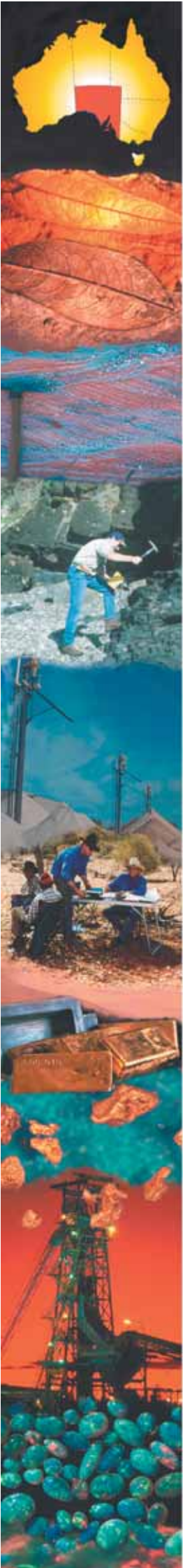

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Minerals and Energy South Australia

# EARTH Resources

INFORMATION SHEET

# COAL DEPOSITS IN SOUTH AUSTRALIA

## INTRODUCTION

Collectively, measured and indicated resources for the major deposits in South Australia exceed six billion tonnes, with a further 14 billion tonnes of inferred resources.

South Australian coals fall into two broad categories according to the American Society of Testing Materials (ASTM) rank classification: ie. Sub-bituminous C/Lignite A and Lignite B.

## PERMIAN COAL

### Arckaringa Coalfield

Estimated 10,000 million tonnes of low-grade, sub-bituminous coal. Heat value, moisture and ash contents of the coal are relatively uniform through coalfield:

- Low ash 6 per cent in situ.
- Low sodium-in-ash .8% to 2.2%.
- Heat value of 18 megajoules per kilogram (MJ/kg).

Sulphur content tends to be variable.

Applications are currently under consideration for exploration rights for coal seam methane and/or gasification over these coal deposits.

Four deposits are identified within the Arckaringa Coalfield;

- Wintinna
- East Wintinna
- Murloocoppie
- Westfield

### Wintinna Deposit

- 8 – 10 persistent seams.
- Cumulative coal thickness of 15 - 25m.
- The first mineable seam occurs at depths between 104 - 240m.
- Measured and indicated resource of 2 billion tonnes.
- Size, depth of overburden and location suggests Wintinna may lend itself to large scale open cut development with either an onsite or coastal coal fired power station.
- Coal is suitable for conventional, pulverised fuel power stations.

### East Wintinna Deposit

- 6 - 7 persistent seams.
- Cumulative coal thickness up to 20m.
- Top of mineable coal between 220 - 300m.

### Murloocoppie Deposit

- 8 persistent seams.
- Cumulative thickness averages 20m.
- Top of mineable coal 140 - 230m.

### Westfield Deposit

- 2 persistent seams.
- Thickness ranges from 1 - 9m.
- Top of mineable coal 145 - 215m.

### Weedina Deposit

Deposit occurs within the Boorthanna Trough on the eastern side of the Arckaringa Basin

- 6 major and several minor coal seams.
- Cumulative thickness of 35m.
- Top of mineable coal 130 - 150m.
- Overburden containing the major aquifers of the Great Artesian Basin.
- Estimated coal resource of 7200 million tonnes.
- Coal is suitable for conventional, pulverised fuel power stations.

Government of South Australia

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### Lake Phillipson Deposit

It occurs in two long, shallow northwest-trending sub-basins (Main and West Basin) within the Phillipson Trough, along the southern margin of the Arckaringa Basin.

- 6 major coal seams.
- Cumulative thickness up to 25m.
- Top of mineable coal between 50 -143m.
- Total resource is estimated at 5000 million tonnes.
- Coal quality is comparable to the other coal deposits in the Arckaringa Basin except for high sodium and chlorine levels (about 2%).

Applications are currently under consideration for exploration rights for coal seam methane and /or gasification over this coal deposit.

### Cooper Basin

- Bituminous to anthracite - the highest rank found in SA.
- Numerous thick coal seams.
- At depths ranging from 1300 - 4000m.
- Seams are up to 25m thick.
- Resources, in the order of hundred of billions of tonnes, dwarf all other known deposits in Australia.
- Coal seam methane and /or gasification.

## TRIASSIC COAL

### Leigh Creel Coalfield

The coalfield occurs as four small discrete basins – Lobe A (Copley Basin), Lobe B (Telford Basin), Lobe C and Lode D (North Field).

- Only operating coal mine in SA.
- Open cut method of mining.
- Owned and operated by NRG Flinders Inc.
- About 3million tonnes low grade sub-bituminous coal produced per year.
- Used in the 240MW Thomas Playford B Power Station and the 2x 250MW Northern Power Station.

#### Lobe A - Copley Basin

- Numerous seams.
- 1 - 3m thick.
- Total coal resource of around 11 million tonnes.

#### North Field basins - Lobe C and D

#### Lobe C

- 1 seam.
- From 1.6 - 16m thick.
- 8.4 million tonnes of the total 20 million tonnes mined due mainly to increasing depths.

#### Lobe D

- 2 coal seams.
- Range in thickness from 6 - 9m.
- 22 million tonnes extracted.

#### Lobe B - Telford Basin

- Total coal resource 500 million tonnes due to steeply dipping seams, limited to between 60 and 100 million tonnes at depths of around 200m.
- Depth of burial in the centre exceeds 1000m.
- Coal occurs in three principal series – Lower, Main and Upper.
- Upper and Lower Series numerous seams up to 5m thick.
- Lower Series seams are generally the poorest and characterised by thin with relatively high ash content.
- The Main Series is essentially a single seam varying in thickness from 6 - 18m.
- Most of the coal mined at Leigh Creek comes from the Lobe B Main Series.
- Upper Series also provides significant quantities of coal.

## JURASSIC COAL

### Lock Deposit

The coal occurs in the Polda Basin, in a narrow east-west trending sub-basin and consists of numerous flat to gently dipping seams of high ash coal.

- A coal resource of 320 million tonnes has been delineated.
- Low-grade, sub-bituminous coal.
- Numerous flat to gently dipping (2 to 5°) seams.
- Cumulative coal thickness between 5 - 17m.
- High ash content, commonly between 20 and 35% in situ.
- Aquifer systems lie above and below the coal zone.

Applications are currently under consideration for exploration rights for coal seam methane and /or gasification over this coal deposit.

*240 tonne rear dump truck operating in Leigh Creek, South Australia.*

## TERTIARY COAL

South Australia has large resources of low-rank brown coal (lignite), of Middle to Late Eocene age, distributed widely in Tertiary sedimentary basins in the southern part of the State.

- Lignite is generally high in moisture, sulphur, sodium and chlorine.
- Development of these deposits for power generation would have advantages.
- Conveniently located to centres of demand for electricity.
- Could be mined cheaply by open-cut methods.
- Other possible uses include coal seam methane, gasification, liquefaction and, briquetting.

Applications are currently under consideration for exploration rights for coal seam methane and /or gasification over these coal deposits.

### Northern St Vincent Basin Coalfield

5 significant deposits of lignite in the Northern St Vincent Basin;

- Bowmans Deposit
- Lochiel Deposit
- Beaufort Deposit
- Whitwarta Deposit
- Clinton Deposit

Lignite at depths ranging between 20 - 150m.

#### Bowmans Deposit

- Measured and indicated resource of 1250 million tonnes.
- Coal occurs at 55 - 100m below the surface.
- Cumulative thickness of 25m.
- High sulphur and chlorine content.

#### Lochiel Deposit

- 625 million tonnes of lignite
- Lignite occurs in three seams.
- Cumulative thickness of 14m.
- Depth to lignite between 20 - 70m

#### Beaufort and Whitwarta Deposits

- Consist of a number of flat-lying, thin lignite seams 1 - 5m thick.
- Depth to lignite 40 - 60m below ground level.

#### Clinton Deposit

- 4 main seams.
- Average thicknesses of 3m.
- Depth to lignite 50 - 100m.

### Kingston Deposit

Considered to be better than many of the other lignites in the State.

- 985 million tonnes of lignite in a single seam.
- 2 main lobes with the maximum lignite thickness of 12m.
- Depth of lignite between 40 - 75m.
- Significant environmental and hydro-geological investigations have been carried out to establish the likely regional impact of mine dewatering.

### Sedan Deposit

- Contains 184 million tonnes of lignite.
- 2 main lignite seams between 5 - 8m thick.
- Average depth of lignite 50m.

### Anna Deposit

- Coal occurs over an area of 3 by 4.5 km.
- Thickness up to 8m.
- Coal at depths between 60 - 85m.

### Moorlands Deposit

- Lignite occurs in six small sub-basins.
- Lignite of poor quality.
- A combined resource of 32 million tonnes.
- Average thickness between 5 - 9m.
- Depth of lignite between 14 - 92m.

## FURTHER INFORMATION

The publication **Coal Deposits in South Australia** (1984) is currently being revised and will be available in the fourth quarter of 2004.

Further information on the coal prospects in South Australia, please refer to the PIRSA minerals website at; www.minerals.pir.sa.gov.au.