

RESOURCE DEVELOPMENTS IN THE KIMBERLEY

The speaker on 4 November 1998 was Bill Preston, a graduate of Kings College London. He had been associated with resource developments that include the steel industry in the UK and copper in Zambia, and he has had 15 years association with resource development in WA. Bill, who has been Manager of Resource Development with the Department of Resources Development for the last two years, apologised for the absence of Dr Des Kelly who was to have given the talk, and he then introduced Melissa who ably presented computerised visual graphics as he proceeded.

Bill said the DRD's role was to promulgate the responsible development of the State's resources for the benefit of all people of WA. Whilst much of the region will remain as one of the last spectacular wilderness areas of the State, he saw that the full realisation of the region's value must include the development of the tourist potential, the agricultural and pastoral base, and, not least, the mineral and petroleum potential. At the same time, he recognised that the cultural and social needs of all interests in the region must be integrated into any development.

Although DRD's involvement included the Ord and West Kimberley irrigation schemes, Bill confined his talk to the oil and mineral resources as he knew we had already been addressed on the Ord Scheme. Time did not permit coverage of West Kimberley Irrigation.

Bill told us that the Kimberley contributed 1.8% of WA's GDP, including \$515 million, or 3%, of WA's 1997 mineral production; and the Ord contributed a further \$63 million to the GDP from horticultural and field crops. Apart from a few notable exceptions, e.g. Argyle diamonds, base metals (lead/zinc) east of Fitzroy Crossing and now petroleum in the Timor Sea, the tantalising promise of the region remains to be fulfilled. But he was optimistic that it would happen.

The geology of the region has a wide variety of geological formations formed over the last 2.2 billion years. Most of the Kimberley comprises the Kimberley Basin of sedimentary and volcanic rock, with base, ferrous metal and bauxite potential. The Basin is bounded on the east and south by the Halls Creek and King Leopold Orogens respectively, comprising metamorphosed igneous and sedimentary rocks with a potential for base and precious metals and bounded on the west by the young sedimentary Canning/Roebuck, Browse and Bonaparte basins with petroleum and base metal potential.

Although preliminary exploration has revealed many promising developments, these have to be exceptionally attractive to justify the high cost of detailed exploration in this area. Bill completed a review of the mineral prospects in the area some 2½

years ago and he was surprised by the limited follow up work on a number of relatively promising exploration projects, but he supposed it was understandable that high-cost projects were not approved considering the area has a record of low returns for the expenditure incurred.

The mineral history of the region includes the 1886 gold rush to Halls Creek, which became the State's first Goldfield. The rush was short lived and there were only minor mineral developments until the 1930s when Yampi iron ore was to be sold to Japan. This fell through when an embargo was placed on the export of iron ore in 1938 because of the perceived shortage of reserves in Australia. However production proceeded in 1951 and, to 1994, when major production ceased, 100 million tonnes had been extracted, half of it exported.

From 1950 to 1970 there was active mineral reconnaissance activity, mainly by major American mining companies and by the Geological Survey which carried out mapping. Copper occurrences were found to be widespread, and there were promising occurrences of many other mineral deposits, including Speewah flourite and nickel, lead, zinc, silver, rare earths and gold in the Halls Creek belt. One of the most significant discoveries was the Mitchell Plateau bauxite. However the potential of these discoveries is still to be realised. The current Land Management Plan for Mitchell Plateau includes consideration of economic feasibility for development, conservation, tourism and services to local communities.

About 1970 a number of uranium prospects were investigated, but only one north of Derby at Oobagooma was significant. It has in situ leaching potential and interest in it has been reactivated. Also a whole series of base metal deposits were discovered along the Devonian Reef including Cadjebut which was successfully developed. The deposit became depleted in 1997 and the plant capacity of 900,000 tonnes per year is being augmented from other nearby deposits with all production now being shipped out of Derby. This is a fly-in-fly-out operation, 50% of personnel coming from the North West; 10% of the work force is Aboriginal; and there is an ongoing training programme.

Then came the diamond boom of the 1970s and 1980s, the greatest mineral success story so far in the Kimberley. In the 1940s, Prof. Prider of UWA thought that some Potassium rich rocks (lamproites) in the Kimberley were of mantle origin, i.e. possibly diamond bearing. The search for diamonds began in earnest in 1967 and the first diamonds were discovered at Ellendale in 1976. Then the follow up of the discovery of the Argyle alluvial diamonds resulted in the discovery of the rich AK1 pipe in 1979 which came into production in 1983. Most workers commute from Perth on a fly-in-fly-out basis. The operators established one of the first local community consultation schemes which is considered to be very successful. The remaining life

of Argyle is limited, with plans in place to extend it for 9 or 10 years. Active diamond exploration has continued with many promising indications, but none to date proving economically viable. Detailed evaluation is proceeding at two possible fields at Blina and in the north Kimberley.

The promise of a rich gold strike continues to elude miners. Many small rich deposits of gold have been discovered, the largest being Palm Springs which produced 73,000 oz—small by large mine standards elsewhere in the State, yet producing twice as much as the entire cumulative previous gold production of the Kimberley. The Tanami region offers some hope for the future.

The petroleum potential of the area is enormous with large resources discovered in the offshore Browse and Bonaparte basins. The Browse Basin contains the largest known gas field in Australian waters and Woodside has considered conceptual plans for its development. To date only small shore-based operations have produced petroleum (oil) in the Canning Basin, though Jabiru, Challis and Skua oilfields close to WA waters in the Bonaparte Basin have been producing for some time. Dramatic developments are in train on the northern boundary of WA waters with the development of the Laminaria and Corallina oilfields in 385 m of water (at a cost of \$1.35 billion) using the largest floating production, storage and off-loading vessel in the world. Production is due to commence next year, serviced from Darwin at present. Other significant oil and gas developments are taking place in the zone of cooperation with Indonesia. Broome and Wyndham are considered to have potential as support bases for offshore oil and gas activity.

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