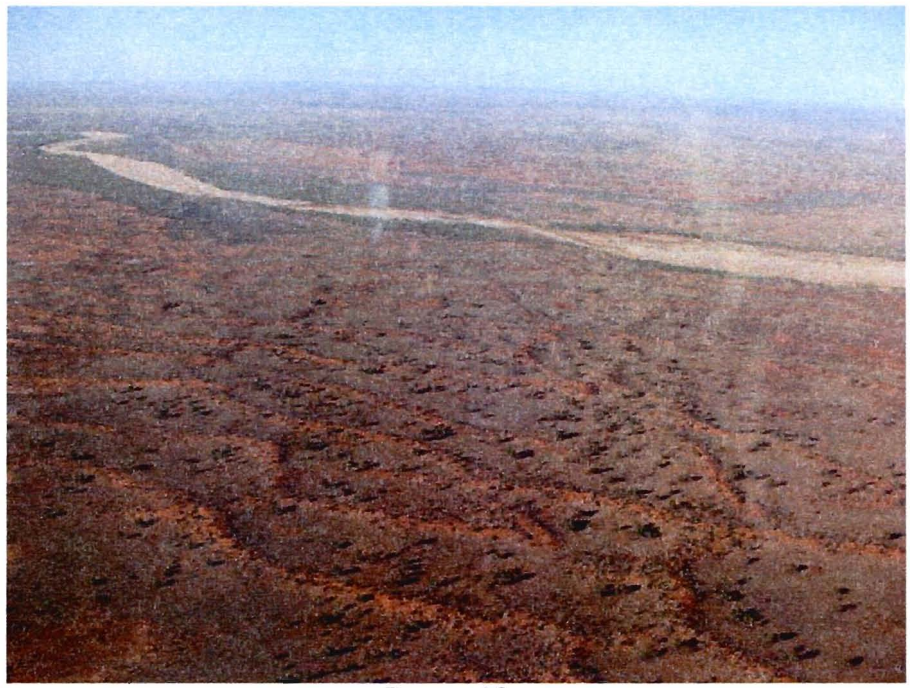
Central Petroleum

Additional Landscape, flora and fauna survey information to accompany the Notice of Intent – Central Petroleum Limited 2007 Amadeus Basin Seismic Acquisition Program; EP 82 Magee Site – Environmental Surveys



Prepared for

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Contents

Figures

Tables

Cover Page: Finke River and sand dune complex within the Magee Prospect Area, Northern Territory

1. Contacts and Proponents

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2. Introduction

This document outlines the environmental surveys conducted by Low Ecological Services in April 2006 in relation to the proposed seismic acquisition program within EP 82 Magee Prospect by Central Petroleum. This document contains updated and / or new information on:

- Environmental factors including geology, hydrology, land unit, land capability, water resources, flora and fauna habitats, coastal and marine environments.
- Existing land uses in and adjacent to the proposal.
- Environmental factors such as climate, heritage, feral and weed species, conservation, social, cultural, economic, endangered species and other relevant environmental issues.
- Environmental commitments, safeguards, monitoring and management systems relevant to the proposal.
- Proposed rehabilitation and decommissioning

All other relevant data and information is supplied within the original notice of intent (Newsome and Low 2007)

3. Environment Impact Assessment

3.1 Aims

The environmental surveys conducted by Low Ecological Services aimed to identify the key environmental issues related to the proposed seismic acquisition program. In doing so, this report provides advice on seismic line alignment, construction and rehabilitation, so that the environmental management plan outlined within the original Notice of Intent can be adhered too (see Newsome and Low 2007).

3.2 Methods

Survey one

A fixed wing Cessna 210 aircraft was used to aerially survey each of the proposed seismic lines within the Magee prospect on 30th March 2007. The flight involved low, < 500 ft, and high, to 2500 ft, altitude flying along each of the lines and adjacent habitat in order to determine:

vegetation characteristics;
percentage of ground cover;
water flow direction;
soil types;
landscape variables;
access issues related to available tracks, landscape, drainage lines;
percentage of clearing required for seismic acquisition;
if any existing tracks occur in the vicinity of the proposed line; and,
appropriate seismic line alignment.

Photographs were taken throughout the flight to provide examples of the different habitat zones, existing road conditions and overall landscape conditions. Track and waypoint data were collected using a *Garmin GPS 76C Mapper* and were mapped in ArcMap (version 8.3).

Survey two

A landscape, flora and fauna survey by 4WD vehicle of the Magee prospect took place on April 12th 2007. The survey consisted of driving existing tracks and assessing areas where each of the proposed seismic lines occur from topographical, geographical and satellite maps. Data from the

aerial survey was also used to ensure that any sensitive areas where surveyed from the ground. Flora adjacent to the roads was briefly surveyed with particular attention paid to habitat suitable for rare or relict species. Photographs were taken to provide examples of the different habitat zones and existing road conditions. Track and waypoint data were collected using a *Garmin GPS 76C Mapper* and were mapped in ArcMap (version 8.3).

4. Results

4.1 Seismic Acquisition Process

The proposed seismic acquisition program requires a maximum line clearance width of 4.5 m but mostly will only need to be the width of a standard vehicle i.e. 4 m or less. Light preparation involves removing surface shrubbery and flattening the surface of the track. If the seismic lines follow existing tracks little vegetation removal will take place and disturbance will be limited to sections of existing tracks which are overgrown or where minor modifications are made to entry and exits from creek crossings.

The seismic acquisition survey involves three Hemi 6X6 Vibroseis trucks and source equipment traversing upgraded or existing tracks. The seismic acquisition process does not create soil compression unless the area is wet. However, the actual survey would not be conducted if the area is wet as this will make access difficult and affect the results. Hence, there will be no need for remediation of soil compaction. Level ground and straight lines are preferred for the seismic acquisition process, however current computing and GPS technology allows for variations in survey pathway and there will be little need to modify the surface at each survey site. While the seismic generation vehicles do not significantly impact the ground, the support vehicles and their frequent traffic along the track can be detrimental to the track surface if low adhesive soils are present.

The seismic acquisition survey may also be followed with an uphole statics survey to be recorded after the main seismic survey. This is to constrain the sometimes strong effect of weathering of surface rocks, on the final seismic data quality. This would consist of a truck mounted drill rig, drilling through the weathered layer (~30m) and placing a geophone at the bottom of the hole, and then using a surface source to provide the energy source. All holes drilled would be remediated and back-filled, so as to present no hazard to either humans or fauna in the area. The typical density of these uphole survey holes would be on the order of 1 hole/2-3 linear km.

4.2 Flora and Fauna

The ground and air survey routes over the Magee prospect are shown in Figure 1. A total of 51 flora species were identified during the survey (Appendix 1). No flora species identified during the survey were listed as vulnerable or endangered under the *EPBC Act* (1999) or *TPWC Act* (2000) legislation for conservation significance. However, the survey aimed to assess general vegetation types and was thus limited in its ability to identify rare or relict species that occur in the area. Overall, flora species identified along the proposed seismic lines are generally widespread in the area and are well represented in the Alice Springs district. All large trees, particularly significant trees such as bloodwoods (*Eucalyptus opaca*) and desert oaks (*Allocasuarina decaisneana*), should be deviated around.

Fauna data was based largely on previous surveys in the area and species listed under the *EPBC Act* (1999) or *TPWC Act* (2000) and assessed on the basis of habitat encountered. There are a number of species of environmental and conservation significance that could occur in the area, including endangered species (see Newsome and Low 2007). However, many of these species have not been recorded in the area for a number of years and key habitat areas are not likely to be disturbed if best practice techniques are followed. The original Notice of Intent listed species that are likely to occur within the Finke Bioregion (Newsome and Low 2007). This report updates this list and includes a list of those species that have been recorded in the Magee Prospect area as listed under the Northern Territory Biological Records Scheme (June 2007) (Appendix 2 – but see Newsome and Low (2007) for information on threatened species)

4.3 Seismic Line Assessment and Recommendations

This report considers the most up to date maps provided by Central Petroleum Ltd on preferred seismic line alignment which have been modified since the original Notice of Intent (Figure 1 and 2) as a result of ongoing interpretation of previous seismic work and known geology as well as avoidance of areas identified by the present environmental survey and archaeological survey (Hill 2007). A summary for each of the proposed seismic lines is represented in a table format and includes recommendations for seismic line alignment based on environmental variables, landscape descriptions, and occurrence of existing tracks. All of the data is summarised in Table 1.

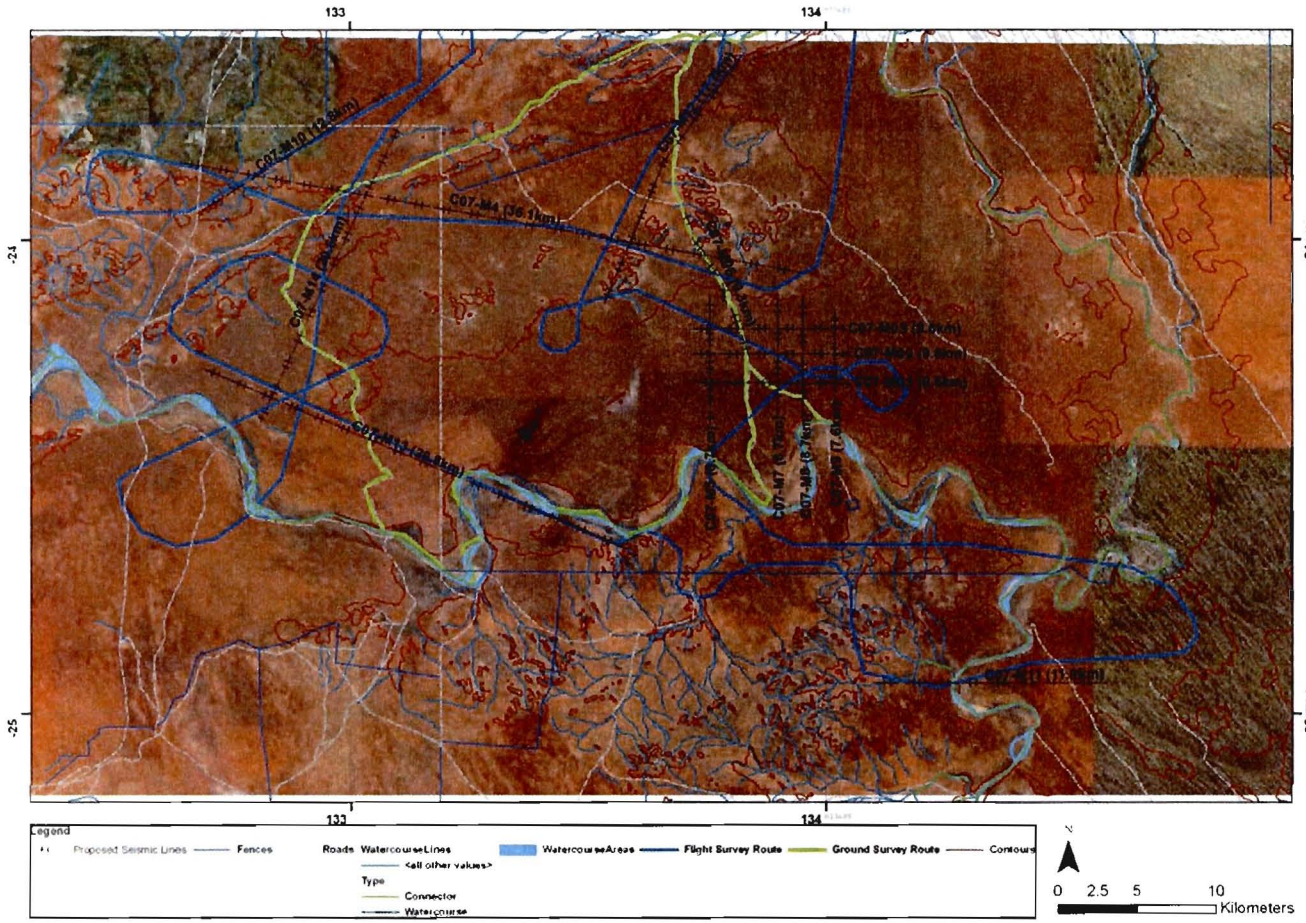

Figure 1: Ground and flight paths undertaken by Low Ecological Services during the environmental surveys over the Magee prospect in 2007 and proposed seismic lines. Note that this survey was conducted prior to the slight changes in preferred seismic line alignment by Central Petroleum Ltd (see also Figure 2). Background image is from Google Earth.

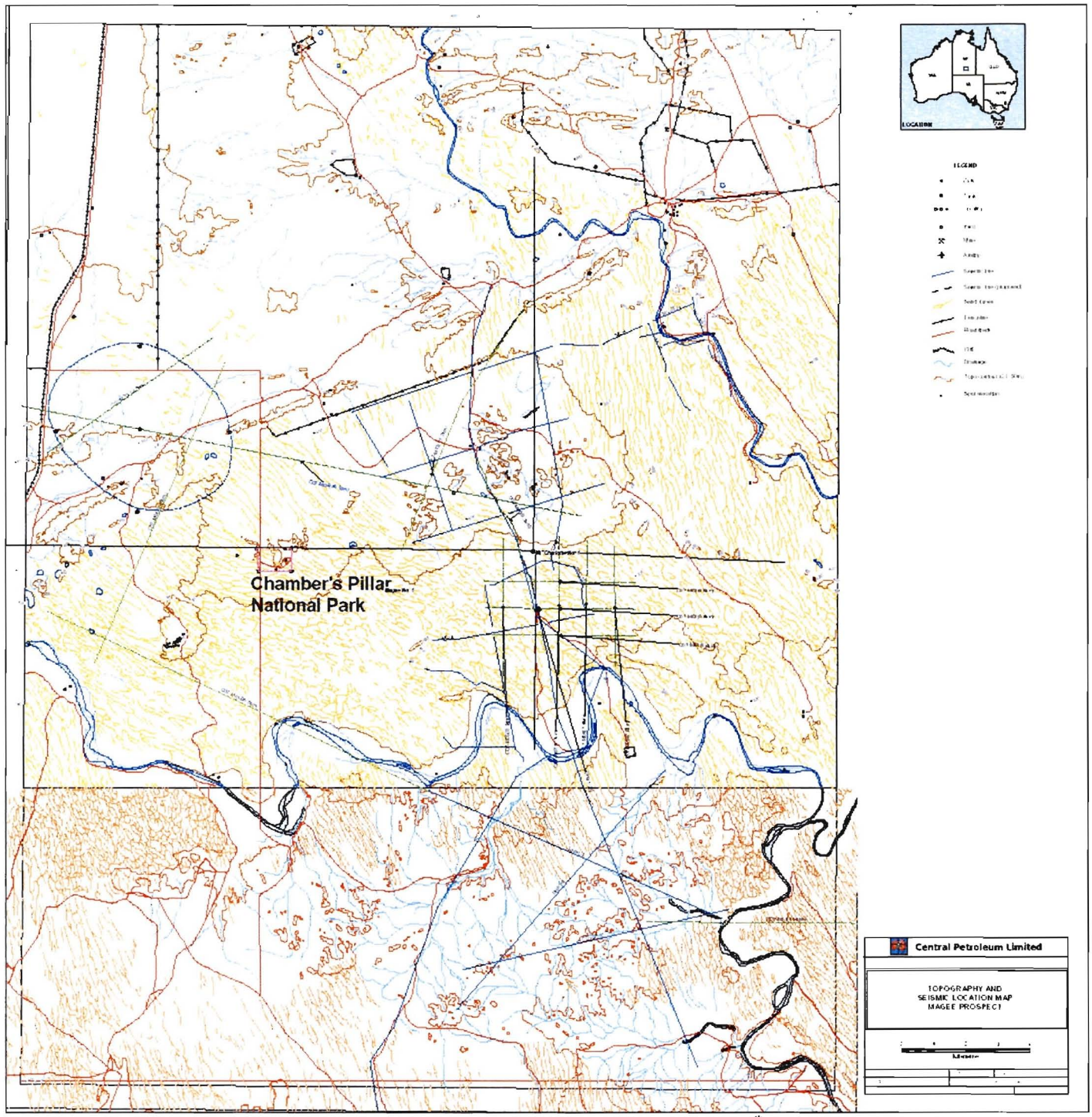

Figure 2: Proposed seismic acquisition program by Central Petroleum LTD modified to 8th June 2007 as a result of ongoing analysis of previous seismic and geological work as well as landscape and archaeological surveys in April and May, 2007

Table 1: Total amount of clearing for each seismic line within the Magee prospect area on existing tracks, open and thick country and overall potential for soil erosion along the line. Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this is an estimate only based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004), but see also Figure 3 for comparison.

	Total kilomters of seismic line					
Seismic Prospect / Line	**Existing Tracks**	**Open County**	**Mulga / Thick Country**	**Total**	**Potential for soil erosion and proportion of line being susceptible (%)**	**Number of Dunes > 8 meters in height**
Magee						
1	0	8.6	1	9.6	1	2
2	0	8.6	1	9.6	1	2
3	0	8.6	1	9.6	1	2
4	0	32	4.1	36.1	6 (10 %)	6
5	0	8	0.7	8.7	1	2
6	9.3	0	0	9.3	1	0
7	0	8	0.7	8.7	1	2
8	0	8	0.7	8.7	1	2
9	0	7	0.6	7.6	1	2
10	0	10	2.8	12.8	6 (50 %)	1
11	0	11	0.9	11.9	5 (15 %)	5
12	2	15	0.7	17.7	1	1
13	0	20	6.8	26.8	1	4
14	18	1	1.6	20.6	1	5
Total	**29.3**	**145.8**	**22.6**	**197**		**42**
% of Total	**14**	**73**	**11**			

Seismic Lines CO7 – M1, M2, M3, M5, M7, M8, and M9

Table 2: Environmental assessment and recommendations for Seismic Lines CO7 – M1, M2, M3, M5, M7, M8, and M9.

Variable	Description / Assessment
Location	Seismic grid in the middle of the Magee prospect (Figures 1 and 2)
Length	62.5 km total in 7 lines ranging from 7.6 to 9.6 km (Figures 1 and 2)
Land Units	Singleton (see Newsome and Low 2007 for description)
Landscape Description	Low dunefields and sandplains with calcareous rocky subcrops with mulga (*Acacia aneura*), mallee (*Eucalyptus socialis*), desert oaks (*Allocasuarina decaisneana*) over scattered shrubs (mainly *Senna* shrubs) and spinifex (*Triodia sp.*) forbs and annual grasses. Vegetation is patchily distributed with 30 – 70 % upper and lower stratum cover (Plate 1).
Soils	Red sands and red clayey sands
Erosion Potential (1-6)	1 (see Figure 3)
Dune Size	6 – 15 m (Plate 2)

Number of dunes > 8 m in height	14
Existing Tracks (%)	0
Open country (%)	91 %
Thick / Mulga country (%)	9 %
Recommendations	Lines should divert around the edges of dunes where appropriate to minimise disturbance or line up with areas where gradients are not steep (see plate 2). Some small patches of mulga may need to be cleared, although all larger trees such as desert oaks should be diverted around.

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M4

Table 3: Environmental assessment and recommendations for Seismic Lines CO7 – M4.

Variable	Description / Assessment
Location	Seismic line running east to west in the northern end of the Magee prospect (Figures 1 and 2)
Length	36.1 km (Figure 1)
Land Units	Eastern end: Rumbulara and Simpson Middle: Singleton and Simpson Western end: Chandlers and Singleton (see Newsome and Low 2007 for description)
Landscape Description	Eastern end: Low dunefields and sandplains with calcareous rock subcrop plains with mulga, mallee and desert oaks over spinifex and scattered grasses (Plate 3). Middle: Low dunefields with 30 - 50 % upper stratum cover (dominated by mulga and desert oaks) and 30 – 70 % lower ground cover (dominated by spinifex) (Plate 4). Western end: Stony and erosional slopes and alluvial fans surrounded by flat top hills with scattered shrubs (mainly Senna spp) and Mulga over short grasses and forbs (Plate 5).
Soils	East end: Shallow stony soils and red sands Middle: Red sands and red clayey sands Western end: Texture contrast soils
Erosion Potential (1-6)	East end: 1 Middle: 1 Western end: 6 (see Figure 3)
Dune Size	East end: 5 – 10 m Middle: 8 m Western end: 5 m
Number of dunes > 8 m in height	6
Existing Tracks (%)	0

Open country (%)	88 %
Thick / Mulga country (%)	12 %
Recommendations	East end: The line should divert around all hills in the area and stay south of the high stony mesas which are more susceptible to erosion (Figure 3). At the area where line CO7 – M4 intersects with CO7 – M12 the line should also divert around the low hills to the north (Figure 3). Middle: The lines should divert around the edges of dunes where appropriate to minimise disturbance or line up with areas where gradients are not steep. Western end: Seismic lines should divert around sensitive areas such as those around the bases of the flat top hills and alluvial plains (Figure 3). In the case where line establishment cannot avoid the areas prone to erosion, runoff management strategies outlined within the original management plan (see Newsome and Low 2007) will aid to minimise disturbance. This is likely to be restricted to only 10 % of the entire line (Figure 3).

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M14

Table 4: Environmental assessment and recommendations for Seismic Lines CO7 – M14.

Variable	Description / Assessment
Location	Seismic line in the western end of the Magee prospect area (Figures 1 and 2)
Length	20.6 km (Figure 1)
Land Units	Northern end: Chandlers and Singleton Southern End: Singleton (see Newsome and Low 2007 for description)
Landscape Description	The northern end of the proposed seismic line runs through stony and erosional slopes and alluvial fans surrounded by flat top hills (as with line CO7 – M4) for approximately 9 km (Plate 6). The rest of the proposed line traverses through dune fields (average height 6 m) and undulating sand plains with mulga swales and spinifex low dunes and rises for approximately 11 km
Soils	Northern end: Texture contrast soils Southern end: Red clayey sands, red earths and red sands
Erosion Potential (1-6)	Northern end: 6 Southern end: 1 (see Figure 3)
Dune Size	Northern end: 4 m Southern end: 5 – 10 m
Number of dunes > 8 m in height	5
Existing Tracks (%)	87 % (if proposed seismic line is moved see below)
Open country (%)	4.8 %

Thick / Mulga country (%)	7.7 %
Recommendations	There are existing tracks in the vicinity of this seismic line (which could be used), the first of which is a section of the main road which runs south towards Idracowra Station via north east bore. The second is an old track which runs north from the Finke River for approximately 7 km (Figure 3). The use of these tracks would restrict works in the north where soils are more prone to erosion, and also reduce line establishment works in the south. The tracks would need to be upgraded for seismic acquisition. Overall the use of these tracks would restrict works to the upgrading of existing tracks and approximately 3 – 4 km of line establishment works (Figure 3).

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M10

Table 5: Environmental assessment and recommendations for Seismic Lines CO7 – M10.

Variable	Description / Assessment
Location	Seismic line in the north western end of the Magee prospect area which runs in a south west to north easterly direction (Figures 1 and 2).
Length	12.8 km (Figure 1)
Land Units	Northern end: Singleton Southern End: Chandlers (see Newsome and Low 2007 for description)
Landscape Description	The south western end runs through the erosional slopes and alluvial fans on the northern edge of the Chandlers Land System area (similar to Plate 6). The north eastern end of the line runs through some small dunefields, but predominantly undulating and open sandplains with mulga and spinifex.
Soils	Northern end: Red clayey sands, red earths and red sands Southern end: Texture contrast soils
Erosion Potential (1-6)	Northern end: 1 Southern end: 6 (see Figure 3)
Dune Size	Northern end: 6 – 10 m Southern end: 2 m
Number of dunes > 8 m in height	1
Existing Tracks (%)	0
Open country (%)	78 %
Thick / Mulga country (%)	22 %
Recommendations	This proposed seismic line is strategically placed in order to determine where there is closure of the underground structures. Therefore best practice management strategies need to be applied in the south western end where soils are highly susceptible to erosion. For example in areas where there is only low vegetation the grader blade should remain at above

	ground level at all times and erosion control features should be installed before the seismic acquisition program.

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M6

This line runs in a south to north direction in the middle of the seismic acquisition near the seismic grid formed by CO7 – M1, M2, M3, M5, M7, M8 and M9 (Figure 1). The line located on a well cleared existing track for its entire length (10 km) and no line establishment works should be needed for this line (Table 1).

Seismic Line CO7 – M11

Table 6: Environmental assessment and recommendations for Seismic Lines CO7 – M10.

Variable	Description / Assessment
Location	This seismic line runs in a west to easterly direction for approximately 11.9 km and is located in the south eastern end of the Magee prospect area (Figures 1and 2).
Length	11.9 km (Figure 1)
Land Units	Western end: Singleton Eastern End: Chandlers (see Newsome and Low 2007 for description)
Landscape Description	The western end of the proposed line traverses through the bevelled edges and dissected margins of the stony plateaux and foothill slopes with stony soils (Plate 7). The area contains scattered mulga and witchetty bush (*Acacia kempeana*) over scattered grasses, but the vegetation is mainly restricted to the watercourse areas. On the eastern side of the river the seismic line dissects through low dunefields (average height 5 m) and undulating sandplains with mulga swales and spinifex.
Soils	Western end: Shallow stony soils and texture contrast soils are present along the plateaux, mesas and erosional slopes with course textured red sands, red clayey sands, alluvial soils, calcareous earths and texture contrast soils along the valley floors and alluvial floors. Eastern end: Red clayey sands, red earths and red sands
Erosion Potential (1-6)	Western end: 5 Eastern end: 1 (see Figure 3)
Dune Size	Western end: 4 – 8 m Eastern end: 6 – 15 m
Number of dunes > 8 m in height	5
Existing Tracks (%)	0%
Open country (%)	92 %

Thick / Mulga country (%)	8 %
Recommendations	The plateaux, mesas and erosional slopes in the western end are prone to erosion, although previous seismic lines in this area have remained in tact with the addition of pond banking. Water flow through the area runs generally runs in a north to south direction and because the seismic line runs in a west to east direction the amount of water running directly down the line would be minimal, although diversions would be need so that water is sheeted, rather than channelled across or along side the line. This line crosses the Finke River just below a creek line intersection where the banks are relatively low. However, further to the south the finer red sands have built up over time and created a relatively high bank on the western side (Plate 8). This area would not be appropriate for the seismic line unless it stopped and then started again on the other side of the river. On the eastern side of the river the seismic line dissects through low dunefields (average height 5 m) and undulating sandplains with mulga swales and spinifex. There are no existing tracks in this area to follow, however this area is not prone to erosion and the track should divert around the edges of dunes where possible.

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M12

Table 7: Environmental assessment and recommendations for Seismic Lines CO7 – M12.

Variable	Description / Assessment
Location	This seismic line runs in a south to north east direction for in the north eastern end of the Magee prospect area (Figure 1).
Length	17.7 km (Figure 1)
Land Units	Southern end: Simpson and Rumbulara Northern End: Singleton (see Newsome and Low 2007 for description)
Landscape Description	The southern end of the proposed line dissects through flat top hills, stony slope and alluvial plains (Plate 9). After the intersection with line CO7 – M4 the line continues through relatively open sand plains with mulga, mallee, and scattered desert oaks over spinifex and four to five sand dunes prior to Charlotte Range.
Soils	Southern end: course textured red sands, red clayey sands, calcareous earths and some texture contrast soils Northern end: Red clayey sands, red earths and red sands
Erosion Potential (1-6)	Southern end: 1 Northern end: 1 (see Figure 3)
Dune Size	Southern end: 5 - 10 Northern end: 5
Number of dunes > 8 m in height	1

Existing Tracks (%)	11 % (if the track is diverted see below)
Open country (%)	85 %
Thick / Mulga country (%)	4 %
Recommendations	The southern end of the proposed line dissects through flat top hills, stony slope and alluvial plains which are likely to contain a mixture of course textured red sands, red clayey sands, calcareous earths and some texture contrast soils which are prone to erosion (Plate 9 and Figure 3). Hence, the line should divert around these hills and run through the sand plains and sparse dunes (average height 8 m) to the west which are less pone to erosion (Figure 2 and 3). There are no existing tracks in the area for this line to follow, although vegetation loss would be restricted mainly to spinifex, as the larger desert oaks and mulga are scattered throughout. After the intersection with line CO7 – M4 the line continues through relatively open sand plains with mulga, mallee, and scattered desert oaks over spinifex and also four to five sand dunes prior to Charlotte Range (which the line should not pass through) (Figure 2). If permitting, the line could follow the existing station track which heads directly north to the west of Charlotte Range (Figure 3).

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

Seismic Line CO7 – M13

Table 8: Environmental assessment and recommendations for Seismic Lines CO7 – M13.

Variable	Description / Assessment
Location	This seismic line runs in an east to west direction for approximately 26.8 km and is located in the south western end of the Magee prospect area (Figure 1 and 2).
Length	26.8 km (Figure 1)
Land Units	Simpson (see Newsome and Low 2007 for description)
Landscape Description	The eastern end of seismic line runs parallel to sand dunes (average height of 7 m) in an area with spinifex and sparse low trees and shrubs (Plate 10). As the line approaches the Finke River, larger trees become more prevalent and dense, particularly river red gums (*Eucalyptus camaldulensis*), inland paper barks (*Melaleuca glomerata*) and horse mulga (*Acacia ramulosa*) (Plate 11).
Soils	Red sands and red clayey sands
Erosion Potential (1-6)	Eastern end: 1 Western end: 1 (see Figure 3)
Dune Size	Eastern end: 5 - 10 Western end: 2
Number of dunes > 8 m in height	4
Existing Tracks (%)	0%
Open country (%)	75 %

Thick / Mulga country (%)	15 %
Recommendations	Very little grading or disturbance would be required in the eastern end as the vegetation is sparsely distributed. Further, the line could virtually run parallel with the dunes, minimising the need for crossings. As the line approaches the Finke River, larger trees become more prevalent, however disturbance to this area could be avoided by running the seismic line along the Finke River, which is well cleared and only flows every three to five years (Figure 3).

Note: Land units are based on classification by Department of Primary Production 1983, and Neave *et al.* (2004). Soil erosion potential is based on landsystem classifications and soil types and is ranked from 1 to 6: 1 – low, 2 – low-moderate, 3 – moderate, 4 – moderate to high, 5 – high, and 6 – very high . Note that this table is based on photo's, satellite imagery and ground and air surveys conducted throughout the prospect area by Newsome and Low (herein) and Neave *et al.* (2004) and is provided as a summary for the area of interest.

4.4 Seismic Line Access

There is currently good access via well cleared existing station tracks to all of the proposed seismic lines except line CO7 – M11, which is located in the south west corner. However, there are two old seismic lines which lead directly to the proposed line, one of which continues from CO7 – M13, and the other from the station track that dissects the seismic grid (CO7 – M1, M2, M3, M5, M7, M8 and M9) at the Finke River (Figure 2). Both of these lines would need to be upgraded for vehicle access, although the latter route is 5 km shorter in distance. Selection of which route to use should involve discussions with station owners, as a new track may be useful (depending on the locations of bores).

4.5 Specific Management Options

Based on the surveys conducted by Low ecological Services in 2007 and previous surveys in the area there is no need for specific management options on top of the original management plan for flora and fauna in the area (see Newsome and Low 2007). There is however the need for additional erosion control features in those areas potentially prone to erosion (Figure 3). In these areas it is recommended that consultation take place with soil conservation officers from the Department of Natural Resources Environment and the Arts in Alice Springs. This practice was undertaken in previous works undertaken by Central Petroleum Ltd and proved invaluable. Further a reduced number (or restriction in use) of support vehicles should be introduced in highly erodable areas to minimise the number of passes over the seismic lines.

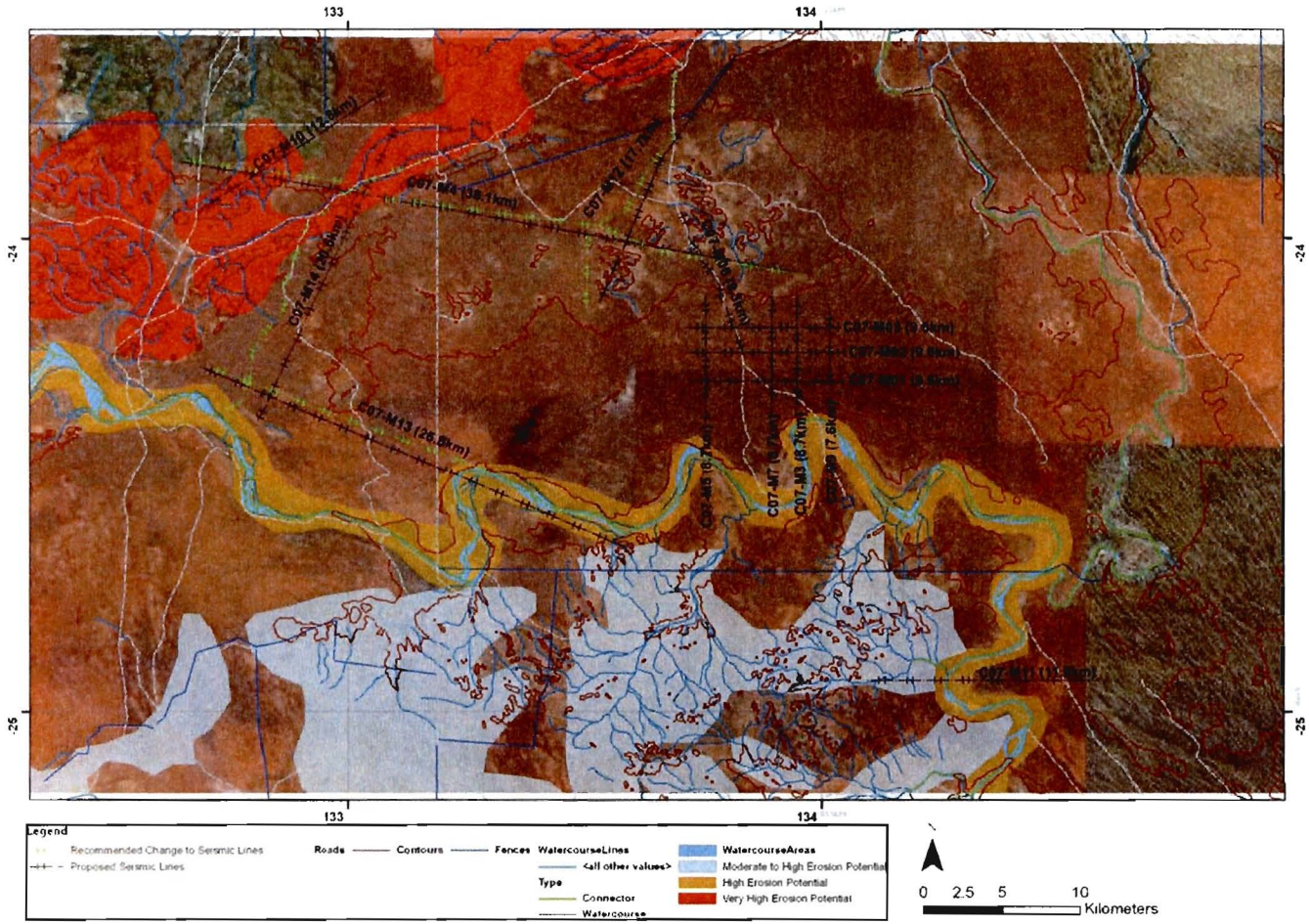

Figure 3: Proposed and recommended seismic lines and areas prone to erosion within the Magee prospect area. Erosion classifications are modified after Neave *et al.* (2004). Recommended seismic lines are only marked along side those lines which require modification, all other lines should remain the same (see above). All areas not highlighted are classified as having a low erosion potential.

4.6 Overview and Conclusions

In general, the proposed seismic acquisition program is not likely to have significant impact on the flora, fauna or landscape if existing tracks are used where available, best practice techniques are followed and sensitive areas avoided. This proposed seismic acquisition program does require a large proportion of line establishment, as there are very few existing tracks in the vicinity of the proposed lines. However, flora and fauna known from the area are well represented within the Alice Springs district, and from an environmental perspective the area does not represent an area of outstanding conservation significance. Further, over 70 % of the seismic acquisition area is relatively open allowing for lines to divert around patches of thick vegetation and dunes. Seismic acquisition process and track building techniques have also been significantly improved in recent years, and they can aim to mitigate potential problems with best practice techniques and rehabilitation procedures. Although parts of some seismic lines pass through potentially erodable country, run-off water control techniques used on 19XX seismic lines in these erodable areas, including diversion bunds, have prevented gullies developing on seismic lines. Central Petroleum and its contractors now have experience with seismic acquisition and rehabilitation in three prospects within the southern Northern Territory, and they have shown a commitment to the rehabilitation of seismic lines and adherence to environmental guidelines.

Seismic data acquisition unfortunately requires lines which are cleared of stakes and trafficable to minimise the risk of damage to seismic vehicle tyres. These tracks do not necessarily have to be flat and graded but capable of containing the equipment so that off line activity is restricted. There are currently no purpose built rubber tracked seismic trucks in Australia, and whilst it is recognised that this would significantly reduce the need for vegetation removal, this technology is not available and would be expensive to create. Hence, this proposal aims to utilise the most up to date seismic acquisition techniques (to avoid sensitive areas) along with best practice track building and rehabilitation procedures. Minimising the frequency of traffic by support vehicles is also an important facet of minimising impact on highly erodable roads. If these practices are adhered to the project is unlikely to have a significant impact on flora, fauna or soil in the prospect area.

5. Acknowledgements

We would like to thanks pastoral owners for allowing access onto their station tracks, Jeff Cole for providing fauna data for the area and Des Nelson for identifying plants found throughout the prospect.

6. References

Neave, H., Nano, C., Pavey, C., Moyses, M., Clifford, B., Cole, J., Harris, M., and Albrecht, D. (2004). A resource assessment towards a conservation strategy for the Fink Bioregion, N.T. Conservation and Natural Resources. Department of Infrastructure Planning and Environment.

Newsome, T.N., and Low, W.A (2007). Notice of Intent: Central Petroleum Limited 2007 Amadeus Basin Seismic Acquisition Program; EP 82 Magee Site. Unpublished report prepared for Central Petroleum Ltd and Department of Primary Industry, Fisheries and Mines.

Hill, T. (2007) Archaeological heritage assessment – EP 82 Magee site (northern territory) proposed seismic survey program. Unpublished report prepared for Central Petroleum Ltd

7. Plates

Plate 1: Existing track which intersects seismic lines CO7 – M1, M2, M3, M4, M5, M7, M8 and M9.

Plate 2: Sand dunes in the eastern end of line CO7 – M9 leading towards the Finke River. An example of how seismic lines should be aligned through these areas is depicted by the black line which diverts around the edges of dunes to avoid disturbance.

Plate 3: Open mulga (*Acacia aneura*) woodland with annual grasses in the area where seismic line CO7 – M4 intersects with the existing track at AMG 53 J 394583 7253262.

Plate 4: Low to medium sized dune fields in the middle of seismic line CO7 – M4. The area is dominated by mulga (*Acacia aneura*) and scattered spinifex (*Triodia sp.*).

Plate 5: Alluvial plains, stony slopes and flat top hills in the western end of line CO7 – M4. This area is characteristic of the Chandlers Landsystem which contains texture contrast soils in the alluvial fans which are highly prone to erosion. Maryvale to Chambers Pillar and Idracowra road traverses north of the area of interest.

Plate 6: Alluvial fans in the vicinity of the northern end of CO7 – M7 and CO7 – M4. The texture contrast soils make these areas highly susceptible to erosion.

Plate 7: High stony plateaux with beveled edges and steeply dissected margins and foothill slopes with stony soils in the vicinity of the western end seismic line CO7 – M11. Surface run-off will require diversion off seismic lines to prevent erosion, as was successfully done in previous seismic work in the area.

Plate 8: Relatively high fringing dune on the edge of the Finke River south of where line CO7 – M11 crosses.

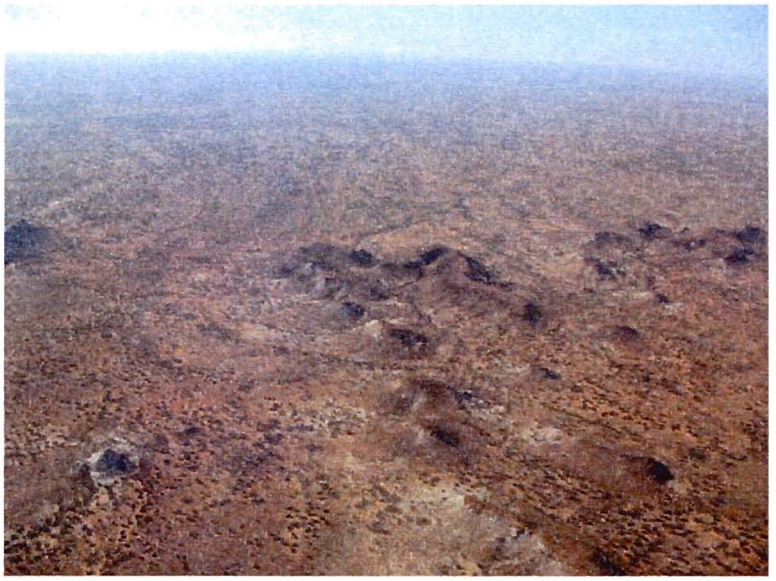

Plate 9: Flat top hills and stony slopes in the area where proposed line CO7 – M12 lies. The slopes and mesas should be avoided and diverted around to avoid erodable soils and culturally significant sites.

Plate 10: Parallel and irregular sand dunes in the area where line CO7 – M13 lies. Very little grading would be needed to establish the seismic line in this area as vegetation as patchily distributed and dunes are low.

Plate 11: Vegetation on extensive flood plains adjacent to the Finke River, dominated by river red gums (*Eucalyptus camaldulensis*)

7. Appendices

7.2 Plants Identified by Low Ecological Services at Selected areas along the Proposed Seismic Lines during the Survey.

A more extensive list of species known for the region is provided by Neave *et al.* (2004) in Newsome and Low (2007).

Species Name	Common Name	Status
Acacia aneura	Mulga	Common
Acacia estrophiolata	Ironwood	Common
Acacia kempeana	Witchetty Bush	Common
Acacia melleodora	Waxy Wattle	Common
Acacia murrayana	Colony Wattle	Common
Acacia ramulosa	Horse Mulga, Bowgarda Bush	Common
Acacia victoriae	Prickly Acacia	Common
Allocasuarina decaisneana	Desert Oak	Common
Aristida contorta	Bunched Kerosene Grass	Common
Aristida holothera	Erect Kerosene Grass	Common
Atalaya hemiglauca	Whitewood	Common
Calandrinia balonensis	Broad-leafed Parakeelya	Common
Calotis erinacea	Tangled Burr-daisy	Common
*Cenchrus ciliaris**	Buffel Grass	Weed
Crotalaria novae-hollandiae		Common
*Cynodon dactylon**	Couch Grass	Common
Dodonaea viscosa ssp. angustissima	Sticky Hopsbush	Common
Enneapogon avenaceus	Native Oat-grass, Bottlewashers	Common
Enneapogon polyphyllus	Oat-grass, Leafy Nine-awn	Common
Enneapogon cylindricus	Limestone Oat Grass	Common
Eragrostis eriopoda	Woolybutt Grass	Common
Eremophila latrobei	Native Fuchsia	Common
Eucalyptus camaldulensis	River Red Gum	Common
Ecucalyptus microtheca	Coolabah	Common
Eucalyptus opaca	Bloodwood	Common
Euphorbia tannensis	Caustic Bush/Desert Spurge	Common
Grevillea eriostachya	Honey Grevillea	Common
Grevillea juncifolia	Desert Grevillea	Common
Melaleuca glomerata	Inland Paper Bark	Common
Newcastelia spodiotricha	Sandhill Sage	Common
Paraneurachne muelleri	Spinifex Couch	Common
Portulaca oleracea	Munyeroo, Pigweed	Common
Ptilotus fusiformis	Skeleton Plant	Common
Ptilotus macrocephalus		Common
Ptilotus obovatus		Common
Ptilotus polystachyus	Long Pussy-tails	Common

Rhagodia spinescens	Spiny Saltbush	Common
Sclerolaena cornishiana	Cartwheel Burr	Common
Senna art. ssp. filifolia	Desert Cassia / Broom Bush	Common
Senna art. ssp. oligophylla	Oval-leafed Senna	Common
Senna artemisioides nothosubsp. sturtii	Dense Cassia	Common
Senna notabilis		Common
Sida platycalyx	*Lifesaver Burr*	Common
Solanum coactiliferum	Western Nightshade	Common
Solanum ellipticum	Native Tomato, Potato Bush	Common
Solanum quadriloculatum	Wild Tomato	Common
Aluta (formerly Thryptomene) maisoneuvii	Desert Heath Myrtle	Common
Themeda triandra	Kangaroo Grass	Common
Tribululs terrestris	Caltrop	Common
Triodia basedowii	Lobed Spinifex	Common
Triodia longiceps	Giant Grey Spinifex	Common
Triodia pungens	Gummy Spinifex	Common
Triraphis mollis	Purple Plumegrass	Common
Zygochloa paradoxa	Sandhill Canegrass	Common

7.2 Fauna Records for the Region Including the Magee Prospect as listed under the Northern Territory Parks and Wildlife Records Scheme (June 2007) and their Status

COMMONNAME	FULLSPEC	THREATENED	NEARTHREAT	DATADEFICI
REPTILES				
Beaded Gecko	*Diplodactylus damaeus*	0	0	0
Black-necked Snake-lizard	*Delma tincta*	0	0	0
Black-shouldered Ground-dragon	*Ctenophorus clayi*	0	0	0
Boulenger's Snake-Eyed Skink	*Morethia boulengeri*	0	0	0
Broad-Banded Sand Swimmer	*Eremiascincus richardsonii*	0	0	0
Brook's Ctenotus	*Ctenotus brooksi*	0	0	0
Bynoe's Gecko	*Heteronotia binoei*	0	0	0
Canegrass Dragon	*Diporiphora winneckei*	0	0	0
Carnaby's Snake-Eyed Skink	*Cryptoblepharus carnabyi1*	0	0	0
Central Bearded Dragon	*Pogona vitticeps*	0	0	0
Central Netted Dragon	*Ctenophorus nuchalis*	0	0	0
Crowned Gecko	*Diplodactylus stenodactylus*	0	0	0
Curl Snake	*Suta suta*	0	0	0
Desert Egernia	*Egernia inornata*	0	0	0
Desert Lerista	*Lerista desertorum*	0	0	0
Dwarf Bearded Dragon	*Pogona minor*	0	0	0
Fat-tailed Gecko	*Diplodactylus conspicillatus*	0	0	0
Fourteen-Lined Ctenotus	*Ctenotus quattuordecimlineatus*	0	0	0
Grey's Menetia	*Menetia greyii*	0	0	0
Helen's Ctenotus	*Ctenotus helenae*	0	0	0
Interior Blind Snake	*Ramphotyphlops endoterus*	0	0	0
King Brown Snake	*Pseudechis australis*	0	0	1
Lea's Ctenotus	*Ctenotus leae*	0	0	0
Leonhardi's Ctenotus	*Ctenotus leonhardii*	0	0	0
Leopard Ctenotus	*Ctenotus pantherinus*	0	0	0
Long-nosed Water Dragon	*Lophognathus longirostris*	0	0	0
Military Dragon	*Ctenophorus isolepis*	0	0	0
Narrow-banded Burrowing Snake	*Brachyurophis fasciolata*	0	0	0
Narrow-Banded Sand Swimmer	*Eremiascincus fasciolatus*	0	0	0
Northern Desert Banded Snake	*Simoselaps anomalus*	0	0	0
Ornate Snake-Eyed Skink	*Notoscincus ornatus*	0	0	0
Painted Dragon	*Ctenophorus pictus*	0	0	0
Perentie	*Varanus giganteus*	0	0	0
Prong-snouted Blind Snake	*Ramphotyphlops bituberculatus*	0	0	0

Purplish Dtella	*Gehyra purpurascens*	0	0	0
Red Tree-frog	*Litoria rubella*	0	0	0
Red-Tailed Snake-Eyed Skink	*Morethia ruficauda*	0	0	0
Ringed Brown Snake	*Pseudonaja modesta*	0	0	0
Ring-tailed Dragon	*Ctenophorus caudicinctus*	0	0	0
Rock Ctenotus	*Ctenotus saxatilis*	0	0	0
Rusty Desert Monitor	*Varanus eremius*	0	0	0
Sand Goanna	*Varanus gouldii*	0	0	0
Sand Lerista	*Lerista labialis*	0	0	0
Schomburk's Ctenotus	*Ctenotus schomburgkii*	0	0	0
Smooth Knob-tailed Gecko	*Nephrurus laevissimus*	0	0	0
Spiny-tailed Gecko	*Strophurus ciliaris*	0	0	0
Striated Egernia	*Egernia striata*	0	0	0
Three-lined Knob-tailed Gecko	*Nephrurus levis*	0	0	0
Tree Dtella	*Gehyra variegata*	0	0	0
Two-Toed Lerista	*Lerista bipes*	0	0	0
BIRDS				
Australasian Grebe	*Tachybaptus novaehollandiae*	0	0	0
Australian Bustard	*Ardeotis australis*	1	0	0
Australian Hobby	*Falco longipennis*	0	0	0
Australian Magpie	*Gymnorhina tibicen*	0	0	0
Australian Owlet-nightjar	*Aegotheles cristatus*	0	0	0
Australian Raven	*Corvus coronoides*	0	0	0
Australian Ringneck	*Barnardius zonarius*	0	0	0
Australian Wood Duck	*Chenonetta jubata*	0	0	0
Banded Lapwing	*Vanellus tricolor*	0	0	0
Banded Whiteface	*Aphelocephala nigricincta*	0	0	0
Barn Owl	*Tyto alba*	0	0	0
Black Kite	*Milvus migrans*	0	0	0
Black Swan	*Cygnus atratus*	0	0	0
Black-eared Cuckoo	*Chalcites osculans*	0	0	0
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	0	0	0
Black-faced Woodswallow	*Artamus cinereus*	0	0	0
Black-fronted Dotterel	*Elseyornis melanops*	0	0	0
Black-shouldered Kite	*Elanus axillaris*	0	0	0
Black-tailed Native-hen	*Gallinula ventralis*	0	0	0
Black-winged Stilt	*Himantopus himantopus*	0	0	0
Boobook Owl	*Ninox novaeseelandiae*	0	0	0
Bourke's Parrot	*Neopsephotus bourkii*	0	0	0
Brown Falcon	*Falco berigora*	0	0	0
Brown Goshawk	*Accipiter fasciatus*	0	0	0
Brown Honeyeater	*Lichmera indistincta*	0	0	0

Budgerigar	*Melopsittacus undulatus*	0	0	0
Chestnut Quail-thrush	*Cinclosoma castanotus*	0	1	0
Chestnut-rumped Thornbill	*Acanthiza uropygialis*	0	0	0
Chiming Wedgebill	*Psophodes occidentalis*	0	0	0
Cinnamon Quail-thrush	*Cinclosoma cinnamomeum*	0	0	0
Cockatiel	*Nymphicus hollandicus*	0	0	0
Collared Sparrowhawk	*Accipiter cirrhocephalus*	0	0	0
Common Greenshank	*Tringa nebularia*	0	0	0
Crested Pigeon	*Ocyphaps lophotes*	0	0	0
Crimson Chat	*Ephthianura tricolor*	0	0	0
Diamond Dove	*Geopelia cuneata*	0	0	0
Eurasian Coot	*Fulica atra*	0	0	0
Fairy Martin	*Hirundo ariel*	0	0	0
Galah	*Cacatua roseicapilla*	0	0	0
Great Cormorant	*Phalacrocorax carbo*	0	0	0
Great Egret	*Ardea alba*	0	0	0
Grey Butcherbird	*Cracticus torquatus*	0	0	0
Grey Shrike-thrush	*Colluricincla harmonica*	0	0	0
Grey Teal	*Anas gracilis*	0	0	0
Grey-crowned Babbler	*Pomatostomus temporalis*	0	0	0
Grey-headed Honeyeater	*Lichenostomus keartlandi*	0	0	0
Ground Cuckoo-shrike	*Coracina maxima*	0	0	0
Hoary-headed Grebe	*Poliocephalus poliocephalus*	0	0	0
Hooded Robin	*Melanodryas cucullata*	0	0	0
Horsfield's Bronze-Cuckoo	*Chalcites basalis*	0	0	0
Inland Dotterel	*Charadrius australis*	0	0	0
Little Black Cormorant	*Phalacrocorax sulcirostris*	0	0	0
Little Button-quail	*Turnix velox*	0	0	0
Little Corella	*Cacatua sanguinea*	0	0	0
Little Crow	*Corvus bennetti*	0	0	0
Little Eagle	*Hieraaetus morphnoides*	0	0	0
Little Pied Cormorant	*Phalacrocorax melanoleucos*	0	0	0
Little Woodswallow	*Artamus minor*	0	0	0
Magpie-lark	*Grallina cyanoleuca*	0	0	0
Major Mitchell's Cockatoo	*Cacatua leadbeateri*	0	0	0
Masked Woodswallow	*Artamus personatus*	0	0	0
Mistletoebird	*Dicaeum hirundinaceum*	0	0	0
Mulga Parrot	*Psephotus varius*	0	0	0
Nankeen Kestrel	*Falco cenchroides*	0	0	0
Nankeen Night Heron	*Nycticorax caledonicus*	0	0	0
Orange Chat	*Epthianura aurifrons*	0	0	0
Pacific Black Duck	*Anas superciliosa*	0	0	0
Painted Finch	*Emblema pictum*	0	0	0

Pallid Cuckoo	*Cuculus pallidus*	0	0	0
Pied Butcherbird	*Cracticus nigrogularis*	0	0	0
Pied Cormorant	*Phalacrocorax varius*	0	0	0
Pied Honeyeater	*Certhionyx variegatus*	0	0	0
Pink-eared Duck	*Malacorhynchus membranaceus*	0	0	0
Rainbow Bee-eater	*Merops ornatus*	0	0	0
Red-backed Kingfisher	*Todiramphus pyrrhopygia*	0	0	0
Red-browed Pardalote	*Pardalotus rubricatus*	0	0	0
Red-capped Robin	*Petroica goodenovii*	0	0	0
Red-kneed Dotterel	*Erythrogonys cinctus*	0	0	0
Red-necked Avocet	*Recurvirostra novaehollandiae*	0	0	0
Red-tailed Black-cockatoo	*Calyptorhynchus banksii*	0	1	0
Richard's Pipit	*Anthus novaeseelandiae*	0	0	0
Rufous Songlark	*Cincloramphus mathewsi*	0	0	0
Rufous Whistler	*Pachycephala rufiventris*	0	0	0
Sacred Kingfisher	*Todiramphus sanctus*	0	0	0
Scarlet-chested Parrot	*Neophema splendida*	0	1	0
Singing Honeyeater	*Lichenostomus virescens*	0	0	0
Southern Whiteface	*Aphelocephala leucopsis*	0	0	0
Spinifex Pigeon	*Geophaps plumifera*	0	0	0
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*	0	0	0
Splendid Fairy-wren	*Malurus splendens*	0	0	0
Spotted Harrier	*Circus assimilis*	0	0	0
Striated Pardalote	*Pardalotus striatus*	0	0	0
Tawny Frogmouth	*Podargus strigoides*	0	0	0
Torresian Crow	*Corvus orru*	0	0	0
Tree Martin	*Hirundo nigricans*	0	0	0
Varied Sittella	*Daphoenositta chrysoptera*	0	0	0
Variegated Fairy-wren	*Malurus lamberti*	0	0	0
Wedge-tailed Eagle	*Aquila audax*	0	0	0
Weebill	*Smicrornis brevirostris*	0	0	0
Welcome Swallow	*Hirundo neoxena*	0	0	0
Western Gerygone	*Gerygone fusca*	0	0	0
Whiskered Tern	*Chlidonias hybridus*	0	0	0
Whistling Kite	*Haliastur sphenurus*	0	0	0
White-backed Swallow	*Cheramoeca leucosternus*	0	0	0
White-browed Babbler	*Pomatostomus superciliosus*	0	0	0
White-browed Treecreeper	*Climacteris affinis*	0	0	0
White-browed Woodswallow	*Artamus superciliosus*	0	0	0
White-faced Heron	*Egretta novaehollandiae*	0	0	0
White-fronted Honeyeater	*Phylidonyris albifrons*	0	0	0
White-necked Heron	*Ardea pacifica*	0	0	0

White-plumed Honeyeater	*Lichenostomus penicillatus*	0	0	0
White-winged Fairy-wren	*Malurus leucopterus*	0	0	0
White-winged Triller	*Lalage sueurii*	0	0	0
Willie Wagtail	*Rhipidura leucophrys*	0	0	0
Yellow-billed Spoonbill	*Platalea flavipes*	0	0	0
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	0	0	0
Yellow-throated Miner	*Manorina flavigula*	0	0	0
Zebra Finch	*Taeniopygia guttata*	0	0	0
MAMMALS				
Camel	*Camelus dromedarius*	0	0	0
Cat	*Felis catus*	0	0	0
Cattle	*Bos taurus*	0	0	0
Central Cave Eptesicus	*Vespadelus finlaysoni*	0	0	0
Dingo	*Canis lupus*	0	0	0
Donkey	*Equus asinus*	0	0	0
Echidna	*Tachyglossus aculeatus*	0	0	0
Emu	*Dromaius novaehollandiae*	1	0	0
Euro	*Macropus robustus*	0	0	0
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	0	0	0
Fox	*Vulpes vulpes*	0	0	0
Gould's Wattled Bat	*Chalinolobus gouldii*	0	0	0
Hairy-nosed Freetail Bat	*Mormopterus sp. 6.*	0	0	0
Horse	*Equus caballus*	0	0	0
House Mouse	*Mus musculus*	0	0	0
Ooldea Dunnart	*Sminthopsis ooldea*	0	0	0
Rabbit	*Oryctolagus cuniculus*	0	0	0
Red Kangaroo	*Macropus rufus*	0	0	0
Sandy Inland Mouse	*Pseudomys hermannsburgensis*	0	0	0
Southern Marsupial Mole	*Notoryctes typhlops*	1	0	0
Spinifex Hopping-mouse	*Notomys alexis*	0	0	0
Stripe-faced Dunnart	*Sminthopsis macroura*	0	0	0
Wongai Ningaui	*Ningaui ridei*	0	0	0

Archaeological Heritage Assessment- EP 82 Magee site (Northern Territory) proposed seismic survey program.

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Executive Summary

Central Petroleum Limited proposes to undertake seismic survey as part of its Amadeus Basin seismic acquisition program. This program aims to undertake initial seismic analysis to map and image the petroleum prospect with a view to drilling. Central Petroleum has wider exploration interests across the Amadeus and Pedirka Basins- Central Australia. Work is proposed to commence after planning approval and post survey work in other prospects.

The proposed seismic survey subject to this assessment is identified as the Magee Prospect, a portion of EP82 in the area of Finke and Hugh Rivers around Chambers Pillar- approximately 140km directly south of Alice Springs (Appendix 2). The seismic survey will be undertaken within the APPEA 1996 "Code of Environmental Practice- Onshore and Offshore". These guidelines list all relevant environmental mitigation measures which will be implemented during the survey. The purpose of this archaeological survey is to identify items protected under the Heritage Conservation Act 1991 and specify mitigation and conservation measures with respect to these items.

The archaeological survey was undertaken on existing pastoral tracks and meandering transects within four identified environmental types, elevated ranges, alluvial floodplain, mulga woodland and spinifex sandplain. Due to the nature of the proposed seismic survey (being 4.5 metre graded transects yet to be marked) the survey aimed to test a predictive model to provide meaningful management recommendations which could be extrapolated across the entire area. A total of 32 km with effective width visibility of 5 metres was surveyed. Eight sites were recorded across all of the four identified environment types. All of the sites were stone artefact scatters- including a number of local silcrete quarries. The most common types of stone material within the sites was quartzite and silcrete- being sourced from local outcrops. Stone artefact scatters were typically either spatially dispersed with low artefact density or spatially dispersed with clusters of high artefact density. Characteristically the clusters of artefacts within sites were located nearby to creeks within or emerging from elevated ranges.

Recommendations to mitigate potential impacts to Aboriginal sites include;

- Where possible restrict all ground disturbance works (bulldozer or grader scrapes) to existing tracks and areas of disturbance.
- Restrict all ground disturbance works within 50m of all recorded archaeological sites (Appendix 1 and table 1 for previously recorded sites).
- Within areas 30 metres of mapped creeks or drainage line creeks restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of a mapped creek. Apply to Minister for approval to disturb sites if recorded.
- Within 30 metres of elevated ranges restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of elevated ranges. Apply to Minister for approval to disturb sites if recorded.
- Within 30 meters of all silcrete or quartz outcrops restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of a outcrops. Apply to Minister for approval to disturb sites if recorded.
- Within 100 metres of Old Idracowra Homestead restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 100 metres of the homestead

Table of Contents

1 Introduction

Central Petroleum Limited proposes to undertake seismic survey as part of its Amadeus Basin seismic acquisition program. This program aims to undertake initial seismic analysis to map and image the petroleum prospect with a view to drilling. Central Petroleum has exploration interests across the Amadeus and Pedirka Basins- Central Australia. Work is proposed to commence after planning approval and post survey work in other prospects.

The archaeological assessment has been commissioned by John Heugh, Managing Director Central Petroleum Limited and is structured according to the Office of Environment and heritage Scope of Works. Initial meetings prior to the survey where held with Central Petroleum representatives, Bill Low and Tom Newsome (Low Ecological Services) and Robin Gregory, Heritage Conservation Services (HCS).

The proposed seismic survey is identified for EP 82 (known as Magee site) on the Finke River around Chambers Pillar south of Alice Springs (Appendix 2). The seismic survey will be undertaken within the APPEA 1996 "Code of Environmental Practice- Onshore and Offshore". These guidelines list all relevant environmental mitigation measures which will be implemented during the survey. The purpose of the archaeological survey is to identify specific mitigation and conservation measures with respect to items protected under the Heritage Conservation Act 1991.

For the purposes of the archaeological assessment the seismic program will include three phases; pre-survey ground preparation by grader; location of a seismic geophone and cable network by four wheel drive; and strategic location of Hemi 6x6 vibroseus trucks. As the survey aims to image the large prospect the field program will predominately utilise existing tracks and disturbed areas within the exploration areas held by Central Petroleum Limited. The works will be carried out by seismic contract company. The proposed seismic survey lines are mapped in figures 1 and 2.

2 The physical environment.

The Finke River is a large and archaic river system which flows from the West Macdonnell Ranges into the Finke Floodplain to the south east in South Australia and is part of the greater Lake Eyre Basin. Four environments are identified for the purpose of the predictive model;

- Elevated ranges/jump ups- being stoney and sparsely vegetated slopes and areas immediately around.
- Alluvial floodplain- being the alluvial flood plain area associated to the Finke River and characterized by River Red Gum forest.
- Mulga woodland- being areas of plain dominated by Mulga (*Acacia aneura*) with an understorey of native grasses.
- Spinfex sand plain- being stable sand plains and confused sand dune and associated plains characteristic of the north Simpson Desert.

The area is currently part of Idracowra, MaryVale and Horseshoe Bend pastoral stations. The area subject to exploration has been moderately grazed and environmental disturbance

includes erosion, introduced weeds, fire and structural changes to native vegetation communities due to road, seismic line, dam building and fencing.

3 The Cultural environment.

3.1 Aboriginal land use

3.1.1. Anthropological and historical evidence
Detailed historical and anthropological records of traditional and semi-traditional Aboriginal landuse within Central Australia areas have been recorded notably by Spencer and Gillen (Jones 2005), Strehlow (Kenny 2005, Strehlow 1978) and by land and native title claims since the 1970's. Linguistic mapping which has been refined by the Institute for Aboriginal Development in Alice Springs, indicates the Finke River area comprises part of the Arrernte and Luritja language and cultural areas. A central feature of the Arrernte social system, as with other languages in the Central ranges and Deserts, was the identification of sacred sites and 'dreaming places' (Arrernte term Altyere) as the primary way of identifying land and cultural associations to it (i.e. Brooks 1991).

Much of the anthropological research to date indicates that across the survey area the underlying systems of land use and tenure were consistent- being clan and totem based. Strehlow for example identifies attachment to land through areas associated to an individuals conception (Strehlow 1978:44-45) with individual and family title being recognised by possession of ceremonial objects. A characteristic of the Arrernte land tenure system was the identification of people within clans associated to areas of land and recognition of section and sub-sections.

> "the work of Strehlow and Pink emphasized a core system of small clan estates within the Aranda (Arrernte) domain. The several land claims that have been heard in this very region over the decades...make it clear that rather small, local Dreaming-based and kin-based groups, not language groups- continue to constitute the sets of Aboriginal claimants. (Sutton 1995:11)

Arrernte physical culture and land use was typical of the Central ranges and desert; enabling a relatively high degree of mobility in order to access dispersed and seasonal resources. Photographic collections from the central and western desert (ie. Kimber 2006; Jones 2005) provide an insight into traditional Aboriginal camps; being both small family sized camps and larger ceremonial camps covering large areas with separate restricted areas for men and women. Traditional technologies included wooden shelters, wooden mens tools including shields, spearthrowers, spears and boomerangs, stone tools, string bags and belts and ornamentary objects made from bone and feathers. Womens technologies included wooden bowls and digging sticks, hair bags and head rings and large stones for processing grains and plant materials.

It is possible to propose a general model of Aboriginal people moving across the landscape as primarily extended family sized groups utilizing a typical hunter-gatherer landuse pattern. In the area Aboriginal people utilised a relatively specialized yet simple technology based on wooden implements, weapons and tools, stone used for food processing and tool production, fire and materials such as hair, ochres and animal fats/oils. A key part of the cultural and landuse system was the large scale (tribal) ceremonies whereby people from surrounding

areas/regions followed major dreaming stories into key sacred sites to participate in cultural activities such as increase ceremonies, initiations and fights- referred to broadly today as 'business'. Such activities intensified land and resource use at local levels and resulted in the introduction of more diverse materials and stylistic markers to the area.

3.2 European History

1875	South Australian pastoral firm F. & A. Grant and F.W. Stokes apply for a 2000 square mile pastoral lease over the Finke River. Idracowra Station forms part of this extensive lease and the first draft of cattle arrived in may 1876 (Pearce 1985). The first Idracowra Homestead was established at Udratnamma Waterhole at this time.
1880	The section of land north east of Idracowra was taken up by Gilmore, Hendry and Melrose and the Idracowra/Mount Burrell boundary was surveyed in 1884. The original Idracowra homestead was found to be within the Mount Burrell boundary and subsequently moved to the current location. (Pearce 1885).
1893	Grant and Stokes abandon the pastoral operation due to drought and financial hardship. In 1894 the Horn Expedition passed through and noted the homestead to be abandoned by pastoralists(Pearce 1885).
1902	Idracowra and Henbury Station are aquired by Joseph Breaden. Idracowra is utilised as an 'outstation' to Henbury (Pearce 1885).
1924	Idracowra and Henbury Stations are purchased by Stan Young- who became insolvent on 1929 and both stations were taken over by the Executor Trustee and Agency Company of South Australia (Pearce 1885).
1933	A pastoral Lease Investigation Committee report indicates Idracowra Station included a house, detached room, storeroom, meathouse, homestaead yard and homestead well
1948	Mortgages tot the estate were acquired by Dalgetty & Company and IDracowra was subsequently acquired by H.J. Mortimer in 1949.
1952	Idracowra Station taken up by Leo and Judith Murphy.

3.3 Aboriginal Archaeological Predictive Model

3.3.1 Aboriginal landuse model

Elevated range.	Use while travelling/for lookouts. Extraction of local stone materials. Living areas in rock formations and shelters. Restricted ceremonial activities.
Alluvial floodplain	Small family living areas used while traveling. Use by hunting or gathering parties to collect or process food. Collection of specific resources around creeks and soakages after periods of rain. Collection of large groups of people during ceremonies or for trade-focus points where major drainage systems are located close to elevated ranges.

Mulga woodlands	Small family living areas used while traveling.
	Collection of specific resources around creeks and soakages after periods of rain.
Spinifex sandplain	Small family living areas while traveling.
	Collection of specific resources around creeks and soakages after periods of rain.

3.3.2 Archaeological predictive model

Elevated range.	Low archaeological sensitivity on steep slopes, ridges and range tops. Moderate archaeological sensitivity on the lower margins of the range. High archaeological sensitivity on the margin of the ranges within close proximity to a dissecting drainage line. High archaeological sensitivity areas immediately around outcrops of silcrete or quartzite.
Alluvial plain	Moderate archaeological sensitivity on alluvial floodplains above secondary banks. High archaeological sensitivity where floodplain is in close proximity to the margin of the elevated ranges. Low archaeological sensitivity within river channels and on primary banks
Mulga woodlands	Low archaeological sensitivity.
	Medium archaeological sensitivity focused around resource areas.
Spinifex Sandplain	Low archaeological sensitivity.

4 Previous Archaeological research

A database search was undertaken by HCS for the Rodinga and 1:250K mapsheet and transferred into ArcView GIS. Site types recorded within the area include stone artefact scatters, painting and engraving sites, grinding stone, stone arrangements, buried deposits, quarries and restricted sites. By far the most common site types were open stone artefact scatters- being resilient types of archaeological heritage in desert environments.

The desktop assessment indicates a trend towards archaeological site density and diversity being greatest in the elevated ranges-particularly the Rodinga Range likely resulting from survey intensity in the area. The area of open native grassland and mulga forest to the north-east of Maryvale near the Train Hills also has a relatively high density of sites recorded on the database. Within the sand dunes sites have been recorded at Chambers Pillar only.

Table 1. Results for HCS database search-Rodinga Mapsheet.

5748-0001	Rodinga roadside	Stone artefact scatter
5748-0002	Mt Rodinga Summit	Stone artefact scatter
5748-0003	Rodinga Sundown Dune	Stone artefact scatter
5748-0004	Madigan Cave	Stone artefact scatter; Hearth
5748-0005/ 5648-0001	Maryvale Claypan Dune	Stone artefact scatter
5648-0003	Quarry-Chambers Pillar	Stone artefact scatter; Quarry
5648-0005	Salt/Claypan	Stone artefact scatter
5648-0006	Chambers Pillar- Itirkawara	Restricted
5648-0007	Christmas Bore	Stone artefact scatter
5848-0001	Rodinga Pass	Stone artefact scatter
5848-0002	Rodinga White tower	Stone artefact scatter
5848-0003	Dune	Stone artefact scatter
5848-0004	Rodinga Oak Shelter	Stone artefact scatter
5848-0005	Sand Cave	Stone artefact scatter; Buried Deposit; Hearth
5848-0006	Rodinga Dune	Stone artefact scatter
5849-0001	Twin Capitor Cairn	Stone artefact scatter;
5849-0003	Atherita Rockhole Main Area	Buried Deposit; Engraving; Stone artefact scatter; Stone Arrangement
5849-0004	Rodinga Washout	Stone artefact scatter;
5849-0008	Camel Hump 4	Engraving; Stone artefact scatter;
5849-0009	Camel Hump 5	Buried Deposit;
5849-0013	Camel Hump 9	Stone artefact scatter;
5849-0014	Camel Hump10	Engraving;
5849-0020	Camel Hump16	Engraving;
5849-0021	Camel Hump17	Stone artefact scatter;
5849-0022	Camel Hump18	Stone artefact scatter;
5849-0023	Camel Hump19	Stone artefact scatter;
5849-0024	Camel Hump20	Engraving;
5849-0025	Wallabi Cave	Buried Deposit; Stone artefact scatter;
5849-0026	Wallabi Rock	Engraving; Stone artefact scatter;
5849-0027	Lake Alleria	Stone artefact scatter;
5849-0028	East Bore North	Stone artefact scatter;
5849-0029	East Bore South	Stone artefact scatter;
5849-0030	River Edge	Stone artefact scatter;
5849-0031	Todd Rockhole	Stone artefact scatter;
5849-0032	Capitor Cave	Buried Deposit; Stone artefact scatter;
5849-0033	Atherita Rockhole 5	Engraving; Stone artefact scatter;
5849-0034	Atherita Rockhole 6	Engraving
5849-0035	Atherita Rockhole 7	Buried Deposit; Engraving;
5849-0036	Atherita Rockhole 8	Buried Deposit; Engraving;
5849-0037	Atherita Rockhole 9	Painting;
5849-0038	Atherita Rockhole 10	Engraving;
5849-0039	Atherita Rockhole 11	Painting; Grinding

5 Archaeological Survey

The archaeological survey was undertaken on meandering transects within the four identified environmental zones (Figures 1 and 2). Due to the nature of the proposed seismic survey (being 4.5 metre wide cleared transects yet to be marked) the survey aimed to test the predictive model to provide meaningful management recommendations which could be extrapolated across the entire range area. Sites were marked by GPS as waypoints and entered into ArcView GIS for analysis and mapping. The survey strategy was biased towards those areas or landforms identified as having the highest archaeological sensitivity.

6 Results

A total of 32.1 (effective) km was surveyed and a total of 8 sites of archaeological interest were recorded across all of the four identified environment types (Table 2, Figures 1, 2 and Appendix 1). All of the sites were stone artefact scatters- including a number of local stone quarries. Within the 9842m of survey transect across elevated ranges a total of 5 sites were recorded - of note that this included two major knapping areas/quarries (Maryvale Hills 1 and Charlotte Range 3). Only 2 sites were recorded across the 9844m of transects on alluvial floodplain- both of these being low density artefact scatters (Magee bore 1 and 2). Only one site (Maryvale Hills 2) was recorded across the two mulga woodland transects. This site was a quarry associated to a single outcrop of silcrete. No sites were recorded within the spinifex sand plain transects.

Table 2. Data from survey transects

No.	Environment	Length	Visibility	Effect. length	No. Sites
1	Elevated range	4710	80	3768	2
2	Elevated range	3264	90	2937	1
3	Alluvial floodplain	3599	80	2879	2
4	Mulga woodland	1879	90	1691	0
5	Mulga woodland	2253	90	2027	1
6	Spinifex sand plain	5072	90	4564	0
7	Alluvial floodplain	4493	90	4043	0
8	Elevated range	3486	90	3137	2
9	Spinifex sand plain	5226	80	4180	0
10	Alluvial floodplain	3653	80	2922	0
				32148	**8**

All of the sites recorded were open stone artefact scatters/living areas. The most common types of stone material within the sites was silcrete and quartzite, with a relatively low percentage of artefacts being of chert and quartz. Stone artefact scatters were typically either spatially dispersed with low artefact density or spatially dispersed with clusters of high artefact density- nearby to the raw material source.

7 Discussion

7.1 Test of archaeological predictive model.

7.1.1 Elevated range

Sites within this environment were situated at the base of the elevated range nearby to eroding drainage lines. Sites typically comprised of areas of low density knapping floors nearby to ephemeral drainage lines with raw materials being quartzite, silcrete and in a few cases chert. Where suitable silcrete resources occurred these areas had been targeted for raw material extraction. The results from the survey support the prediction that elevated ranges were more likely to contain archaeological sites than the three other environment types.

7.1.2 Alluvial floodplain.

Archaeological sensitivity on the alluvial floodplains was lower than predicted by the model- with only two low density stone artefact scatters being recorded across the three survey transects. A possible explanation for this is a recent period of flooding which may have built up debris and vegetation.

7.1.3 Mulga woodland.

As predicted the only site recorded on the mulga woodland was associated to a silcrete outcrop. The nature of the artefacts around the site indicate targeted usage of this area - likely from the nearby Maryvale Hills.

7.1.4 Sand Plain

No sites were located on the sand plain environment within the survey.

7.2 Potential Cultural Significance.

Sacred sites surveys of the area have been undertaken by Central Land Council.

The potential cultural significance of the archaeological sites recorded during the survey include;

- Association to sacred sites and ceremonial areas- likely at Chambers Pillar
- As an opportunity to pass on cultural knowledge, and
- Historical significance- likely at Magee bore.

Given the clan based nature of the Arrernte social structure it is likely that cultural attachment to the sites within the respective areas will be relatively restricted to key families.

7.3 Potential Scientific significance.

The sites identified within the survey have the potential to inform archaeological research at two levels being;

- Local site/raw material discard patterns within and around the identified silcrete quarries, and
- Regional cultural and land-use boundaries between the MacDonnell ranges to the North and the Simpson Desert/Finke Floodplain to the south.

7.4 Statements of significance.

All sites are identified as being of low to moderate potential cultural significance.

The quarry sites (Maryvale Hills 1, Maryvale Hills 2 and Charlotte Range 3) are considered to be of moderate significance.

Magee Bore 1 and Magee Bore 2 are determined to be of moderate significance.

Charlotte Range 1 and 2, 4 are determined to be of low significance.

8 Summary and recommendations

8.1 Summary

A total of 8 sites were recorded by the survey which covered over 32km of transect across four identified environments. The predictions of the predictive model were largely supported, with the bases of elevated ranges adjacent to ephemeral drainage lines being the most sensitive areas to potential disturbance and specific outcrops of suitable raw material for knapping being systematically targeted. The mulga woodlands and spinifex sand plain are determined to have low archaeological sensitivity.

8.2 Recommendations.

8.2.1. Where possible restrict all ground disturbance works (bulldozer or grader scrapes) to existing tracks and areas of disturbance.

8.2.2. Restrict all ground disturbance works within 50m of all recorded archaeological sites (Appendix 1 and table 1 for previously recorded sites).

8.2.3 Within areas 30 metres of mapped creeks or drainage lines creeks restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of a mapped creek. Apply to Minister for approval to disturb sites if recorded.

8.2.4. Within 30 metres of elevated ranges restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of elevated ranges. Apply to Minister for approval to disturb sites if recorded.

8.2.5. Within 30 meters of all silcrete or quartz outcrops restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 30m of a outcrops. Apply to Minister for approval to disturb sites if recorded.

8.2.6. Within 100 metres of Old Idracowra Homestead restrict ground disturbance works to areas of existing disturbance. Undertake post survey/pre-grading archaeological assessment for all works on undisturbed ground within 100 metres of the homestead

9 Bibliography

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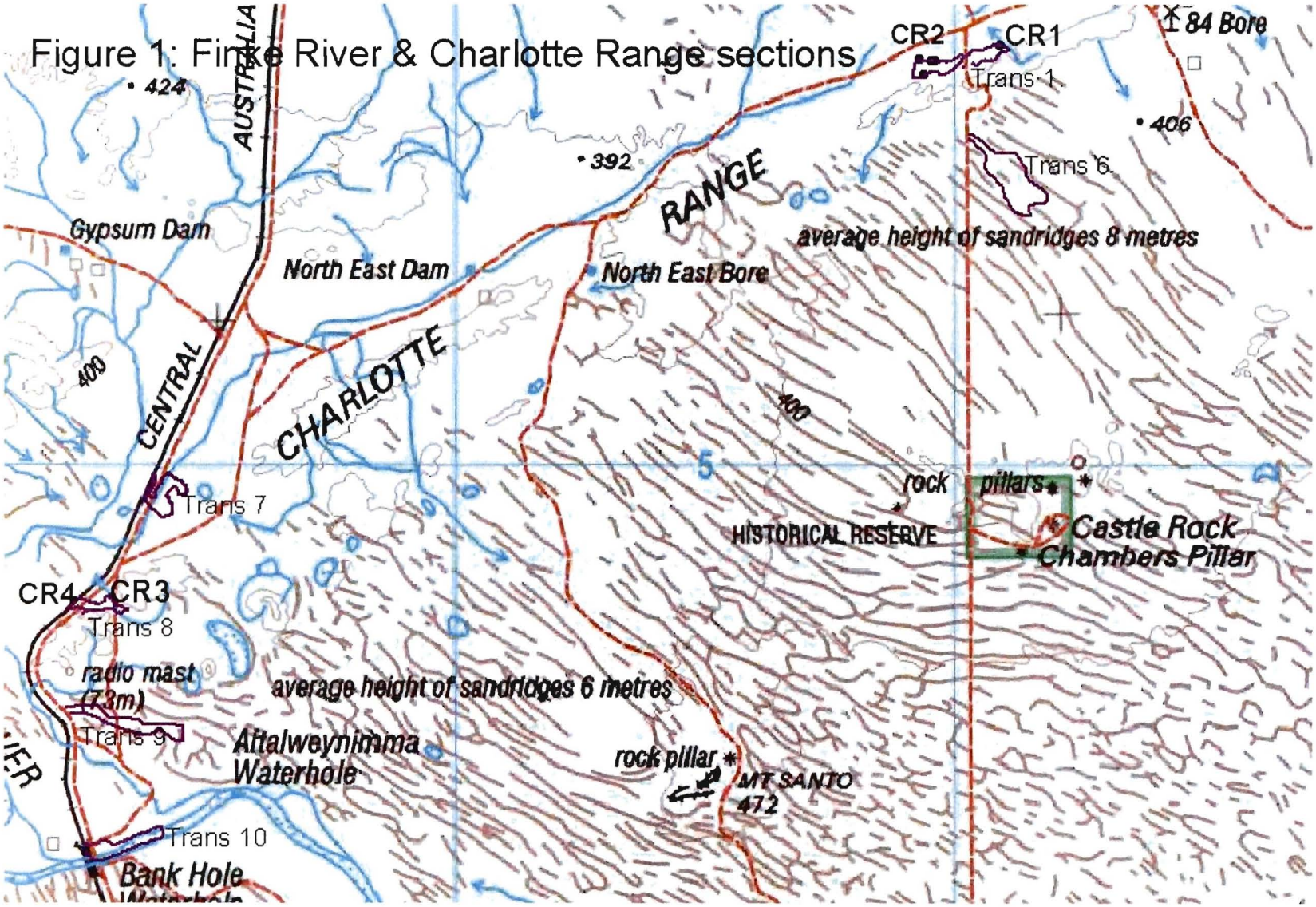
Figure 1: Finke River & Charlotte Range sections



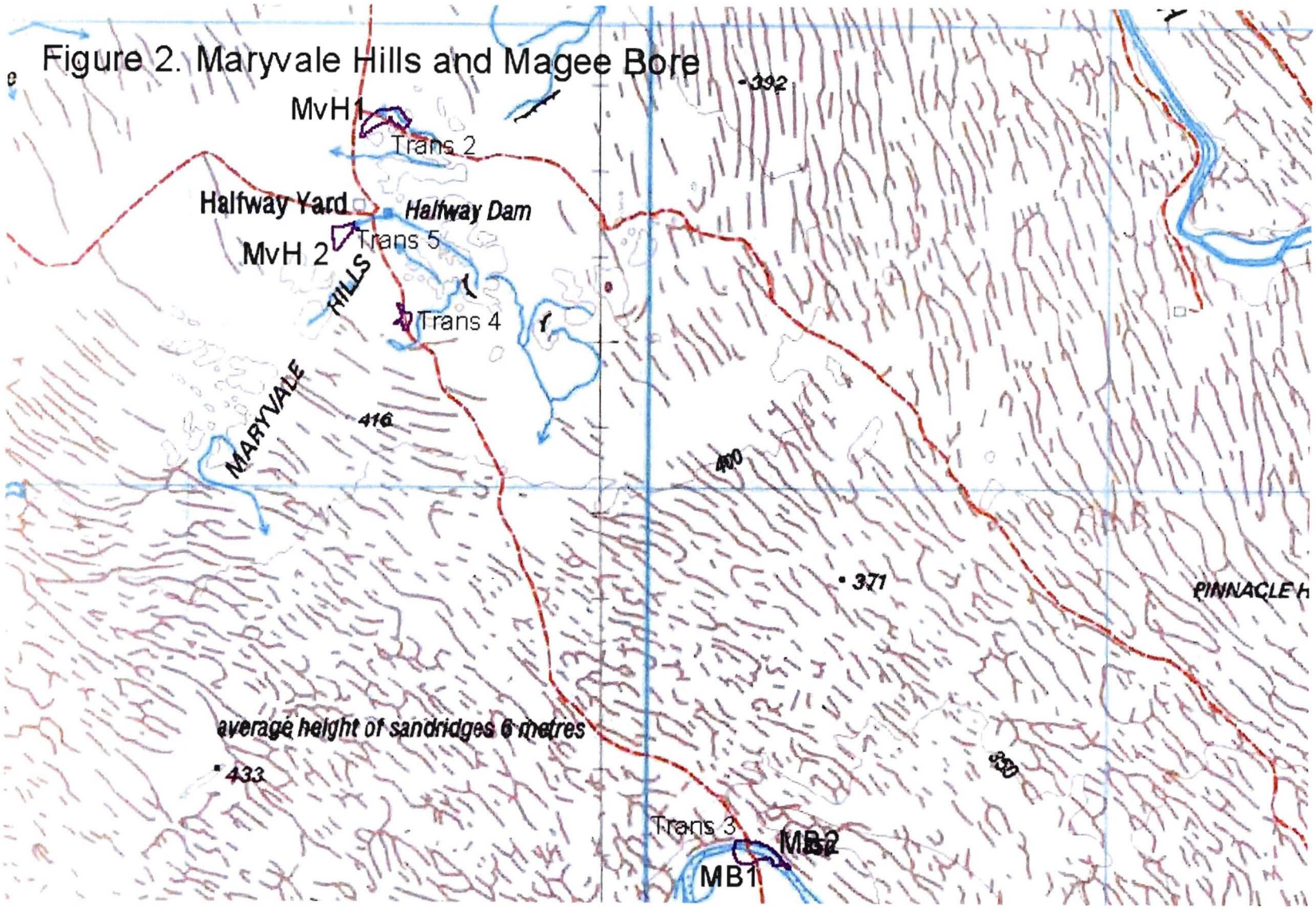
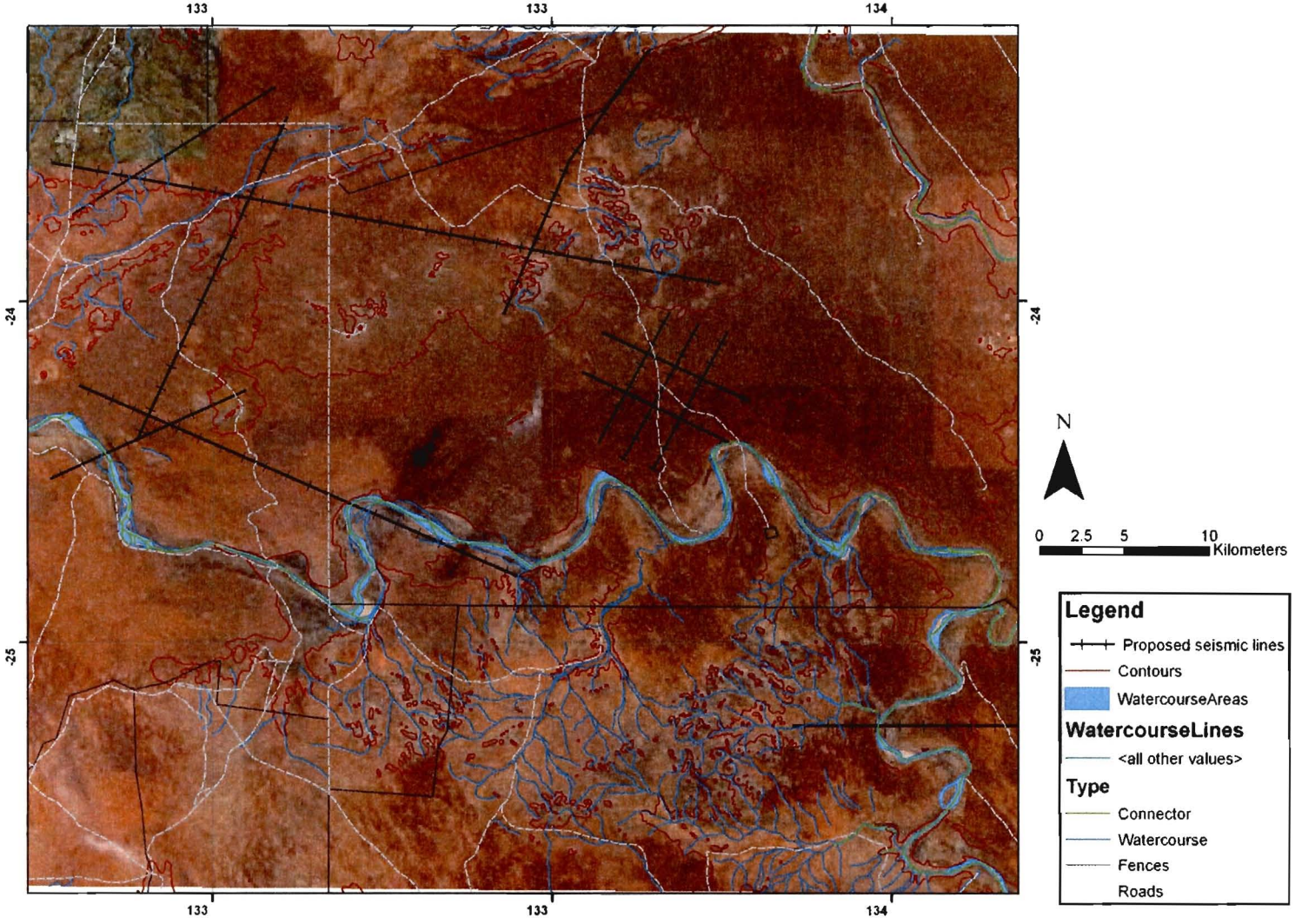


Figure 2. Maryvale Hills and Magee Bore
MvH1
Trans 2
Halfway Yard
Halfway Dam
MvH 2
Trans 5
HILLS
Trans 4
MARYVALE
416
400
392
371
PINNACLE h
average height of sandridges 6 metres
433
380
Trans 3
MB2
MB1

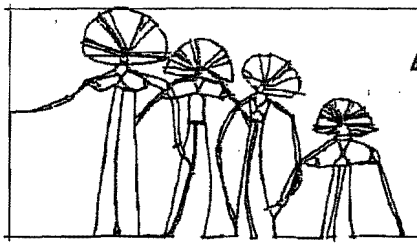
Figure 3. Proposed seismic survey transects



10 Appendix 1. Site data

Name	Location	Grid ref.	Veg.	Vis.	Disturbance	Max density m^2	Ave. density m^2
Charlotte Range 1	Low density stone artefact scatter at the base of Charlotte Range approximately 700m east of the Chambers Pillar road. Located on ephemeral drainage line.	**e380930n7258348**	Sparse acacia/senna shrub & native grass	**90**		**1**	**0.2**
Charlotte Range 2	Low density stone artefact scatter at the base of Charlotte Range approximately 800m west of the Chambers Pillar road. Located on ephemeral drainage line.	**e379385n7257751 e379300n7258056 e379543n7258023 e379623n7258032**	Mulga; sparse acacia/senna shrub & native grass	**90**		**3**	**0.2**
Maryvale Hills 1	A large silcrete quarry and associated knapping/living areas. The site extends across on are of approx. 1000m by 600m and likely further. Artefact density is greatest at silcrete outcrops eroding from the base of the hills.	**e393740n7257613 e394042n7257724 e394218n7257792 e394372n7257939 e394360n7258119 e394578n7258140 e394592n7258098 e394654n7258015 e394708n7257872 e394618n7257723**	Acacia/ senna shrub and native grasses. Sparse Mulga and Hakea.	**90**	Access track to Mulga Claypan	**15**	**0.7**
Maryvale Hills 2	An isolated silcrete quarry located 1km south-west of Halfway Yards. The quarry is located around an elevated silcrete outcrop.	**e393162n7255224 e393149n7255149 e393148n7255119**	Mulga forest and sparse native grasses.	**90**		**10**	**0.5**
Magee Bore 1	Low-medium density stone artefact scatter on the southern	**e402203n7241852 e402230n7241847**	River Red Gum and Acacia shrub	**90**	Cattle grazing and	**5**	**0.2**

	bank of the Finke river opposite Magee Bore	**e402408n7241910**			access to Danny Whites Yard		
Magee Bore 2	Low density stone artefact scatter on elevated northern bank of Finke River approx. 800 east of Magee Bore	**e402921n7242022 e403089n7241806**	River red gum, acacia shrub and sparse spinifex and native grasses.	**90**		**1**	**0.2**
Charlotte Range 3	High density silcrete quarry. Low to medium density knapping areas with chert and quartzite flakes and cores. Located on the margins of Charlotte Range nearby to ephemeral drainage.	**e363468n7247107 e363424n7247133 e363295n7247200 e363103n7247384**	Sparse acacia/ senna shrub, dispersed whitewood and native grasses.	**90**		**10**	**0.5**
Charlotte Range 4	Low density silcrete stone artefact scatter located at base of elevated range. 50m+ to water	**e363376n7247221**	Acacia & Senna shrub.	**90**		**2**	**0.2**



ABORIGINAL AREAS PROTECTION AUTHORITY

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Our Ref: D2005/006 *In Reply Please Quote: 511562*

Department of Natural Resources, Environment and the Arts
PO Box 496
PALMERSTON NT 0831

ATTENTION: WENDY HUTCHISON

RE: ABORIGINAL SACRED SITES WITHIN THE AREA OF EP82 – MAGEE PROSPECT

I refer to your letter dated 26 March 2007 seeking comment on the Notice of Intent from Compass Resources for the above area.

I advise that the Aboriginal Areas Protection Authority has a record of a number of sacred sites within EP82 including several sites listed in the Register of Sacred Sites. These include several sacred sites in the vicinity of the proposed seismic acquisition programme.

Sacred sites known to the Authority in the above area are shown on the map accompanying this letter as either "registered sacred sites" or "recorded sacred sites". Sacred sites listed as "registered sacred sites" are sacred sites that Aboriginal custodians have asked the Authority to protect and that have subsequently been documented and evaluated by the Authority and entered in the Register of Sacred Sites in accordance with the *Northern Territory Aboriginal Sacred Sites Act 1989.*

Sites listed as "recorded sacred sites" are sites that have not yet been evaluated or placed in the Register but there is information indicating that they are nonetheless significant according to Aboriginal tradition and therefore "sacred sites" within the meaning of the Act. The Authority does not purport to hold detailed information regarding all these sites. However, the information attached to this letter regarding recorded sacred sites is relevant to your query as the offence provisions of the Act apply to <u>all</u> sacred sites, whether or not these have been listed in the Register of Sacred Sites or otherwise recorded.

The symbols representing sites on the attached map are <u>not</u> intended to show precisely the extent of each site. Before entering or undertaking works on, or in the vicinity of these sites, further advice should be sought from the Authority. Recorded sites may be represented by a site centroid or tentative site boundary. In each case the extent of the site may be much greater.

The attached information cannot be taken as definitive advice on the location of all sacred sites in the area. There is a risk that a sacred site previously unknown to the Authority may be identified after the commencement of works, leaving no option but to cease works or possibly breach the offence provisions of the Act.

To overcome this problem the *Sacred Sites Act* enables a person, wishing to make use of or carry out works on land in the Northern Territory, to request that the Aboriginal Areas

Protection Authority consult with custodians and provide written advice specifying the constraints (if any) to a particular activity imposed by the existence of sacred sites. Section 19G of the Act also provides the opportunity for an applicant to discuss the project with Aboriginal custodians at a meeting convened by the Authority.

The written advice provided by the Authority following the completion of the procedures established in Sections 19A-22 of the Act is termed an "Authority Certificate". An Authority Certificate sets out the conditions (if any) on which, under the Act the proposed work may be carried out or use made of the land. As long as the holder of a Certificate complies with its conditions the holder is indemnified against prosecution under any of the offence provisions of the Act.

Recommendation
It is strongly recommended that any ground disturbing works, including the clearing of vegetation, only proceed in accordance with the conditions (if any) of an Authority Certificate.

If you have any queries, please do not hesitate to contact me on 8952 6366.

Yours sincerely,

ANDREW ALLAN
Regional Manager

2 ~~March~~ April 2007

attach.

cc: Central Petroleum Ltd
PO Box 197
South Perth WA 6151