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EL 2672

MABEL CREEK

ANNUAL AND FINAL PROGRESS REPORTS TO LICENCE EXPIRY/SURRENDER FOR THE PERIOD 3/12/1999 TO 2/12/2003

Submitted by
Redfire Resources Ltd, Consolidated Broken Hill Ltd and Taipan X Pty Ltd
2003

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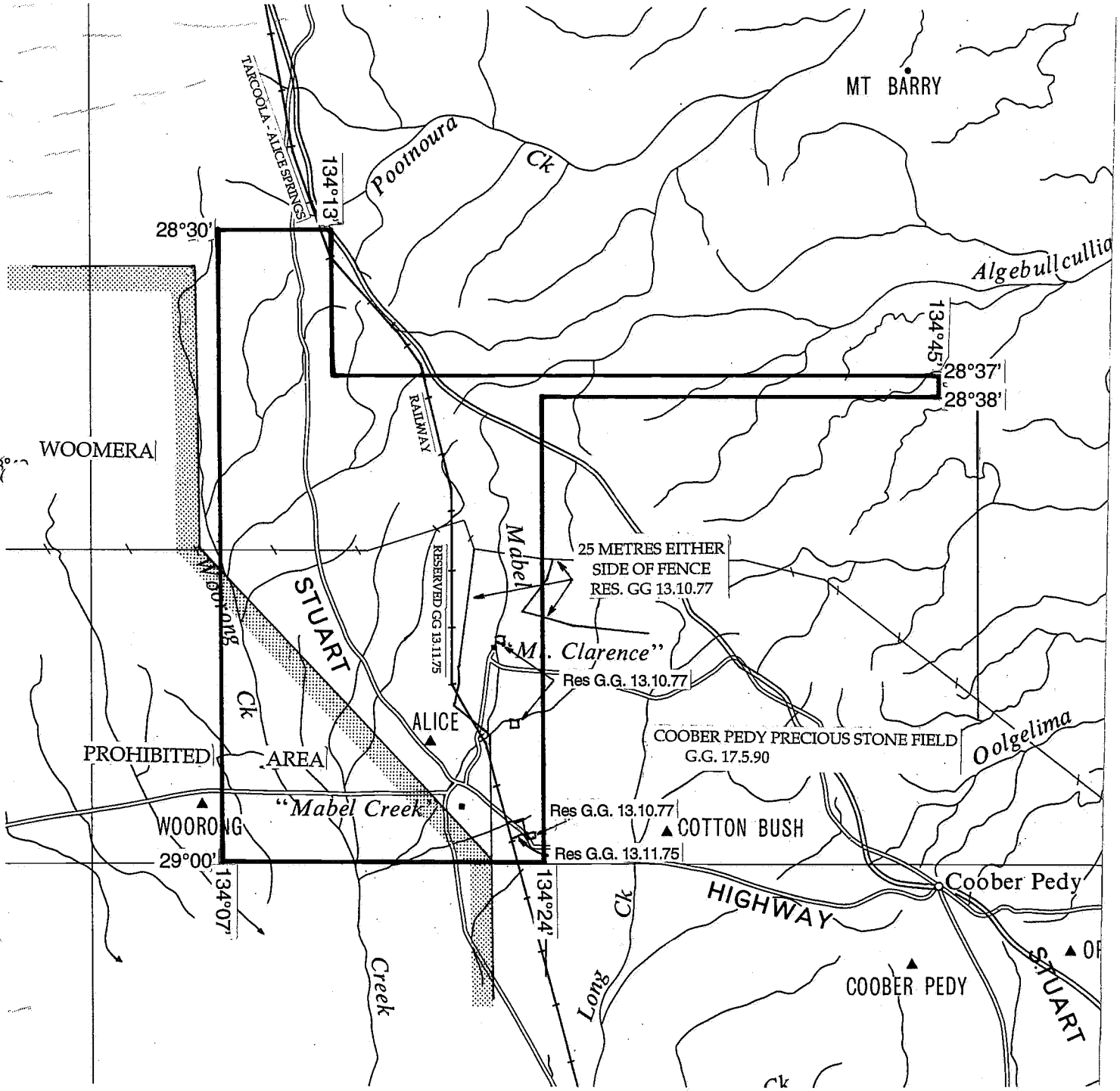
Government of South Australia
Primary Industries and Resources SA

SCHEDULE A



SCALE 1 : 500 000

10 0 10 20 30 40 50

KILOMETRES

APPLICANT : **REDFIRE RESOURCES N.L.**

DM : **477/97** **OPAL ONLY** AREA : **1363** square kilometres (approx.)

1:250 000 PLANS : **MURLOOCOPPIE**

LOCALITY : **MABEL CREEK AREA - Approximately 50 km northwest of Coober Pedy**

DATE GRANTED : **3 December 1999** DATE EXPIRED : **2 December ~~2000~~ 2001 2002 2003** **EL No : 2672**

REDFIRE RESOURCES Ltd.
ACN 009 423 858

MABEL CREEK EL 2672 (OPAL)

ANNUAL REPORT

to 2 December 2000

Prepared for:
Redfire Resources Ltd.
Level 4, 12-14 O'Connell Street
Sydney, NSW, 2000

Prepared by:
C A Simpson (Project Geologist)
January 2001

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1 INTRODUCTION

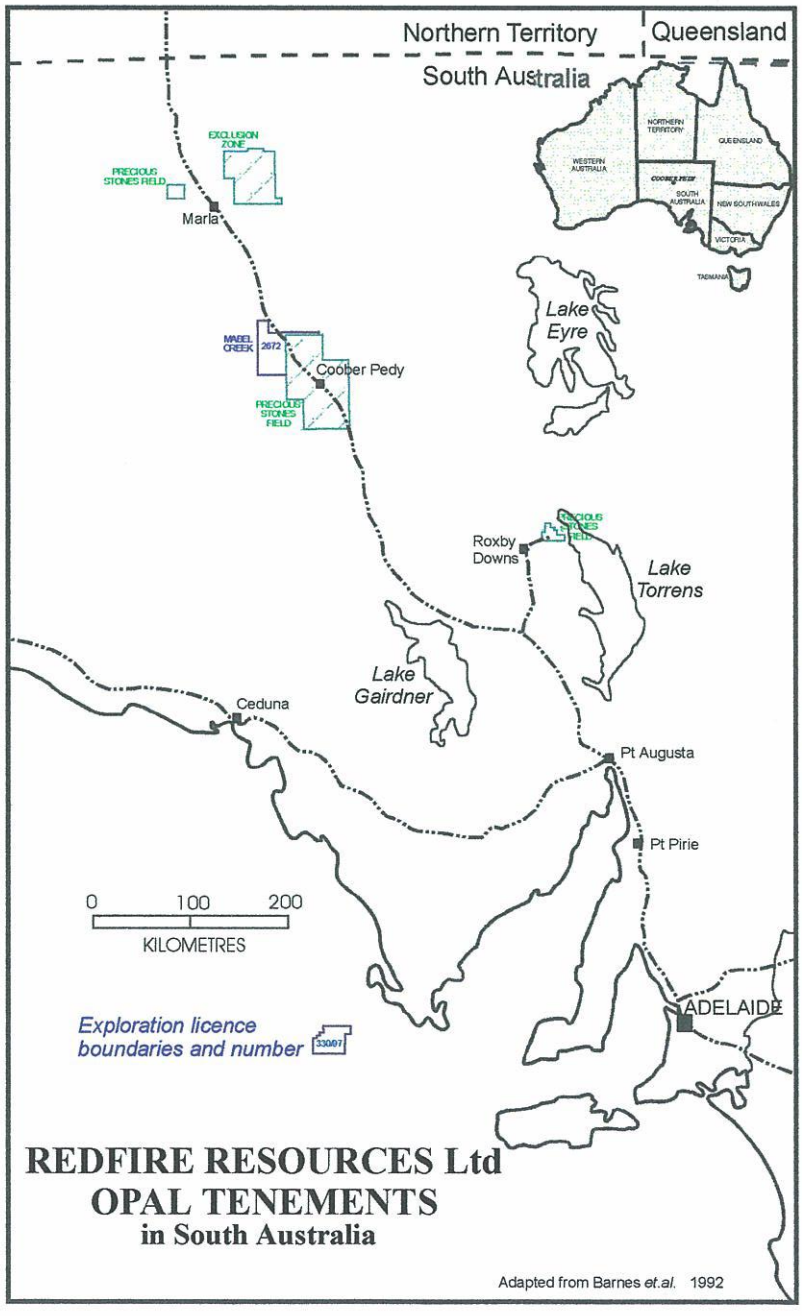
Exploration licence 2672 is part of a project targeted at locating and developing large-scale opal deposits within the Coober Pedy region of South Australia. This is the first annual report for this licence covering work carried out to 2 December 2000.

Project work to date includes compilation of geological and opal occurrence data, aerial photograph geological interpretations, Digital Terrain Modelling, and field reconnaissance of target areas. Native title negotiations have been commenced with public advertising of intention to explore, and initiation of discussion with claimants to reach an agreement in order to use ground disturbance exploration techniques.

2 LOCATION AND ACCESS

The licence is situated in central South Australia, approximately 900 kilometres north-west of Adelaide (see Figure 1). EL 2672 (non-reduced area) is fully contained within the Murlocoppie (SH 53-2) 1:250 000, and within the Mabel Creek (5740), and Algebullcullia (5840) 1:100 000 sheets.

Figure 1.



Exploration licence 2672 is located approximately 55 kilometres north-west of the township of Coober Pedy, and is adjacent to the western margin of the Coober Pedy Precious Stones Field. Access to the project area is via the sealed Stuart Highway that traverses the north-eastern flank of the licence, or the old unsealed Stuart Highway that traverses the eastern portion of the licence. Further access to the remainder of the licence area is via station tracks and fence lines traversing the region.

3 LAND USE AND VEGETATION

The area is situated in an arid zone typical of central Australia. Rainfall is very low, averaging 150 mm per year, with temperatures quite high in the summer months (mean average for January above 35 degrees Celsius). All creeks are ephemeral, and no permanent surface water exists (water holes in major creeks often hold water throughout the year, however can dry out in drought years).

Vegetation is sparse upon the gently undulating gibber covered plains of the Stuart Range, being mostly grasses with few bushes and trees. The edge of the Stuart Range, characterised by the 'breakaway' country, lies within the most eastern portion of the licence. This is marked by an abrupt change in elevation (40 to 50 meters relative) over a short distance as numerous dissecting creeks drain eastwards off the escarpment.

Sheep and Cattle grazing are the main agricultural activities in the region, with the stations of Mt Willoughby, Mabel Creek, Mount Clarence and Giddi Giddinna included within the licence area.

4 TENEMENT

Exploration licence 2672 was granted to Redfire Resources Ltd on the 3 December 1999. This licence was renewed for a further 12 month period over a reduced tenement area (a 45% reduction of the south western portion of the licence was carried out on 1 November 2000, see *Simpson, 2001*).

5 NATIVE TITLE

There is a registered Native Title claim (SC 95/7 – Antakirinja) covering the areas of Exploration licence 2672. Under regulations within the Mining Act (1971), negotiations must be made with identified claimants in order to carry out ground disturbance operations. These Native Title proceedings are in progress, which has included public advertisement of intention to negotiate for right to explore (Part 9B, section 63M) in April 2000.

An agreement has been drafted in order to allow exploration to be carried out on the licences, with amendments being made in line with negotiations with the claimants.

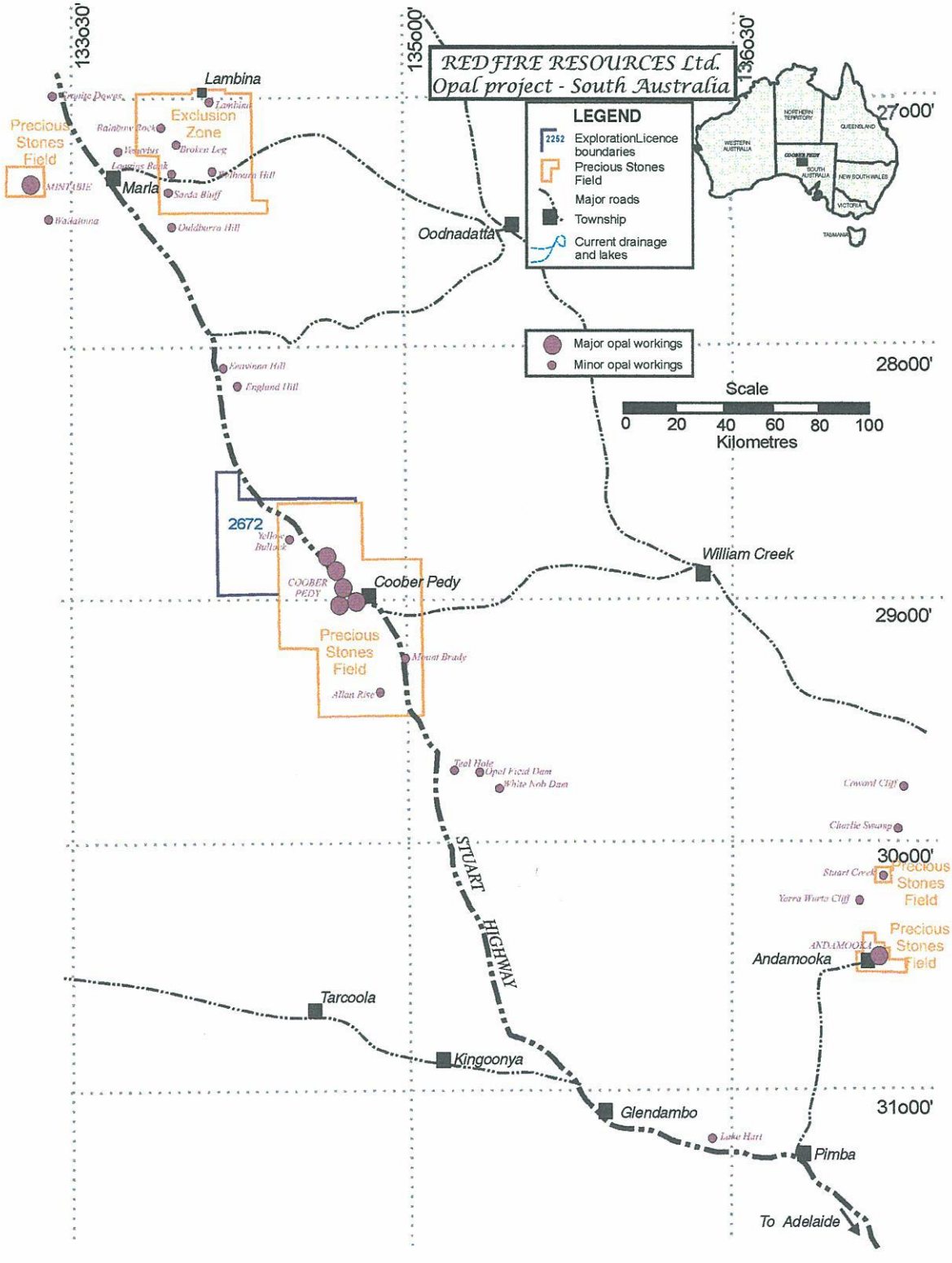
6 REGIONAL AND TENEMENT GEOLOGY

Within the Coober Pedy region, rocks vary in age from Archaean (granitoids and metasediments) at depth to recent alluvium and aeolian sand deposits at the surface. The

lithologies of interest for opal formation are Cretaceous (Bulldog Shale) to Tertiary (Russo Beds) in age, and are outcropping or thinly covered by latter Tertiary and Quaternary sediments along the eastern margin of the Stuart Range.

The Stuart Range (and extensions) trends in a general north-westerly direction extending from near Pt Augusta in the south, to past the Northern Territory border in the north. It encompasses the opal fields of Andamooka, Coober Pedy and Lambina (Seven Water Holes), as well as many smaller workings between these fields (Figure 2). The range is an elevated (40 to 50 metres relative) tableland characterised by an abrupt escarpment to the east (the 'breakaways'), and a gentle dipping slope towards the west. The range's western extent is covered by Quaternary aeolian sands characteristic of central Australia.

Figure 2.



All opal discovered in the Coober Pedy region has occurred within areas of the Stuart Range in a weathered marine shale unit (Bulldog Shale). Characteristically this deeply weathered unit forms bleached, porous, kaolonitic claystone (*miner's term - sandstone*) overlying unweathered darker, denser smectitic claystone (*miner's term - mud*). Precious and potch opal is mostly found as veins infilling cracks and joints and occasionally replacing fossils. These are usually found anywhere in the upper bleached zone, rarely in the lower claystone, and occasionally in the overlying red silts termed the Russo Beds (*miner's term - biscuit band*) as eroded fragments from veins in the lower Bulldog Shale.

Opal is formed as part of the weathering process that occurred within the Bulldog Shale during the late Cretaceous to early Tertiary. Gradual drying of the weathered unit (by evaporation or filtering) produced ground water rich in colloidal silica which was then trapped in open spaces possibly also formed by the weathering process. These trap sites may be for instance clay rich (or less porous) bands (*miner's term - levels*), fractures caused by jointing (*miner's term - slides*), or the replacement of carbonate fossils by silica (*miner's term - shells*). The abundance of silica in the ground water would have been produced by the conversion of smectite clay and feldspar to kaolin, together with the corrosion of quartz grains.

Precious opal is rare in the full sequence due to the unusual conditions required to accumulate the equal sized silica spheres and their packing into a regular array. This is likely to be effected by local conditions such as relative location to fluid movement pathways (*slides*), or characteristics of the surrounding host rocks such as porosity, acidity, and the presence of other minerals such as alunite, all of which may hasten or impede the formation of opal.

In general, all areas of deeply weathered Bulldog Shale are prospective for opal formation. The most prospective areas for economical deposits will lie upon the Stuart Range where overlying Tertiary and Quaternary sediments, which become prevalent toward the west, are thin or absent. The area to the east of the Stuart Range is an erosional plain where the soft weathered Bulldog Shale has been removed leaving low potential for opal deposits.

7 PREVIOUS EXPLORATION AND MINING

Exploration licence 2672 is the first tenement to be granted for opal exploration over this area. No previous records for opal exploration exist for this tenement area.

Previous exploration for other commodities has focussed on base metals and coal within the Coober Pedy region. Relevant information for this project is summarised in Table 1, with drill results given in Appendix I.

Company	Year of drilling	Target Mineralisation	Envelope No.	Summary of operations
BP Minerals	1974	Coal	2454	1 drill hole within the licence area to 163.1 m depth
AFMECO	1981	Base Metals/ Uranium	3838	4 drill holes within the licence areas to depths of 205 m
BHP	1993, 1994	Base Metals	8647	3 drill holes within the licence area to depths of 296 m

8 TARGETS

Photogeological interpretations have identified prospective target zones (Figure 3) that appear to have geological similarities to areas within the Coober Pedy Precious Stones Field. In addition to this, Digital Terrain Modelling (DTM) plans clearly show the higher topographic portions of this licence, and therefore areas most likely to have preserved thicker sequences of Bulldog Shale, to be in the north, and north east of the licence (Figure 4).

Therefore although large portions of this licence are attractive for exploration of 'hidden' opal deposits, the most prospective areas are in the north and north-east of the licence.

9 WORK COMPLETED to 2 December 2000

Work completed within the licence area for the first 12 month period includes:

- Literature reviews.
- Continuing research of information (unpublished) for the region from local opal miners.
- Aerial photograph geological interpretations.
- Digital Terrain Modelling.
- Drill hole research and interpretations.
- Field reconnaissance of licence areas (December 1999 & March 2000).
- Native Title proceedings initiated.

10 RESULTS

Literature reviews and research have not clearly indicated that opal workings exist within the licence area. Ongoing research may reveal that there are very small workings within the licence performed in search of opal. However, as there is little readily available information of opal being mined from this area, production from any potential workings is expected to be negligible.

Photointerpretations of the licence area has depicted geomorphological similarities to opal producing regions within the Coober Pedy Precious Stones Field (Figure 3). Some local zones of surface disturbance (potential opal workings) were also depicted from this interpretation. Field reconnaissance of this area did not locate opal workings or highly prospective areas for opal formation (intensely weathered shale with opal *floaters*). There is moderate potential for opal deposits within the depicted target zones, observed by many localities exhibiting intensely weathered shale typical of opal producing regions within the Coober Pedy opal fields. Any potential opal resources within these zones are 'blind' targets or 'hidden' deposits as they show no outcropping opal mineralisation, which is typical of the majority of located opal-producing sites within the state.

Figure 3

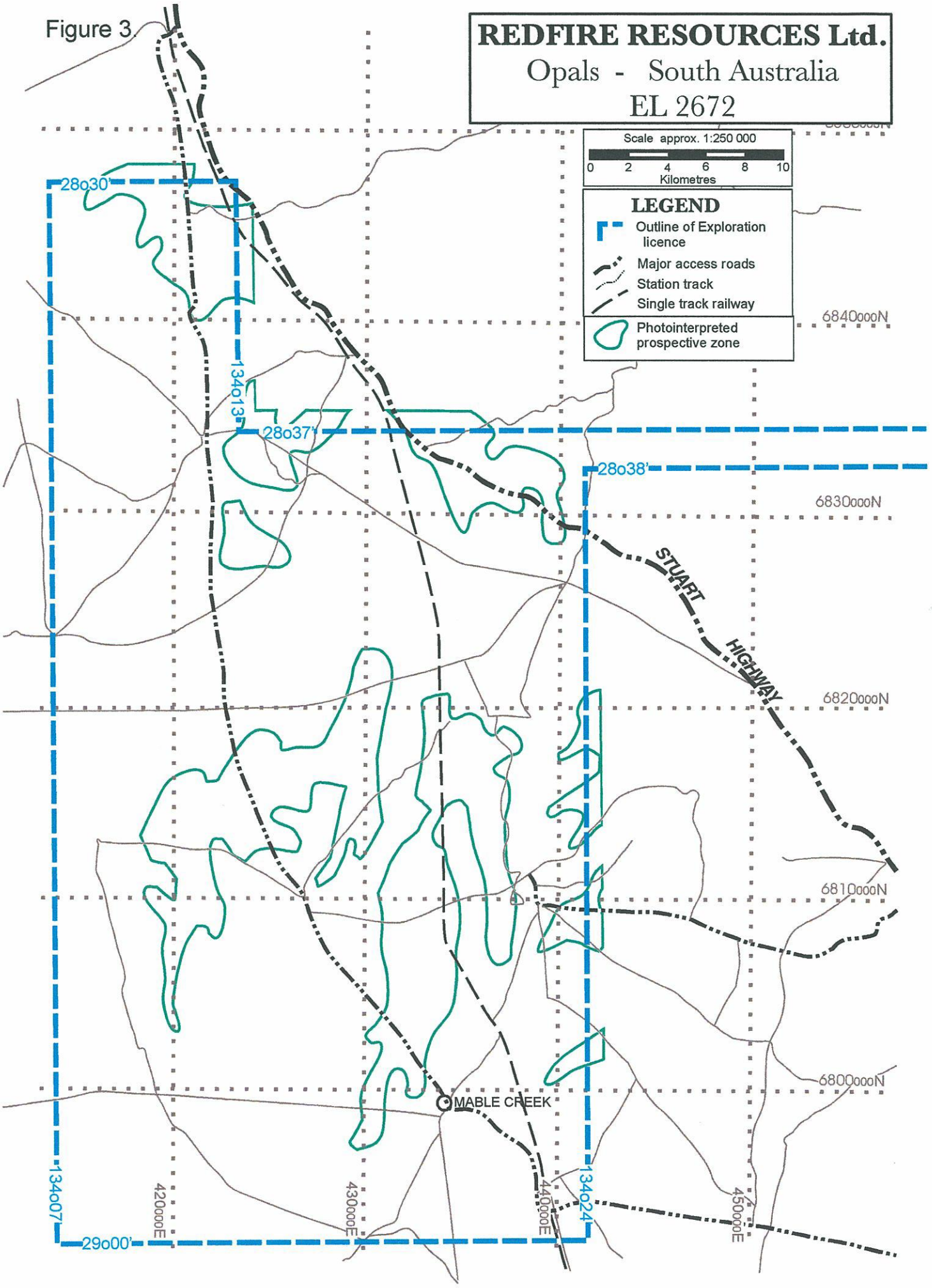
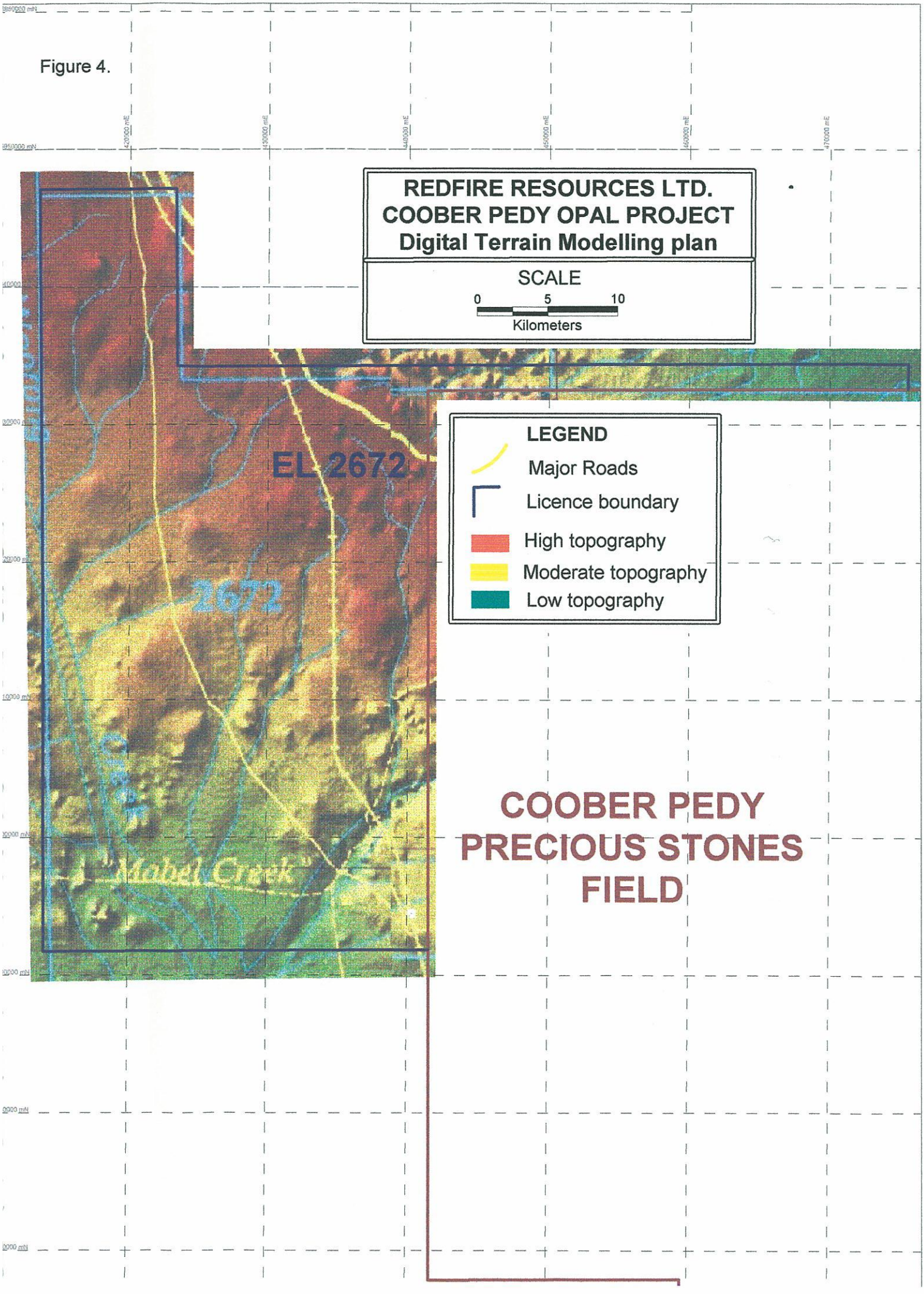

REDFIRE RESOURCES Ltd.
Opals - South Australia
EL 2672
Scale approx. 1:250 000
0 2 4 6 8 10
Kilometres
LEGEND
Outline of Exploration licence
Major access roads
Station track
Single track railway
Photointerpreted prospective zone
28o30'
28o37'
28o38'
134o13'
134o07'
134o24'
29o00'
6840000N
6830000N
6820000N
6810000N
6800000N
420000E
430000E
440000E
450000E
STUART HIGHWAY
MABLE CREEK

Figure 4.


REDFIRE RESOURCES LTD.
COOBER PEDY OPAL PROJECT
Digital Terrain Modelling plan
SCALE
0 5 10
Kilometers
LEGEND
Major Roads
Licence boundary
High topography
Moderate topography
Low topography
EL 2672
2672
"Mabel Creek"
COOBER PEDY
PRECIOUS STONES
FIELD

Digital Terrain Modelling (DTM) of the project area indicates a higher topographic region (higher portions of the Stuart Range) in the north and north-east of the licence (Figure 4). This region has a higher chance of preserving opal deposits in thick intervals of intensely weathered shale. This potential is also exhibited by the increased presence of massive to bouldery silcrete above the shale, which is also a common occurrence within opal producing regions of the Coober Pedy area.

Drill hole research and modelling of Bulldog Shale intersections has shown that the Bulldog Shale is present throughout the licence area, and thickens to the north and north-east (Appendix I).

Field reconnaissance was carried out in order to check target zones generated by the remote geological interpretations. This was carried out by traversing the licence area utilising the existing public roads, and stopping at sites of good geological exposure to observe opal potential. No samples were collected during this survey.

An agreement between Redfire Resources Ltd and the Antakirinja Native Title claimants is currently being prepared and negotiated in order to carry out ground disturbance exploration operations.

11 CONCLUSIONS AND RECOMMENDATIONS

Photointerpretations, Digital Terrain Modelling, drill hole research and field reconnaissance of the licence areas has identified similar geological relationships of depicted target zones to opal productive areas within the Coober Pedy Precious Stones Field. No sites of outcropping opal mineralisation have been located within the licence area to date.

Native Title proceedings have been initiated in order for ground disturbance exploration work to be carried out. Upon completion of these proceedings, an exploratory drilling programme is recommended for the moderate to high priority zones depicted within the licence.

There is high potential for depicted target zones within the licence to host large-scale opal deposits. Areas interpreted to have low potential have been relinquished from the licence.

12 BIBLIOGRAPHY

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Benbow M.C. 1982; Coober Pedy, South Australia. *Explanatory notes, 1:250 000 geological series.*

Hiern M.N. 1976; Precious opal - South Australia, *In: Knight C.L. (Ed.) Economic Geology of Australia and Papua New Guinea, 4, Industrial minerals and rocks. Australian Institute of Mining and Metallurgy, Monograph series, 8: 322-323*

Martin N.H. 1998; Ant Hill opal project, South Australia. *First annual report for EL's 2252 & 2266.*

Robertson R.S. & Scott D.C. 1990; Geology of the Coober Pedy precious stones field, *Report of investigations 56, Geological survey of South Australia.*

Simpson C.A. 1999; Ant Hill, EL's 2252 & 2266 (opal), *Annual report to 13 February 1999.*

Simpson C.A. 2000; Ant Hill, EL's 2252 & 2266 (opal), *Annual report to 13 February 2000.*

Simpson C.A. 2001; Mabel Creek EL 2672 (opal), *Partial relinquishment report to 1 November 2000.*

APPENDIX I

Results of drill hole research

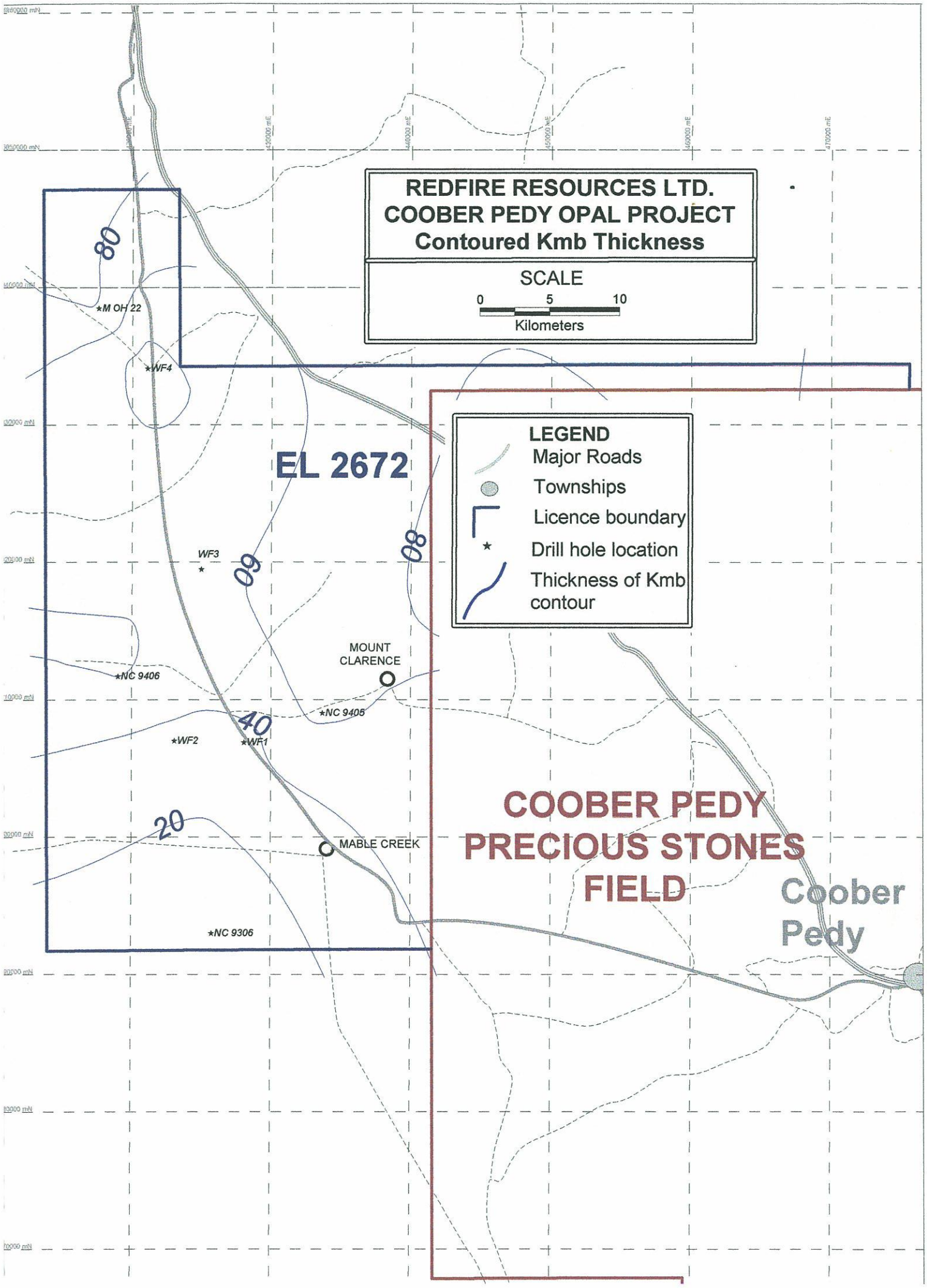
Appendix I Results of drill hole research

Information of previous drill holes performed within the licence area was carried out by researching open file reports available through the Primary Industries and Resources South Australia. This has resulted in the location of only 8 company drill holes located within the licence area (excluding water bore data). The source of this data is located in the body of this report, with results of drilling tabulated below.

Using the available drill data in conjunction with data from the surrounding area, modelling of the thickness of the Bulldog Shale was carried out. The results of these interpretations indicate that the Bulldog Shale (target lithology for opal deposit exploration) is present throughout the licence area and thickens to the north and north-east within the licence (towards the Stuart Range escarpment).

Hole No.	AMG (E)	AMG (N)	Collar RL (m)	Azimuth	Dip	Total Depth (m)	Bulldog Shale	
							From (m)	To (m)
MOH 22	417557	6838487	280.0	0	90	163.1	0.0	62.5
WF 1	428100	6806900	200.0	0	90	167.5	7.0	41.0
WF 2	423100	6807000	200.0	0	90	189.0	8.0	43.0
WF 3	425000	6819500	220.0	0	90	205.0	0.0	55.0
WF 4	421100	6834100	260.0	0	90	199.0	12.0	43.0
NC 9306	425800	6793000	200.0	0	90	296.0	None	
NC 9405	433693	6809020	210.0	0	90	273.0	0.0	68.0
NC 9406	419000	6811720	210.0	0	90	273.0	0.0	64.0

AMG coordinates referenced to AGD66, which is within a 2 metre accuracy of AGD84. These locations have been copied and/or converted from lat/long coordinates where this information was available in the researched reports. Some holes were plotted from available plans onto gridded plans in order to get coordinate data, and are therefore less accurate.


REDFIRE RESOURCES LTD.
COOBER PEDY OPAL PROJECT
Contoured Kmb Thickness
SCALE
0 5 10
Kilometers
LEGEND
Major Roads
Townships
Licence boundary
Drill hole location
Thickness of Kmb contour
EL 2672
80
09
08
40
20
*M OH 22
*WF4
WF3
*WF2
*WF1
*NC 9406
*NC 9405
*NC 9306
MOUNT CLARENCE
MABLE CREEK
COOBER PEDY PRECIOUS STONES FIELD
Coober Pedy

CONSOLIDATED BROKEN HILL Ltd.
ACN 009 423 858

MABEL CREEK EL 2672 (OPAL)

ANNUAL REPORT
to 2 December 2001

Prepared for:
Consolidated Broken Hill Ltd.
Level 4, 12-14 O'Connell Street
Sydney, NSW, 2000

Prepared by:
C A Simpson (Consulting Geologist)
January 2002

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SUBMISSION OF DIGITAL DATA

This report has been submitted digitally in the form of a .pdf (Adobe Portable Document Format) saved onto a labelled 1.44 Mb floppy diskette.

Label: Consolidated Broken Hill Ltd.
EL 2672 Annual report 2001
Digital submission of report

File name: EL2672_200201_01_Annual report

File size: approximately 530 Kilobytes

File Type: PDF (Adobe Portable Document Format)

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i SUMMARY OF ACTIVITIES

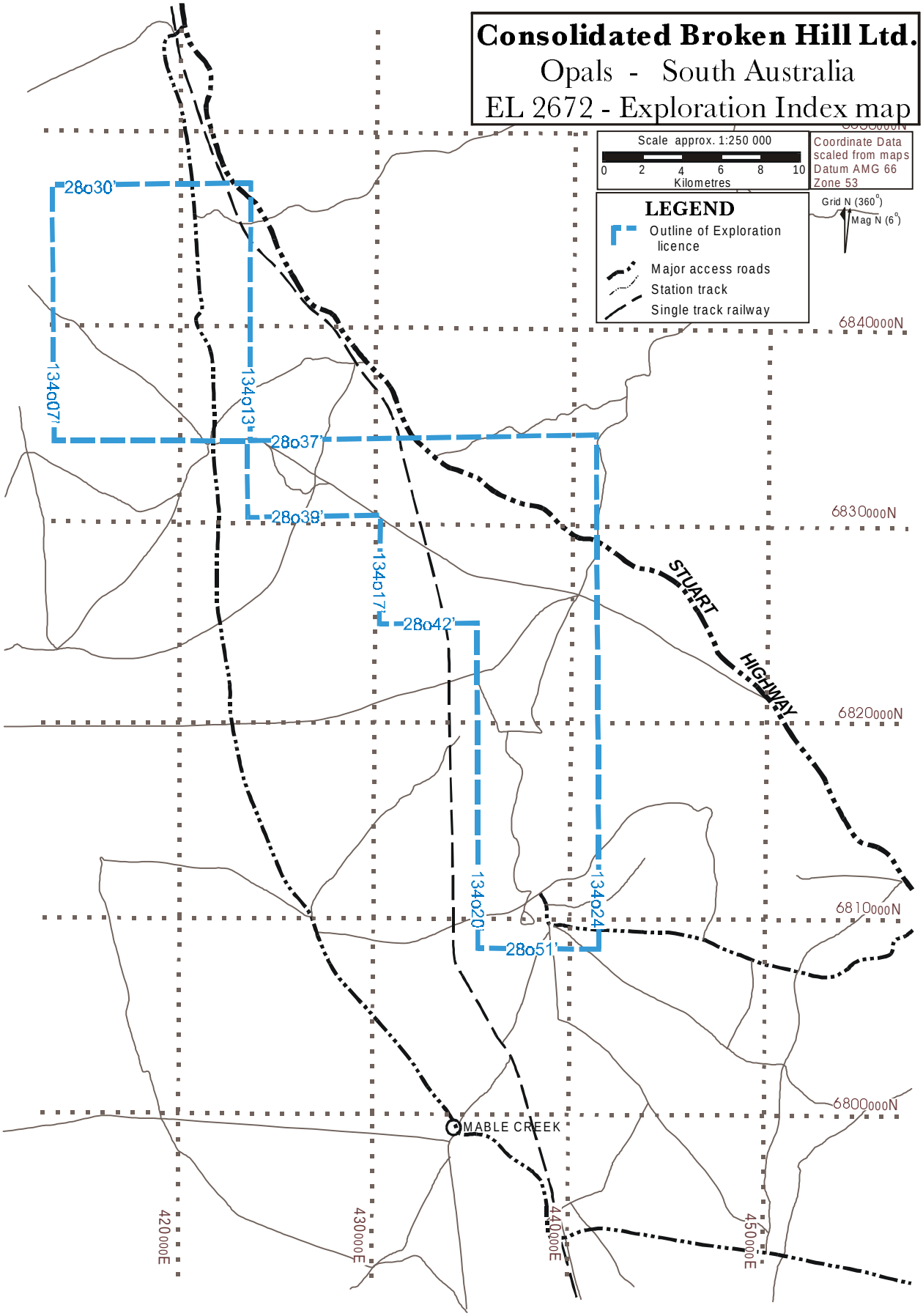
The Mabel Creek project area is situated north-west of the township of Coober Pedy in the state of South Australia. Exploration activities are targeted at locating and developing large-scale opal deposits.

Activities carried out within the licence for the last 12 month period (3 December 2000 to 2 December 2001) include continued interpretation of all collected data, together with completion of a Native Title exploration agreement, and the giving of renewed Notice of entries to pastoralists. All of these activities were carried out upon the whole of the licence area (see Exploration Index Map).

ii KEYWORDS

Bulldog Shale, Cretaceous Aged, Digital Terrain Modelling, Drill hole research, Eromanga Basin, Field reconnaissance, Murloocoppie (SH 53-2) & Mabel Creek (5740) mapsheets, Opals, Photointerpretations, Remote sensing.

iii EXPLORATION INDEX MAP



1 INTRODUCTION, HISTORY AND EXPLORATION RATIONALE

Exploration licence 2672 is part of a project (including other exploration licences 2252, 2266 & 2787) targeted at locating and developing large-scale opal deposits within the Coober Pedy region of South Australia. This is the second annual report for this licence covering work carried out to 2 December 2001.

Project work to date includes compilation of geological and opal occurrence data, aerial photograph geological interpretations, Digital Terrain Modelling and field reconnaissance of target areas. Native Title negotiations have been concluded with an exploration agreement emplaced which enables ground disturbance exploration operations over heritage cleared areas. No heritage area clearances have been undertaken within the licence as no high priority target areas have been defined to date.

Exploration licence 2672 was granted to Redfire Resources Ltd on the 3 December 1999, and has been transferred to Consolidated Broken Hill Ltd (same company) due to a name change of the former company. This licence has been renewed for a further 12 month period over 100% of its previously reduced tenement area (see *Simpson, 2002*). Current tenement area is 363 square kilometres (a 51% reduction in area occurred on 2 November 2001). This tenement is one of the first exploration licences granted for regional opal exploration within the state of South Australia under amendments to the Mining and Opal Mining Acts (enacted 1997).

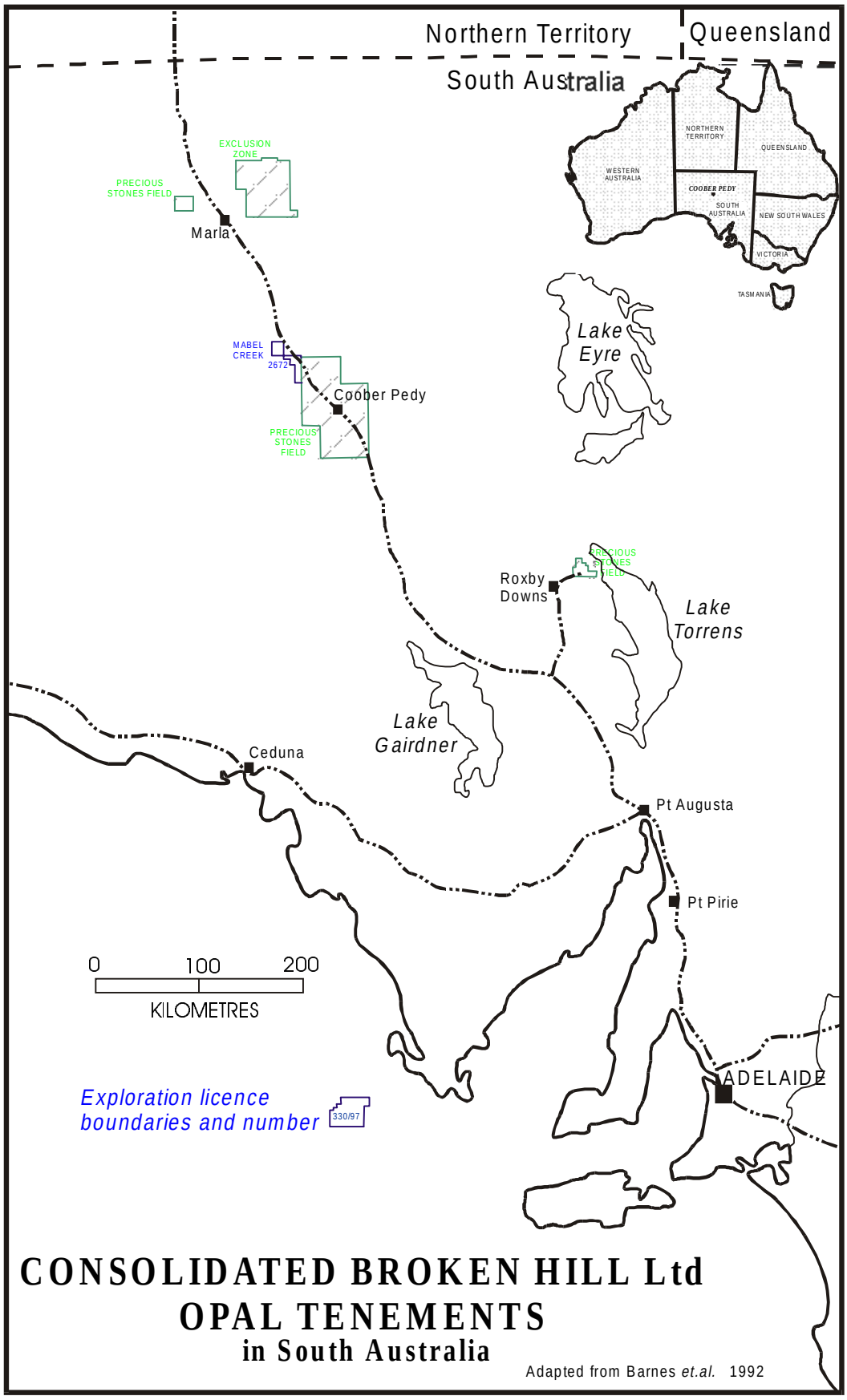
The project area is situated in central South Australia, approximately 900 kilometres north-west of Adelaide (see Figure 1). Exploration Licence 2672 is fully contained within the Murloocoppie (SH 53-2) 1:250 000 and the Mabel Creek (5740) 1:100 000 sheets. The licence is centred approximately 60 kilometres north-west of the township of Coober Pedy. Access to the project area is via the sealed Stuart Highway and/or the old unsealed Stuart Highway that both traverse the licence area. Further access to the remainder of the licence area is via station tracks and fence lines traversing the region.

The area is situated in an arid zone typical of central Australia. Rainfall is very low, averaging 150 mm per year, with temperatures quite high in the summer months (mean average for January above 35 degrees Celsius). All creeks are ephemeral, and no permanent surface water exists (water holes in major creeks often hold water throughout the year, however can dry out in drought years). Vegetation is sparse upon the gently undulating gibber covered plains of the Stuart Range, being mostly grasses with few bushes and trees. The edge of the Stuart Range, characterised by the 'breakaway' country, lies near the eastern portion of the licence. This is marked by an abrupt change in elevation (20 to 40 meters relative) over a short distance as numerous dissecting creeks drain eastwards off the escarpment. Cattle and sheep grazing are the main agricultural activities in the region, with the pastoral leases of Mt Willoughby, Mt Clarence and Mabel Creek within the licence area. These pastoralists were given renewed Notice of Entry forms within this reporting period, outlining details of our proposed exploration operations.

Exploration licence 2672 is the first tenement to be granted for opal exploration over this area and as such there are no records for opal prospecting or mining. Previous exploration for other commodities has focussed on base metals and coal within the

Coober Pedy region, with few company drill holes located within the licence boundaries.

Figure 1.



2 REGIONAL AND TENEMENT GEOLOGY

Within the Coober Pedy region, rocks vary in age from Archaean (granitoids and metasediments) at depth to recent alluvium and aeolian sand deposits at the surface. The lithologies of interest for opal formation are Cretaceous (Bulldog Shale) to Tertiary (Russo Beds) in age, and are outcropping or covered by thin Tertiary and Quaternary sediments along the eastern margin of the Stuart Range (*Pitt & Barnes, 1976*).

All opal discovered in the Coober Pedy region has occurred within areas of the Stuart Range in a weathered marine shale unit (Bulldog Shale). Characteristically this deeply weathered unit forms bleached, porous, kaolonitic claystone (*miner's term - sandstone*) overlying unweathered darker, denser smectitic claystone (*miner's term - mud*). Precious and potch opal is mostly found as veins infilling cracks and joints and occasionally replacing fossils. These are usually found anywhere in the upper bleached zone, rarely in the lower claystone, and occasionally in the overlying red silts termed the Russo Beds (*miner's term - biscuit band*) as eroded fragments from veins in the lower Bulldog Shale.

Opal is formed as part of the weathering process that occurred within the Bulldog Shale during the late Cretaceous to early Tertiary. Gradual drying of the weathered unit (by evaporation or filtering) produced ground water rich in colloidal silica which was then trapped in open spaces possibly also formed by the weathering process. These trap sites may be for instance clay rich (or less porous) bands (*miner's term - levels*), fractures caused by jointing (*miner's term - slides*), or the replacement of carbonate fossils by silica (*miner's term - shells*). The abundance of silica in the ground water was produced by the conversion of smectite clay and feldspar to kaolin, together with the corrosion of quartz grains (*Barnes et. al., 1992*).

Precious opal is rare in the full sequence due to the unusual conditions required to accumulate the equal sized silica spheres and their packing into a regular array. This is likely to be effected by local conditions such as relative location to fluid movement pathways (*slides*), or characteristics of the surrounding host rocks such as porosity, acidity, and the presence of other minerals such as alunite, all of which may hasten or impede the formation of opal.

In general, all areas of deeply weathered Bulldog Shale are prospective for opal formation. The most prospective areas for economical deposits will lie upon the Stuart Range where overlying Tertiary and Quaternary sediments, which become prevalent toward the west, are thin or absent. The area to the east of the Stuart Range is an erosional plain where the soft weathered Bulldog Shale has been removed leaving low potential for opal deposits.

Within Exploration Licence 2672, extensive outcrops of Bulldog Shale have been mapped (*see Pitt and Barnes, 1976*), and is interpreted to exist below shallow cover throughout the licence area. Outcrops of intensely weathered shale have been observed at several localities within the licence area, with brief descriptions given in Appendix I.

3 GEOPHYSICS

No geophysical surveys relevant to opal exploration have been carried out within the project.

4 REMOTE SENSING DATA

Photogeological interpretations have identified prospective target zones (Figure 2) that appear to have geological similarities to areas within the Coober Pedy Precious Stones Field. In addition to this, Digital Terrain Modelling (DTM) plans clearly show the higher topographic portions of this licence, and therefore areas most likely to have preserved thicker sequences of Bulldog Shale, to be extensive throughout the licence area (Figure 3).

Digital Terrain Modelling plans were purchased in a processed state from PIRSA mapping branch using AUSLIG data. Details of processing parameters are given in Appendix II.

5 SURFACE GEOCHEMISTRY

No geochemical surveys relevant to opal exploration have been carried out within the project.

6 DRILLING

No drilling has been carried out within the project area by Consolidated Broken Hill Ltd to date. Research has indicated that only 3 reported company drill holes exist within the retained licence area as indicated below (Table 1). Complete details of this information was contained in Appendix I of the previous annual report.

Table 1.

Hole number	Company	Year of drilling	Target commodity	Envelope reference
MOH 22	BHP	1974	Coal	2454
WF 4	AFMECO	1981	Base metals	3838
NC 9405	BHP	1994	Base metals	8647

7 OTHER STUDIES OR WORK

No other studies or work relevant to opal exploration have been undertaken within the project.

Figure 2.

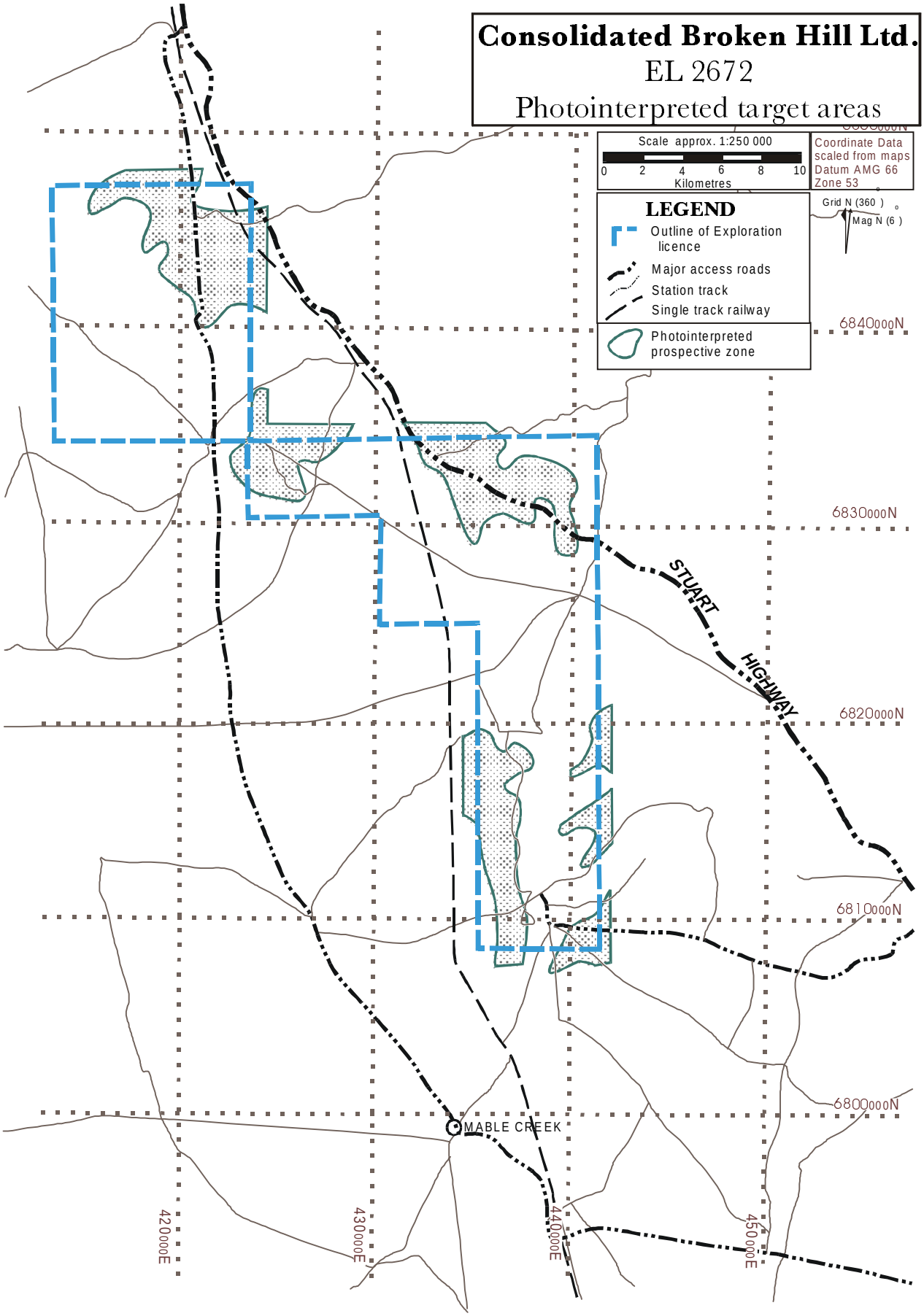
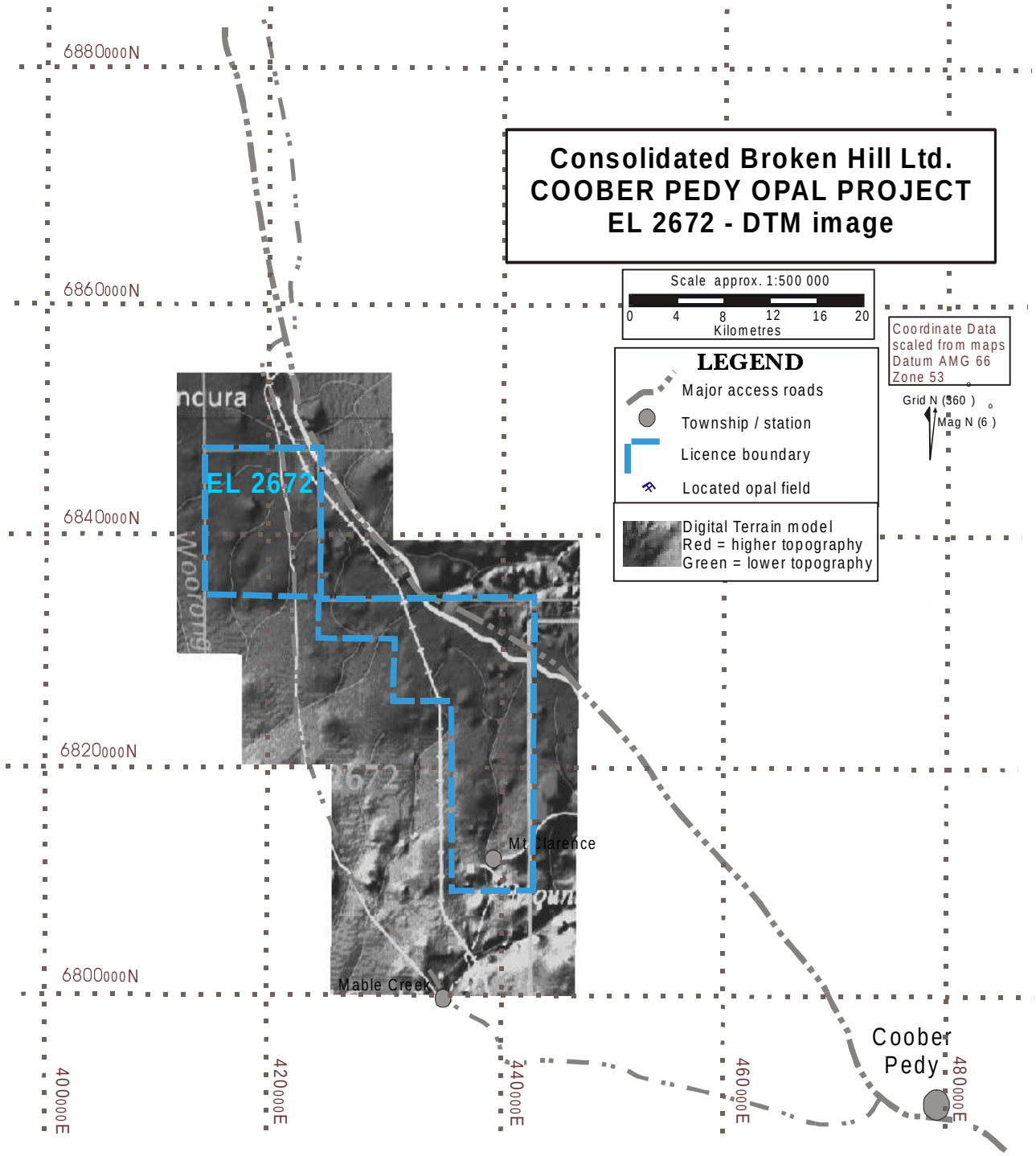

Consolidated Broken Hill Ltd.
EL 2672
Photointerpreted target areas
Scale approx. 1:250 000
0 2 4 6 8 10
Kilometres
Coordinate Data scaled from maps
Datum AMG 66
Zone 53
Grid N (360)
Mag N (6)
LEGEND
Outline of Exploration licence
Major access roads
Station track
Single track railway
Photointerpreted prospective zone
6840000N
6830000N
6820000N
6810000N
6800000N
STUART HIGHWAY
MABLE CREEK
420000E
430000E
440000E
450000E

Figure 3.


Consolidated Broken Hill Ltd.
COOBER PEDY OPAL PROJECT
EL 2672 - DTM image
Scale approx. 1:500 000
0 4 8 12 16 20
Kilometres
Coordinate Data scaled from maps Datum AMG 66 Zone 53
Grid N (360)
Mag N (6)
LEGEND
Major access roads
Township / station
Licence boundary
Located opal field
Digital Terrain model
Red = higher topography
Green = lower topography
EL 2672
6880000N
6860000N
6840000N
6820000N
6800000N
400000E
420000E
440000E
460000E
480000E
Mt Clarence
Mable Creek
Coober Pedy

8 ENVIRONMENT

No ground disturbance exploratory operations have been undertaken within the project, and therefore no rehabilitation is required to be carried out.

9 ORE RESERVES AND RESOURCES

No opal ore reserves can be measured from the little on-ground exploratory work carried out.

10 EXPENDITURE

Total expenditure for the licence over the last 12 months has been $ 16,866 with a detailed expenditure statement given in Table 1. Cumulative expenditure for the licence at the end of this reporting period was $ 30,001.

Table 2.

Expenditure statement for EL 2672 (opal)		
Communications, office services, postage	$	192.62
Data acquisition	$	0.00
Field living	$	231.62
Field travel	$	925.71
Geological consultants	$	6,439.00
Native Title – consultants	$	3,616.00
Native Title – expenditures	$	2,125.00
Overheads	$	0.00
Tenement – rents, sundry fees	$	1,744.5
Personnel – wages geological	$	58.00
Administration and management	$	1,533.25
Total Expenditure	**$**	**16,866**

11 CONCLUSIONS

Photointerpretations, Digital Terrain Modelling, drill hole research and field reconnaissance of the licence area has identified similar geological relationships of

depicted target zones to opal productive areas within the Coober Pedy Precious Stones Field.

Literature reviews, research and field activities have indicated that no opal workings exist within the licence area. Geological interpretations based on remote sensing, backed up by on-ground field observations predict that 'hidden' opal deposits may exist within the licence areas. These potential deposits have not been located by previous opal prospectors, as recent erosion has not dissected deeply to opalised horizons (within the target areas), and therefore opal '*floaters*' have not formed and been found. The location of these '*floaters*' is the primary source for the initiation of virtually all the opal fields in the state of South Australia.

Native Title proceedings have been completed in order for ground disturbance exploration work to be carried out over heritage cleared areas. As no high priority target zones exist within EL 2672, recent Aboriginal Heritage clearance surveys that were undertaken upon the adjacent EL 2252 did not extend to this licence.

The prospectivity of the licence area to host large-scale 'hidden' opal deposits remains high.

12 REFERENCES

Barnes L.C., Townsend I.J., Robertson R.S. & Scott D.C. 1992; Opal: South Australia's gemstone, *South Australia department of Mines and Energy handbook no 5. (revised edition).*

Benbow M.C. 1982; Coober Pedy, South Australia. *Explanatory notes, 1:250 000 geological series.*

Hiern M.N. 1976*;* Precious opal - South Australia, *In: Knight C.L. (Ed.) Economic Geology of Australia and Papua New Guinea, 4, Industrial minerals and rocks. Australian Institute of Mining and Metallurgy, Monograph series, 8: 322-323*

Pitt G.M. & Barnes L.C. 1976; Murloocoppie geological mapping sheet SH 53-2. *South Australian Geological atlas series.*

Robertson R.S. & Scott D.C. 1990; Geology of the Coober Pedy precious stones field*, Report of investigations 56, Geological survey of South Australia.*

Simpson C.A. 2001(a); Mabel Creek, EL 2672 (opal), *Annual report to 2 December 2000.*

Simpson C.A. 2001(b); Mabel Creek, EL 2672 (opal), *Partial relinquishment report to 2 December 2000.*

Simpson C.A. 2002; EL's 2252, 2266, 2672 & 2787 (opal), *Partial relinquishment report to 2 November 2001.*

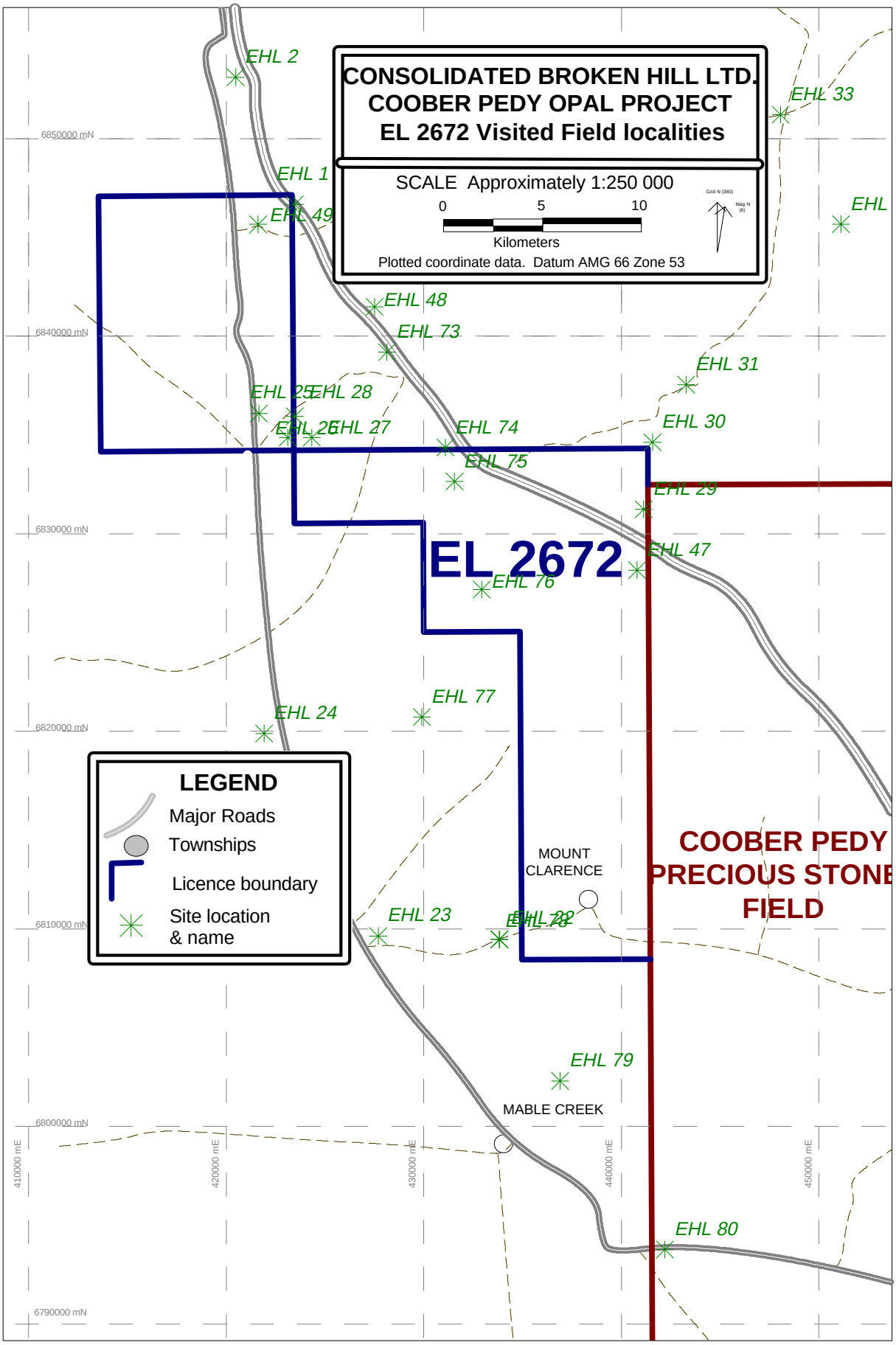
APPENDIX I

Results of field reconnaissance

Appendix I Results of field reconnaissance

Field reconnaissance of the licence area has been carried out over the last few years via several short field excursions. Many of the target zones generated from remote geological interpretations have been briefly traversed, with observations noted and samples taken at indicative outcrops. Few samples have been collected away from the immediate areas surrounding existing opal workings, and no samples have been submitted for analysis. Brief field descriptions of sites visited within the licence area are given below and indicated on the following plan.

All sites were located in close proximity to existing access tracks, with locations positioned using a hand-held Garmin 12XL GPS. All coordinates are referenced to the Australian Metric Grid, Datum AGD 66.


CONSOLIDATED BROKEN HILL LTD.
COOBER PEDY OPAL PROJECT
EL 2672 Visited Field localities
SCALE Approximately 1:250 000
0 5 10
Kilometers
Plotted coordinate data. Datum AMG 66 Zone 53
EHL 2
EHL 1
EHL 49
EHL 48
EHL 73
EHL 33
EHL 31
EHL 30
EHL 25
EHL 28
EHL 26
EHL 27
EHL 74
EHL 75
EHL 29
EHL 47
EHL 76
EL 2672
EHL 77
EHL 24
EHL 23
EHL 22
EHL 79
EHL 80
MOUNT CLARENCE
MABLE CREEK
COOBER PEDY PRECIOUS STONE FIELD
LEGEND
Major Roads
Townships
Licence boundary
Site location & name
6850000 mN
6840000 mN
6830000 mN
6820000 mN
6810000 mN
6800000 mN
6790000 mN
410000 mE
420000 mE
430000 mE
440000 mE
450000 mE

CONSOLIDATED BROKEN HILL LTD

FIELD DESCRIPTIONS OF SITES VISITED IN SURVEYS

Location	Date	Location (GDA 66)		Site	Lithological	Opal	Samples	Photographs	Priority of
Name	Visited	easting	northing	Description	Description	Occurrences	Taken	Taken	Area
EHL 1	8/05/98	423485	6846670	Murloocoppie area, creek with bridge crossing. Rabbit warrens and possible only hand holes in creek	Outcropping white porous CS, quite hard, low kaolin content. Upper 2 m silicified + broken (hard white) capped by thin (<1m) calcareous silts and 1-2m of grey silcrete	None observed	None	None	Low
EHL 22	7/12/99	433860	6809475	Railway crossing W of Mt Clarence HS	Low flat high topography not dissecting to outcrop of CS. Calcrete + gibber at surface	None observed	None	None	Low
EHL 23	7/12/99	427690	6809640	Residual hill towards old Stuart Highway	Outcropping hard white siliceous fgr CS capped by thick grey silcrete and minor red silcrete. CS softer and more porous at base of hill	minor 'poor mans potch' as float in certain portions of hill	Sample poor to OK CS + poor mans potch	None	Low - Moderate
EHL 24	7/12/99	421925	6819885	Camel Bore apparent diggings. Backfilled road quarry	Hard fgr mottled yellow to purple CS at near surface. Low residual hills show only very minor silcrete capping	None observed	None	None	Very low
EHL 25	7/12/99	421650	6836090	Russel Bore area, low escarpment	Gibber plains showing silcrete scree and some hard fgr CS scree. Surrounding hills show 'breakaways' of possible weathered CS	None observed	None	None	Very Low
EHL 26	7/12/99	423134	6834869	Russel Bore area, outcropping CS	Outcrop of poor hard white to purple fgr CS, minor grey silcrete float	None observed	None	None	Very Low
EHL 27	7/12/99	424330	6834870	Rabbit warrens atop small escarpment	Hard white altered CS capped by calcrete + grey and red conglomeritic silcrete float	None observed	None	None	Low
EHL 28	7/12/99	423475	6835940	Breakaways of CS with rabbit warrens exposing CS	More weathered, softer and kaolonitic CS kicked out of rabbit warrens. Softer CS to base of escarpment. Hills capped by grey + red SI	None observed	None	None	Low
EHL 29	8/12/99	441125	6831250	Upper Mosquito creek, low breakaways	Outcropping hard fgr white to mottled purple CS, softer and more kaolonitic to base. Capping of 1-2m grey silcrete up slope	None observed	None	None	Low
EHL 30	8/12/99	441570	6834620	Near Mosquito Creek, taller breakaways	Outcropping hard fgr siliceous CS, mottled clastic Fe-stained textures to CS (akin to near Copper Hills HS). Calcareous + ferruginous capping, very little developed silcrete.	None observed	Small sample taken of Fe-stained CS	None	Low
EHL 31	8/12/99	443290	6837540	Mosquito Creek, tall breakaways around creek (deep incision)	Outcropping poor hard white to purple fgr CS, some softer kaolonitic patches. Silcrete capping larger mesas in area.	None observed	None	None	Low
EHL 47	9/12/99	440805	6828150	Broken Bit Bore Dam, surrounded by low breakaways off from regional tableland	Grey bouldery silcrete capping above hard white CS and soft kaolonitic pink mgr CS (almost chippy) exposed from push of recently excavated dam	None observed	None	None	Moderate
EHL 48	5/03/00	427520	6841475	Near Grouse Swamp Bore, shallowly dissected tableland	Outcrop of hard fgr white to purple mottled CS with grey silcrete scree overlying	None observed	None	None	Low - Moderate
EHL 49	5/03/00	421620	6845665	Murloocoppie rockholes, small chain of ponds in shallow creek	Outcropping hard fgr mottled purple to white CS ('blueground' at surface), upslope very little silcrete gravel scree overlying hard fgr CS	None observed	None	None	Very Low

EHL 73	8/03/00	428140	6839210	Railway line, good lookout to potential of this region	Observe from a distance breakaways of white CS capped by siliceous material	None observed	None	None	Low
EHL 74	8/03/00	431100	6834365	Railway crossing, minor shallow pit	Exposure of well developed platy calcrete + red silts >3m thick (Russo Beds), minor grey silcrete boulders. No exposed CS	None observed	None	None	Low
EHL 75	8/03/00	431565	6832645	Towards railway tower, low breakaways off from tableland, lower topography to SW	Outcrop of hard white fgr CS + grey silcrete scree. Minor hard to chippy CS exposed in warrens	None observed	None	None	Moderate - Low
EHL 76	8/03/00	432935	6827190	Railway cutting in higher topography	Exposure of hard fgr white CS with purple Fe-stained patches & minor grey silcrete boulders as capping. Platy calcrete developed in Tertiary channel at N end of cutting	None observed	None	None	Low
EHL 77	8/03/00	429890	6820730	Dog Fence, rabbit warrens in low undulating flat topography	Warrens expose very hard fgr white porcelanite CS, minor mottled purple stained textures ('blueground')	None observed	None	None	Very Low
EHL 78	8/03/00	433825	6809465	Railway crossing, higher topography	Very little exposure of CS, mostly hard fgr CS scree with minor grey silcrete. Higher topography - more potential?	None observed	None	None	Low
EHL 79	8/03/00	436910	6802305	Mabel Creek railway cutting, higher topographic ridge trending ENE - WSW. Cutting to 2m deep	Cut exposes reasonable well developed platy calcrete in red silts supporting SR to RR grey silcrete pebbled to boulders. Some weathered CS clasts at depth, No well developed silcrete capping	None observed	None	None	Low

APPENDIX II

Digital Terrain Modelling methodology

Appendix II Digital Terrain Modelling methodology

Digital Terrain Modelling (or DTM) is a pictorial presentation of the change in surface topography for a selected region. This information is used to more easily recognise higher topographic regions, which are areas most likely to have preserved thicker sequences of weathered Bulldog Shale. This weathered unit is the target lithology for opal exploration and is formed by deep weathering events occurring since the late Cretaceous. Field reconnaissance of these interpreted areas has confirmed that these depicted zones contain more intensely weathered claystone than surrounding areas. Abundant silcrete has also been mapped in the near surface environment throughout these topographically higher zones. The presence of this massive to bouldery silcrete has acted as a resistance to erosion of the underlying softer weathered shale units.

DTM plans were compiled by the PIRSA mapping branch from the readily available AUSLIG topographic data. This data is comprised of the available spot height and 50 metre contour data generated from compilation of the 1:250 000 topographical sheets for the region. A pixel size of 220 metres was used in generating the majority of the DTM images. Although this data is not as accurate as other methods available (ie. recent Digital Elevation Modelling (DEM) data recorded in conjunction with aeromagnetic/gravity surveys) the data is readily available and cheaply processed.

All grid coordinates on the DTM images are referenced to AGD 94. In some cases the overlying information is plotted in reference to AGD 66, and the underlying DTM image has been referenced to this coordinate system. All plans are annotated to the relevant coordinate system accordingly.

The DTM plans were generated at 1:500 000 and 1:250 000 scales for the project region. The pixel size was resampled to 100 metres from 220 metres for the smaller scale plan.

Plans are available in hard copy form only, with a scanned image for the Mabel Creek project (at 1:500 000 scale) presented within the body of the report (Figure 3).

CONSOLIDATED BROKEN HILL Ltd.
ACN 009 423 858

MABEL CREEK EL 2672 (OPAL)

ANNUAL REPORT
to 2 December 2002

Prepared for:
Consolidated Broken Hill Ltd.
Level 4, 12-14 O'Connell Street
Sydney, NSW, 2000

Prepared by:
C A Simpson (Consulting Geologist)
February 2003

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SUBMISSION OF DIGITAL DATA

This report has been submitted digitally in the form of a .pdf (Adobe Portable Document Format) saved onto a labelled 1.44 Mb floppy diskette.

Label: Consolidated Broken Hill Ltd.
EL 2672 Annual report 2002
Digital submission of report

File name: EL2672_200302_01_Annual report

File size: approximately 300 Kilobytes

File Type: PDF (Adobe Portable Document Format)

i SUMMARY OF ACTIVITIES

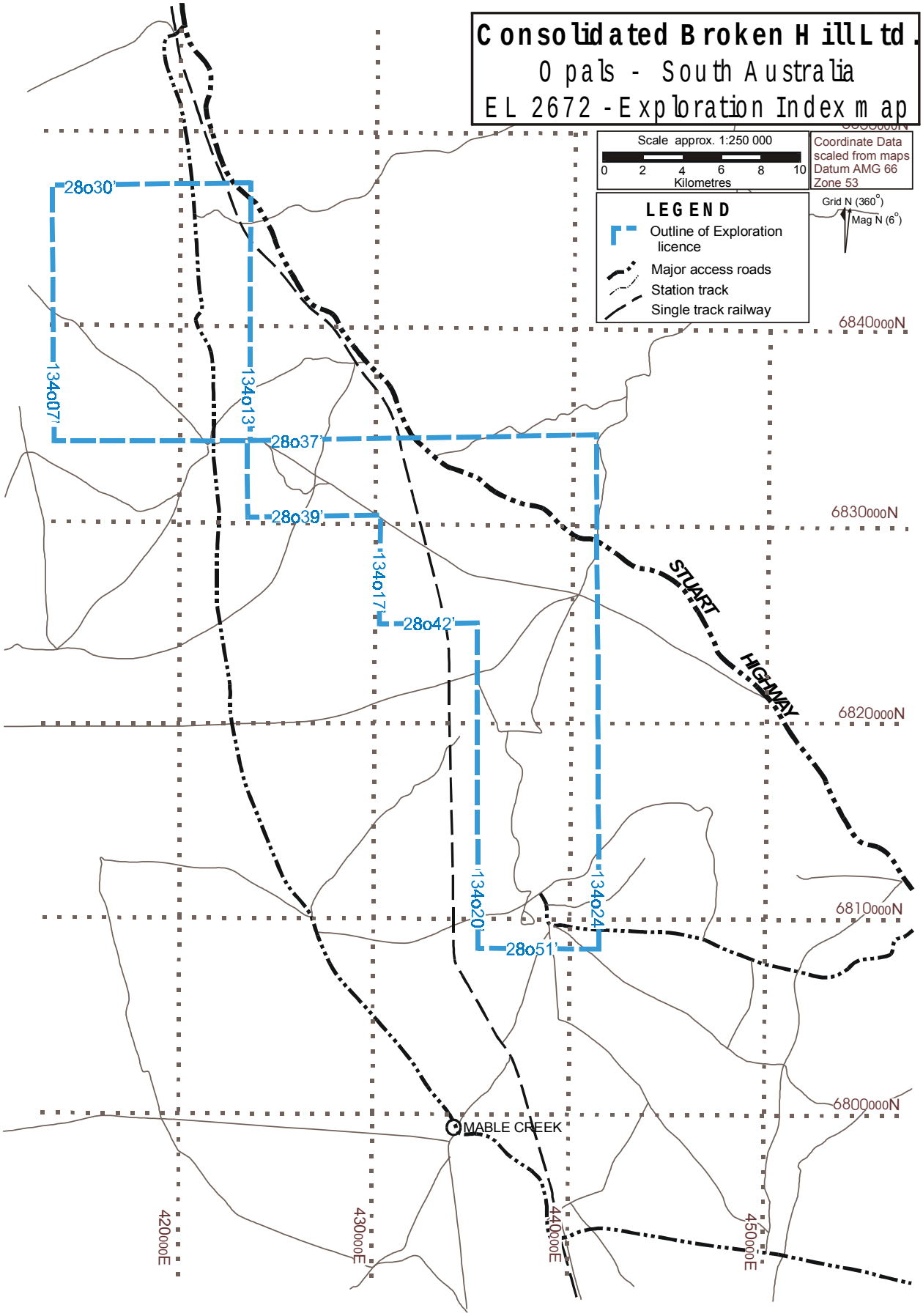
The Mabel Creek project area is situated north-west of the township of Coober Pedy in the state of South Australia. Exploration activities are targeted at locating and developing large-scale opal deposits.

Activities carried out within the licence for the last 12 month period (3 December 2001 to 2 December 2002) include continued interpretation of all collected data, together with registration of a Native Title agreement and Farm-in agreement (with Taipan X Pty Ltd). All of these activities were carried out upon the whole of the licence area (see Exploration Index Map).

ii KEYWORDS

Bulldog Shale, Cretaceous Aged, Digital Terrain Modelling, Drill hole research, Eromanga Basin, Field reconnaissance, Murloocoppie (SH 53-2) & Mabel Creek (5740) mapsheets, Opals, Photointerpretations, Remote sensing, Taipan X Pty Ltd.

iii EXPLORATION INDEX MAP



1 INTRODUCTION, HISTORY AND EXPLORATION RATIONALE

Exploration licence 2672 is part of a project (including other exploration licences 2787, 2914, 2915 & 2985) targeted at locating and developing large-scale opal deposits within the Coober Pedy region of South Australia. This is the third annual report for this licence covering work carried out to 2 December 2002.

Project work to date includes compilation of geological and opal occurrence data, aerial photograph geological interpretations, Digital Terrain Modelling and field reconnaissance of target areas. Native Title negotiations have been concluded with an exploration agreement registered, which enables ground disturbance exploration operations over heritage-cleared areas. No heritage area clearances have been undertaken within the licence as no high priority target areas have been defined to date.

This licence has been renewed for a further 12-month period. Current tenement area is 363 square kilometres.

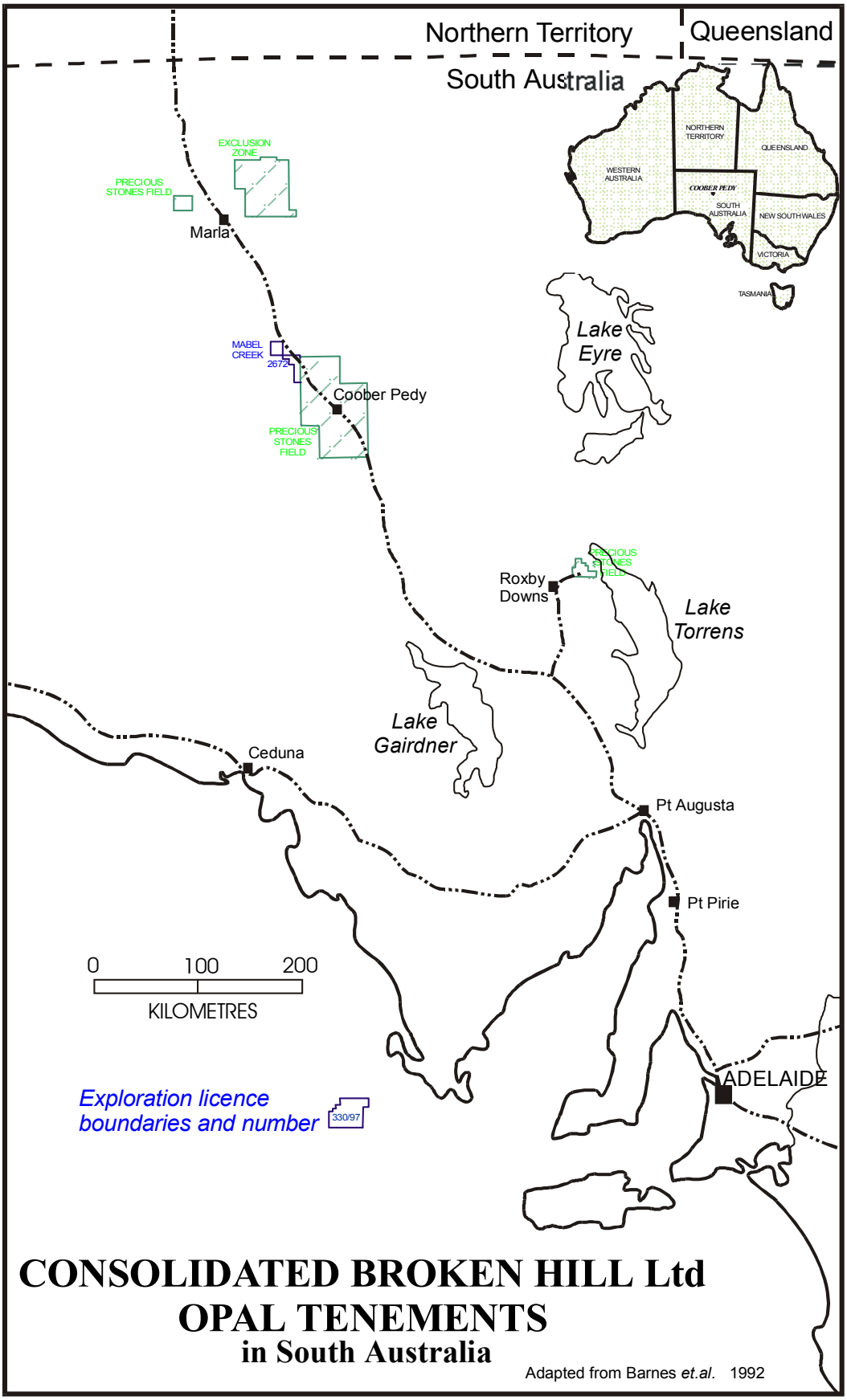
A Farm-in agreement has been registered with Taipan X Pty Ltd, who are currently operators of the project, and are earning an interest in the project by funding all exploration costs.

The project area is situated in central South Australia, approximately 900 kilometres north-west of Adelaide (see Figure 1). Exploration Licence 2672 is fully contained within the Murloocoppie (SH 53-2) 1:250 000 and the Mabel Creek (5740) 1:100 000 sheets. The licence is centred approximately 60 kilometres north-west of the township of Coober Pedy. Access to the project area is via the sealed Stuart Highway and/or the old unsealed Stuart Highway that both traverse the licence area. Further access to the remainder of the licence area is via station tracks and fence lines traversing the region.

A good physiographic and climatic description for this area was given in previous annual reports and will not be repeated here.

Exploration licence 2672 is the first tenement to be granted for opal exploration over this area and as such there are no records for opal prospecting or mining. Previous exploration for other commodities has focussed on base metals and coal within the Coober Pedy region, with few company drill holes located within the licence boundaries.

Figure 1.


Northern Territory
Queensland
South Australia
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
COOBER PEDY
SOUTH AUSTRALIA
NEW SOUTH WALES
VICTORIA
TASMANIA
EXCLUSION ZONE
PRECIOUS STONES FIELD
Marla
MABEL CREEK
2672
Coober Pedy
PRECIOUS STONES FIELD
Lake Eyre
Roxby Downs
Lake Torrens
Lake Gairdner
Ceduna
Pt Augusta
Pt Pirie
0
100
200
KILOMETRES
ADELAIDE
Exploration licence boundaries and number
330/97
CONSOLIDATED BROKEN HILL Ltd
OPAL TENEMENTS
in South Australia
Adapted from Barnes et.al. 1992

2 REGIONAL AND TENEMENT GEOLOGY

A good regional and tenement geology description has been given in previous annual reports and will not be repeated here.

Within Exploration Licence 2672, extensive outcrops of Bulldog Shale have been mapped (*see Pitt and Barnes, 1976*), and are interpreted to exist below shallow cover throughout the licence area. Outcrops of intensely weathered shale have been observed at several localities within the licence area, with brief descriptions given in the previous annual report.

3 GEOPHYSICS

No geophysical surveys relevant to opal exploration have been carried out within the project.

4 REMOTE SENSING DATA

Photogeological interpretations have identified prospective target zones that appear to have geological similarities to areas within the Coober Pedy Precious Stones Field. In addition to this, Digital Terrain Modelling (DTM) plans clearly show the higher topographic portions of this licence, and therefore areas most likely to have preserved thicker sequences of Bulldog Shale, to be extensive throughout the licence area.

Details of photogeological and DTM interpretations have been given in the previous annual report.

5 SURFACE GEOCHEMISTRY

No geochemical surveys relevant to opal exploration have been carried out within the project.

6 DRILLING

No drilling has been carried out within the project area by Consolidated Broken Hill Ltd to date. Research has indicated that only 3 reported company drill holes exist within the retained licence area as indicated in the previous annual report.

7 OTHER STUDIES OR WORK

No other studies or work relevant to opal exploration have been undertaken within the project.

8 ENVIRONMENT

No ground disturbance exploratory operations have been undertaken within the project, and therefore no rehabilitation is required to be carried out.

9 ORE RESERVES AND RESOURCES

No opal ore reserves can be measured from the little on-ground exploratory work carried out.

10 EXPENDITURE

Total expenditure for the licence over the last 12 months has been $ 8,268.40 with a detailed expenditure statement given in Table 1. Cumulative expenditure for the licence at the end of this reporting period was $ 38,268.60.

Table 1.

Expenditure statement for EL 2672 (opal)		
Communications, office services, postage	$	434.92
Data acquisition	$	145.99
Field living	$	0.00
Field travel	$	0.00
Geological consultants	$	4,708.50
Legal consultants	$	650.00
Native Title – expenditures	$	13.25
Overheads	$	0.00
Tenement – rents, sundry fees	$	1,475.50
Registration of Farm in agreement	$	88.60
Administration and management	$	751.64
Total Expenditure	**$**	**8,268.40**

11 CONCLUSIONS

Photointerpretations, Digital Terrain Modelling, drill hole research and field reconnaissance of the licence area has identified similar geological relationships of

depicted target zones to opal productive areas within the Coober Pedy Precious Stones Field.

Literature reviews, research and field activities have indicated that no opal workings exist within the licence area. Geological interpretations based on remote sensing, backed up by on-ground field observations predict that 'hidden' opal deposits may exist within the licence areas. Previous opal prospectors have not located these potential deposits, as recent erosion has not dissected deeply to opalised horizons (within the target areas), and therefore opal '*floaters*' have not formed and been found. The location of these '*floaters*' is the primary source for the initiation of virtually all the opal fields in the state of South Australia.

Native Title proceedings have been completed in order for ground disturbance exploration work to be carried out over heritage-cleared areas. As no high priority target zones exist within EL 2672, no clearance work has been undertaken.

The prospectivity of the licence area to host large-scale 'hidden' opal deposits remains high.

12 REFERENCES

Barnes L.C., Townsend I.J., Robertson R.S. & Scott D.C. 1992; Opal: South Australia's gemstone, *South Australia department of Mines and Energy handbook no 5. (revised edition).*

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Simpson C.A. 2002; EL's 2252, 2266, 2672 & 2787 (opal), *Partial relinquishment report to 2 November 2001.*

PRIMARY INDUSTRIES AND RESOURCES SA

Office of Minerals and Energy Resources SA

SUMMARY REPORT ON MINERAL EXPLORATION

(Separate form for each licence)

Exploration Licence No:	2672 (O)
For Six Months Ending: 2/06/2003	
Operator/Manager:	Taipan X Pty Ltd
Mineral(s) Sought: Opals	
Prepared by:	C.A. Simpson
Date:	25 June 2002
Phone No:	08 8232 5088
Fax No:	08 8223 5290

SUMMARY OF OPERATIONS

(No., type of samples; line km & type of survey; No. of holes; metres of each type of drilling; Environmental activities etc).

Exploration licence number 2672 is part of an exploration project that includes EL's 2787, 2914, 2915 and 2985. The project is targeted at locating large-scale opal deposits.

No fieldwork was carried out upon this licence during this reporting period. Continued compilation of results from previous exploration programs is in progress, with the aim of refining methods to be better able to depict high priority areas by remote sensing techniques.

As no high priority exploration sites have yet been depicted within the region, no Native Title clearances have been undertaken.

Farm-in partners have been sought in order to assist in funding broad exploration and stratigraphic drilling which is required to test the opal potential of this licence.

[If field activity undertaken, attach A4 size plan showing general location and type of work done]

EXPENDITURE

Expenditure for Period: (Add detailed statement)	**$**	**5,539.60**
Total Expenditure for Licence:	**$**	**43,808.20**