeline alignment. Databases reviewed included the following:

- Department of the Environment, Water, Heritage and the Arts (DEWHA) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), online database
- Department of Sustainability and Environment (DSE) Atlas of Victorian Wildlife (AVW) database search
- DSE Biological Significant Sites (Biosites) Maps and Reports.

A search of the DSE Atlas of Victorian Wildlife database was conducted within a 5 km radius of the alignment for all records since 1980 of the threatened species within the locality.

All fauna database records were plotted using a geographic information system and were analysed to determine the likelihood that the threatened species may occur within the study area. The analysis involved assessment of dates, source reliability and numbers of records to assess the accuracy and current relevance to the study area.

### Plains wanderer (*Pedionomus torquatus*) targeted survey

Targeted survey for plains wanderer (*Pedionomus torquatus*) was undertaken within potentially suitable, but sub-optimal habitat during a single night on Tuesday 15 December 2009. The targeted survey was undertaken by two experienced ecologists during optimal weather conditions for spotlight survey and detection of the species. The evening was warm, with minimal wind and light cloud cover. The species was known to have been recently recorded approximately 3 km away at the nearest point by the same two ecologists in high quality habitat within the pipeline alignment to the north of Ballan Road and north-east of the targeted survey study area (KBR 2009).

The DEWHA recommended survey method is described in the species profile and threats database (DEWHA 2010). The method is to perform nocturnal transect surveys in suitable native grassland habitat from a slow-moving vehicle travelling at less than 5 km per hour and use of a hand-held spotlight and the vehicle headlights to locate any birds present. Plains wanderer (*Pedionomus torquatus*) are known to become disturbed if a vehicle comes within 20 m and usually respond to approach by walking a short distance or by standing up and extending their neck above the surrounding vegetation, which allows detection (Baker-Gabb et al. 1990 after DEWHA 2009; Maher 1997).

The survey method, as applied to the pipeline alignment, involved the two ecologists traversing the potential habitat areas on foot and/or in a vehicle driving at less than 5 km per hour along the minor unsurfaced roads immediately adjacent to or within the

alignment. The vehicle-based spotlighting survey utilised the headlights and a hand-held spotlight shone in an arc at right-angles to the vehicle. Roads surveyed were Edgars Road, an unnamed road between and parallel to Quandong Road and Argoona Road, and Ripley Road. The Rabbiters Lake biosite was investigated on foot, up to approximately 300 m beyond the alignment.

The survey methodology, including a single evening of spotlight survey, was discussed and agreed with Richard Boekel of the DSE on 15 December 2009. Considering the optimal weather conditions occurring at the time of survey and the known suitable, but sub-optimal habitat quality throughout the survey area based on prior detailed vegetation assessment (KBR 2009), it was agreed that repetition of the survey effort over two subsequent evenings was unlikely to detect the species. It was also agreed that further survey work was not warranted as it would have the same overall outcome in terms of management and mitigation measures. The precautionary principle was applied in the identification of known and potential habitat.

### **Survey limitations**

The desktop review of published information relies on government databases, reports and recognised specialist knowledge of the species. Further surveys of threatened species within the revised Urban Growth Boundary have been commissioned by DSE; however, it is not known if targeted survey for plains wanderer (*Pedionomus torquatus*) is planned and no data is currently available. Currently available data is thought to be based on incidental sightings of the species.

Historically, targeted species assessments have not generally occurred within the project area due to the majority of the land being held in private ownership. Historical records are likely to be limited due to the current land ownership and management for agricultural production and further survey could possibly record the species. Current land management and grazing regimes which result in very short pasture may contribute to the limited distribution of the species which has particular habitat structure preferences that are likely to prevent its occurrence where no lower layer cover is present. Proposed reservation of the area as a grassland reserve and the consequential changes in the focus of land management to favour threatened species habitat structure and quality suggest that future surveys could possibly record the species.

The targeted survey occurred over a single evening in optimal weather conditions. Not all plains wanderer (*Pedionomus torquatus*) individuals would be observable during a single day survey, due to factors that include seasonal variability, availability of feed sources and vegetative cover for concealment.

The species is very shy and difficult to observe and is known to have a large home range of approximately 18 ha in sparse grassland habitat (DSE 2003) which increases the likelihood that it may escape detection during any survey efforts.

## 4 Results

### Previous records

The desktop data search indicated that plains wanderer (*Pedionomus torquatus*) had historically occurred near Biosite 5147, Rabbiters Lake, avoided by the proposed alignment. The pipeline alignment is located to the south and east of the biosite and the two associated plains wanderer records dating from 1978 and 1987. In 1988, the species was recorded in a property adjacent to Edgars Road, approximately 1 km to the east of the alignment.

One individual plains wanderer (*Pedionomus torquatus*) was recorded on 17 September 2009 during the prior spring KBR assessment, within the proposed pipeline alignment on private land (Property 144021) between Ballan Road and the Werribee River (KBR 2009). This property had some higher quality, sparse remnants of plains grassland present. The species is considered likely to be widespread but with a patchy distribution. Potential habitat occurs along the alignment wherever larger tracts of native grasslands occur, including areas dominated by exotic tussock grasses. In particular, areas immediately north and south of Ballan Road along the alignment would provide the greatest potential to support the species.

### Current survey

No plains wanderer (*Pedionomus torquatus*) individuals were recorded during the targeted survey within and adjacent to the proposed pipeline alignment.

The plains wanderer (*Pedionomus torquatus*) targeted survey focussed on areas to the south of Ballan Road where potential habitat and historical records for the species were recorded. During the spring survey, a sighting of the bird in a property located to the north of Ballan Road and extending to the Werribee River was recorded (KBR 2009), described above. Additional survey of the northern side of Ballan Road was not considered necessary as it was clear that habitat quality was relatively high in this area and that the habitat zones recorded in the area should be regarded as 'best 50 per cent of habitat' status on the basis of the sighting, high habitat quality and above average condition and landscape context for the ecological vegetation class (EVC) and habitat type in the bioregion (DSE 2007) (see Appendix A). For species known from only one or a few sites within the bioregion, a precautionary approach to the link between occurrences and likely habitat should be applied and all currently known occurrences should be assigned 'best 50 per cent of habitat' for the species (DSE 2007).

Observations from the spring assessment noted that south of Ballan Road the habitat zones within private property following the power easement were more heavily grazed and were assessed as 'remaining 50 per cent of habitat' status on the basis of no current sighting and sub-optimal habitat quality (DSE 2007) (see Appendix A). The assessment of habitat quality could potentially rise if a positive sighting was achieved during the targeted survey or if reduced grazing pressure improved habitat quality for the bird; however, no birds were subsequently observed.



Within the alignment sections following Edgars Road and an unnamed road between and parallel to Quandong Road and Argoona Road, around the Rabbiters Lake biosite, two records of plains wanderer dating from the late-1970s to mid-1980s were recorded. The alignment was assessed during the spring assessment as 'remaining 50 per cent of habitat' pending the results of the targeted survey. No birds were observed during the targeted survey and the assessment of habitat quality has remained unchanged (see Appendix A).

The habitat quality for plains wanderer was observed to be significantly lower to the south of Ballan Road based on the extent of disturbance, weediness and the particular habitat preferences of the bird. The particular known habitat preferences include height and spacing of tussocks, lower and upper layers to the vegetation (DSE 2003) and a preference for no overstorey structures or vegetation (Biosis Research 2009).

These preferred habitat characteristics are present to the north of Ballan Road where the bird was recently sighted, but are not as common over large areas to the south of Ballan Road. Habitat features to the south of Ballan Road which contribute to lower potential habitat quality include:

- extensive earthworks are currently occurring to the north of Argoona Road in Rabbiters Swamp which would prevent the bird utilising that area
- Rabbiters Lake biosite was walked on foot and was observed to have trees around the perimeter of the currently dry lake, shrubby growth taller than the 30 cm maximum preferred by the bird and while an upper layer of grasses was present, it was taller than the bird prefers and no lower layer of understorey was present. The lack of a lower layer in the understorey is considered a key factor limiting the likelihood of occurrence of the species (Maher 1997)
- planted windbreaks of native trees and shrubs are common on paddock boundaries adjacent to Edgars Road and a minor road between Argoona Road and Quandong Road where the older recordings were noted. The planted windbreaks are likely to have been planted a few years after the sightings of the bird were recorded. The bird is known to avoid areas with overhead structures, including trees, shedding and power lines, and contributes to the lowered status of the habitat which can be confirmed as 'remaining 50 per cent of habitat' under current management
- plains wanderer is unlikely to utilise the spotlight-surveyed areas south of Ballan Road as preferred habitat in their current degraded, heavily grazed condition and with the higher level of ongoing disturbance from cattle grazing and general agricultural activities and structures.

Due to the historical records of plains wanderer (*Pedionomus torquatus*) to the south of Ballan Road and designation as 'remaining 50 per cent of habitat', the species should be assumed potentially present in these designated areas for the purposes of the proposed project.

Refer to the map in Appendix A for species and habitat details.

## 5 Potential impacts and mitigation measures

### Potential impacts

The proposed pipeline alignment will necessitate the removal of a narrow 10–30 m strip of vegetation throughout the 56.4 km extent. Most of this vegetation is highly grazed and therefore regularly loses the necessary two-level vegetation ground layer structure that provides suitable habitat for the species. Only a small part of the potential total area of habitat (see Appendix A) is known habitat or potential habitat and also meets the grassland height requirements for the plains wanderer (*Pedionomus torquatus*) at any particular time. The area of greatest significance is located within Property 144021, north of Ballan Road and the construction impact zone will be minimised to 10 m in this area.

Removal and reinstatement of the small area of native grassland habitat for the proposed pipeline will not constitute a significant proportion of the potential habitat available for the species within this property. The species is mobile, typically has a large home range and is likely to move away from the temporary impact zone. Construction works will be prohibited within the property to the north of Ballan Road and within any potential habitat identified south of Ballan Road during the entire potential breeding season.

Potential impacts of the proposed project on plains wanderer (*Pedionomus torquatus*) include:

- destruction or disturbance of nests of plains wanderer (*Pedionomus torquatus*) due to removal or disturbance of appropriate native grassland habitat
- potential fragmentation and isolation of appropriate native grassland habitat due to failure to recolonise the area following construction disturbance and reinstatement
- potential temporary disturbance to foraging habitat of plains wanderer (*Pedionomus torquatus*) due to avoidance of the visual barrier caused by temporary construction zone fencing
- potential spread of weeds due to inappropriate management of construction activities leading to further degradation of remnant native grassland, including preferred habitat for the species.

### Mitigation measures

The following specific management measures are proposed:

- prepare a threatened species management plan, that includes plains wanderer (*Pedionomus torquatus*)
- the proposed construction corridor for sensitive areas is 10 m wide, including where plains wanderer (*Pedionomus torquatus*) is recorded in the habitat zones to the north of Ballan Road
- preparation of a construction schedule to avoid/minimise impacts on the plains wanderer (*Pedionomus torquatus*). Construction activities in sensitive habitat areas

must be scheduled to occur between April and mid-August, to avoid the key breeding and activity periods for the plains wanderer

- construction works will be prohibited within the property to the north of Ballan Road and within any potential habitat identified south of Ballan Road during the entire potential breeding season for the plains wanderer (*Pedionomus torquatus*)
- completion of a pre-construction survey by a qualified ecologist to locate any nests of plains wanderer (*Pedionomus torquatus*) within the construction zone
- clear marking out of the reduced construction corridor prior to any earthworks commencing, using high visibility orange flagging or similar
- cover fencing adjacent to the construction corridor with shadecloth to prevent the birds entering the construction zone within the habitat zones to the north of Ballan Road. The shadecloth should be firmly secured to the bottom of the fencing
- use clean construction techniques to restrict the movement of weeds within and beyond the construction area. Initial weed control should target Weeds of National Significance (WONS) to reduce the chance of spreading seed through the site
- only use clean materials and machinery on site. All machinery and materials are to be free of weed seed and pathogens.

Revegetation of the proposed pipeline alignment within this area, which is proposed as a new grassland reserve, will be undertaken by DSE as the land manager.

## 6 Legislation and government policy considerations

### Federal legislation

#### *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects the environment, particularly matters of national environmental significance (NES) and is administered by the Commonwealth DEWHA. There are seven matters listed as of NES under the EPBC Act, including listed threatened species. The plains wanderer (*Pedionomus torquatus*) is listed as 'vulnerable' under the EPBC Act. An action (i.e. project, development) requires approval from the federal environment minister if it is likely to have a significant impact on any matters of NES. Significant impact criteria for vulnerable species are included in the significant impact guidelines for matters of NES (DEWHA 2009). The criteria indicate that an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
- reduce the area of occupancy of an important population
- fragment an existing important population into two or more populations

- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of an important population
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- introduce disease that may cause the species to decline, or
- interfere substantially with the recovery of the species (DEWHA 2009).

One individual plains wanderer was recorded within the pipeline alignment during a previous KBR survey of the alignment. No birds were sighted during the targeted survey. It is probable that further individuals occur to the north of Ballan Road where the recent sighting was made. It is possible that further individuals occur to the south of Ballan Road, but are not likely to be recorded within the inappropriate habitat along Edgars Road and to the north of Argoona Road within the pipeline alignment.

The species is shy and difficult to observe and can not be adequately surveyed in a single season. However, based on the known habitat preferences of the species, the most likely habitat within the proposed pipeline alignment is in the area north of Ballan Road where the recent record occurred and within the rocky knolls and adjacent areas which support a higher diversity, structure and appropriate cover of native grasses.

The occurrence of plains wanderer (*Pedionomus torquatus*) within the pipeline alignment may be considered an impact on a matter of NES; however, the impact will be temporary and localised for a mobile species known to have a large home range of 7–21 ha (DEWHA 2009). Significant habitat loss or fragmentation is unlikely to occur due to the narrow construction corridor and impacts to the breeding season will be minimised by construction planning which will prohibit works in the areas of known or potential habitat north and south of Ballan Road during the entire potential breeding period. The availability and quality of habitat is unlikely to be impacted to the extent that the species is likely to decline and appropriate mitigation measures are proposed to manage potential weed and disease introductions to the construction corridor. Accordingly, impacts on plains wanderer (*Pedionomus torquatus*) as a result of the project are not likely to be significant.

### **Government policy considerations**

The DSE has released a strategic impact assessment report under the *Environment Protection and Biodiversity Conservation Act 1999* for the Victorian Government's Delivering Melbourne's Newest Sustainable Communities program. The report considers:

- designation of the expanded urban growth boundary
- the proposed outer metropolitan ring road/E6 transport corridor
- the Tarneit section of the Regional Rail Link project.

The Victorian government has committed to protecting two significant areas of native grassland to the west of Melbourne totalling approximately 15,000 ha. These areas will be used to offset any unavoidable losses of native vegetation and habitat associated with the government program (DSE 2009).

The pipeline alignment is partially located within one of these grasslands and within the proposed expanded urban growth boundary.

The strategic impact assessment report notes that: ‘...the Western Grassland Reserves proposed will be managed for a range of values, including Plains-wanderer. With active management to maintain and increase areas of suitable habitat for the species, Plains-wanderers are likely to continue to be recorded in the area, and numbers will increase over the medium term. The added pressure of increased urban development and human population near these areas will be mitigated by the sheer size of the reserved areas (approximately 15,000ha). As most known Plains-wanderer populations exist on private land, managing the proposed Western Grassland Reserves for this species will contribute significantly to its recovery across its range (DSE 2009)’.

## 7 Conclusion

Prior to the targeted survey, one individual plains wanderer (*Pedionomus torquatus*) was recorded on 17 September 2009 during the spring KBR assessment, within the proposed pipeline alignment on private land (Property 144021) between Ballan Road and the Werribee River (KBR 2009).

No plains wanderer (*Pedionomus torquatus*) individuals were recorded during the targeted survey within and adjacent to the proposed pipeline alignment which focussed on areas to the south of Ballan Road where potential habitat and historical records for the species were recorded.

The property to the north of Ballan Road where plains wanderer (*Pedionomus torquatus*) was observed supported the highest quality native grassland within the proposed grassland reserve portion of the alignment.

The low quality of native grasslands observed to the south of Ballan Road and the presence of built structures, windbreak plantings and a higher level of grazing and disturbance is likely to contribute to the reduced potential of the area as preferred habitat for plains wanderer (*Pedionomus torquatus*).

The proposed pipeline alignment represents a small linear impact on known habitat for the plains wanderer (*Pedionomus torquatus*), but is likely to have only a localised and temporary impact on the species which has a large home range and is likely to move away from the construction disturbance.

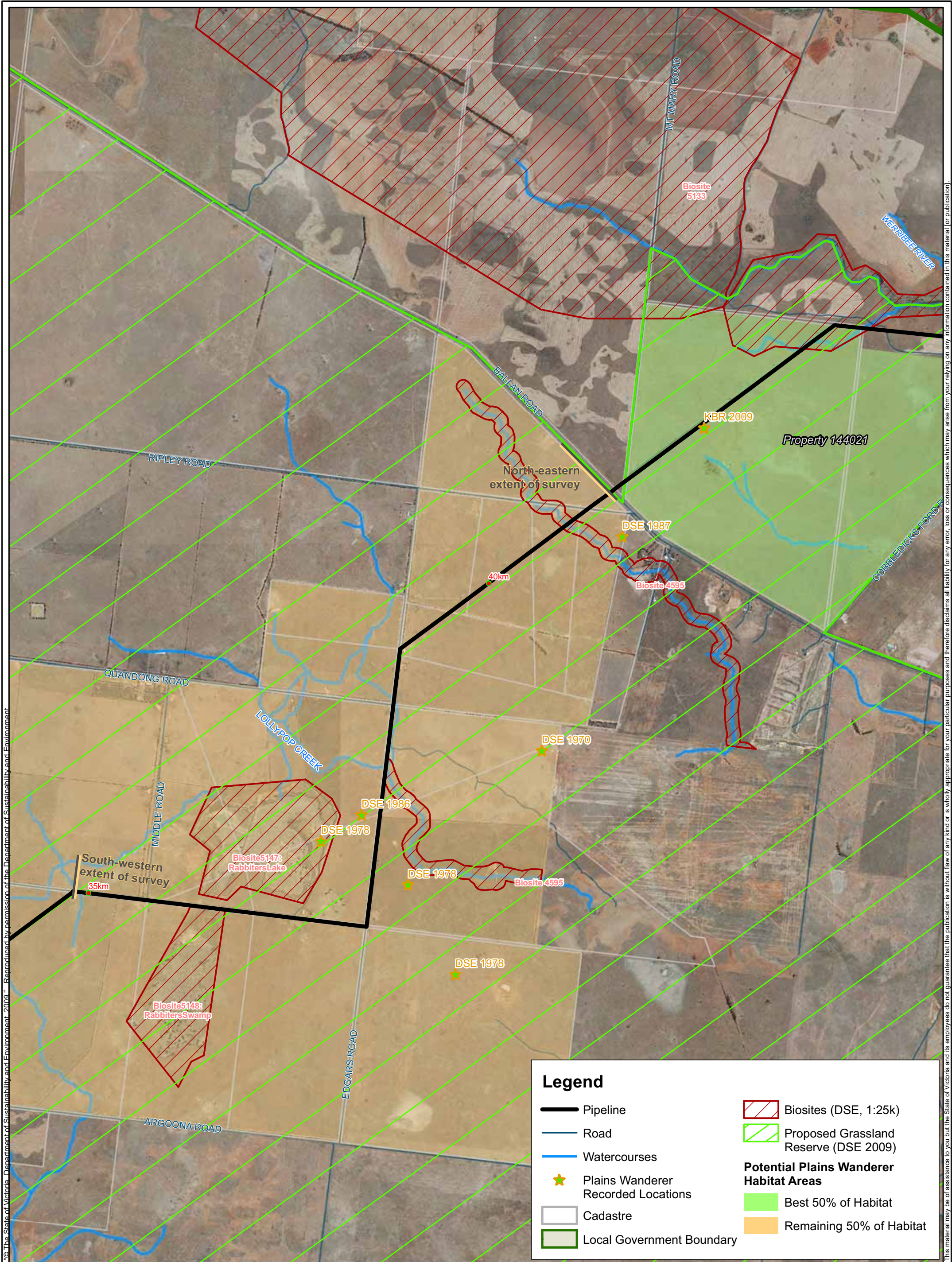
Mitigation measures are proposed to minimise the impact of construction on the species. Application of these measures is designed to avoid significant impacts on the species.

## 8 References

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*Appendix A*

## **HABITAT MAP**



**Legend**

- Pipeline
- Road
- Watercourses
- Plains Wanderer Recorded Locations
- Cadastre
- Local Government Boundary
- Biosites (DSE, 1:25k)
- Proposed Grassland Reserve (DSE 2009)
- Potential Plains Wanderer Habitat Areas**
- Best 50% of Habitat
- Remaining 50% of Habitat

Barwon Water

N 0 0.5 1 2 km

1:25,000 @A3  
Map 1 of 1

FILE LOCATION: O:\G&I\GIS\MEG831\_BarwonWaterData\_Control\Maps\MXD\Issued

COORDINATE SYSTEM: GDA 94 ZONE 55

DATE: 01/03/2010

SOURCE: Barwon Water, Vicmap, DSE

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TITLE  
**Barwon Water  
Melbourne Geelong Interconnection**

Plains Wanderer Targeted Survey Map

APPENDIX A	PROJECT No. MEG831
MAP No. MEG831-G-MAP-053-B	REVISION B

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