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FOR MR. DAVID SIMMONS M.P. - 6TH APRIL, 1988

CORONATION HILL JOINT VENTURE

ECONOMIC POTENTIAL OF THE SOUTH ALLIGATOR
CONSERVATION ZONE

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ECONOMIC POTENTIAL OF THE SOUTH ALLIGATOR
CONSERVATION ZONE

Projections of the economic potential of Coronation Hill and other gold/platinum/palladium prospects in the Conservation Zone located in the South Alligator Valley are given below.

The Conservation Zone has been declared over an area in which extensive mining was conducted earlier this century and where the Coronation Hill Joint Venture (CHJV) holds numerous leases (see Fig. 1). It is quite likely that in situ mineral resources with a value of \$1.5 billion at today's prices will be discovered. Already, significant gold/platinum/palladium resources have been discovered at Coronation Hill and indicated at El Sherana West. Because 45 mineral prospects are presently known and awaiting exploration in the area it is probable that further commercial deposits could be discovered if rational and responsible mineral exploration is allowed to proceed. Capital investments of around \$150 million and direct employment of up to 500 people could reasonably be expected.

It is for this reason, that not only the Coronation Hill Joint Venture, but the Australian mining industry in general believes the Conservation Zone to be one of the more prospective mineralized provinces for exploration and development in Australia today. As the style of mineralization is unique in current Australian experience, it is premature to place rigid limits on the gold/platinum/palladium resources of the Conservation Zone, on the basis of present knowledge. Nevertheless an informed estimate of the minimum resources anticipated in the Conservation Zone has been attempted.

The CHJV recognizes and accepts that the Kakadu area is of special environmental significance. It would however, be hoped and expected that approval would be forthcoming for a rational development strategy which ensured that the nature, scale and pace of mining developments in the Conservation Zone were such that there would be no threat to the environment or Aboriginal heritage sites.

The overall thrust of this review is that many great mining fields have historically developed step by step from small beginnings and that this is the model that the South Alligator gold/platinum/palladium field would be expected to follow. Whilst Coronation Hill will be a stand alone project, it is highly probable that, under the Government's present policy of allowing controlled exploration and mining in the Conservation Zone, further economic gold/platinum/palladium deposits will be discovered, proved up, and developed into mining operations. Therefore, if the economic benefits that will flow from such development are to eventuate within the next decade, the Government must move quickly to reaffirm and implement its current policy in the Conservation Zone so as to allow the protracted discovery-establishment process to begin.

Regional Review

The CHJV has carried out a major compilation and review of all available mining and exploration data for mineral deposits within the South Alligator Valley.

Excluding Coronation Hill, the review covered 45 deposits, including 11 actual mines in addition to regional prospecting information extending from the Katherine head waters in the south to the Mundogie Range in the north. Some gold sampling results were available from 14 of these - 12 recorded significant gold. Based on this and their geological setting, deposits were ranked in terms of prospectivity for gold as follows:-

Very high	- 5
High	- 14
Medium	- 12
Low	- 14

This review did not include the mine at Sleisbeck, where gold has been recorded, since it currently lies outside the Conservation Zone (as gazetted on 12th June, 1987).

Very limited sampling over several deposits by the Coronation Hill Joint Venture has shown some association of platinum and palladium with the gold from those deposits. All the areas in the South Alligator Valley which are prospective for gold are also likely to contain associated platinum and palladium. Silver does not occur in economic concentrations at Coronation Hill, but some significant silver assays have been recorded at El Sherana. It is possible that silver could be a byproduct from some of the gold/platinum/palladium deposits in the Conservation Zone.

The Coronation Hill Project

Exploration of the Coronation Hill deposit has been constrained by the existing lease boundaries. The drilling results show that gold/platinum/palladium mineralization at Coronation Hill occurs in zones south from the old mine. These zones occur over a width of 80-100m, extend along strike for 250m to the existing tenement boundary and continue from the surface to 500m depth at least. The zones are still open at depth. The upper portion of the Coronation Hill resource will be mined by open pit mining methods using selective mining techniques. Underground mining will be necessary to extract the deeper parts of the ore body. Preliminary mining studies have been undertaken.

At this stage of exploration, an insitu resource of approximately 650,000 ounces of gold, 40,000 ounces of platinum and 100,000 ounces of palladium is indicated, consisting of drill proven plus possible resources. Additional drilling beyond the boundaries of the present leases is required to determine the full extent of the open-cuttable material. The material below the defined resource has been delineated on the basis of several deep intercepts. A program of very deep drill holes would be required to confirm this deeper resource. To achieve the required depth, the drill holes will have to commence well outside the present lease boundaries.

This ongoing ore reserve definition is normally done after mining operations have commenced. Unlike bulk commodity minerals where most massive deposits are fully evaluated before mining commences, it is common gold mining industry practice to prove only sufficient ore reserves for a limited period of operation and to add to these incrementally. This is best explained by the analogy made below, between the projected development of the Conservation Zone and Western Mining Corporation's experience in the Kambalda region of Western Australia.

The El Sherana Prospects

The CHJV has just completed a detailed compilation of available gold assay data from two of the most prospective deposits, El Sherana and El Sherana West, previously mined for uranium by United Uranium N.L. (UUNL). All available UUNL data for the area was compiled into a series of tables, appendices, plans and sections. These indicate the existence of substantial high grade gold mineralisation extending at least 300m in length, 30m in width and 100m in depth. This is comparable in extent to that presently defined at Coronation Hill. Contained gold, platinum and palladium at the El Sherana West site might therefore equal or exceed Coronation Hill.

The El Sherana/El Sherana West gold mineralization appears to be much longer, wider and deeper than the narrow, small scale uranium mineralization, previously mined on this site. The strike and depth extensions of this gold resource have not been tested. Diamond drilling is required to confirm and extend the knowledge of this prospect.

A preliminary resource estimate will be prepared on the basis of the existing assay data from the El Sherana deposit. The results of this review will be made available when complete.

In the area surrounding El Sherana the probable extensions to the zone of gold mineralization are untested to both the northwest and to the south east. In the north west the geology is similar and the BMR detected geophysical anomalies similar to that overlying the El Sherana West mineralization. In the southeast UUNL inadequately tested the High Road Adit prospect.

Regional Potential

The mining field of the South Alligator Valley can be divided into five zones, Coronation Hill in the South (excluding Sleisbeck), the Scinto Plateau, Scinto V to El Sherana, El Sherana to Stag Creek, and the Airstrip to Rockhole area. As noted above, El Sherana West could contain a gold/platinum/palladium resource at least comparable in size to Coronation Hill. There is also a very high probability that yet another resource at least equal to Coronation Hill or El Sherana could be discovered in at least one of the other three zones, either as a single deposit or as the aggregate of a number of smaller adjoining deposits. There could of course be more than one in this area, as well as others elsewhere in the whole Conservation Zone. However, for the purposes of demonstrating the likely economic benefits from mining in the Conservation Zone as projected above, three deposits have been assumed, Coronation Hill, El Sherana and one other of the same size.

Analogy with Goldfield Development in the Kambalda Region, W.A.

Because historically the South Alligator Valley has produced gold only as a byproduct, it is premature to attempt to estimate the maximum potential resources in the area. To give only the minimum expected resources would be misleading as much greater potential exists. Therefore, Western Mining Corporation (WMC)'s experience at Kambalda has been used as an analogy to show how gold fields typically develop.

As is now well known, the extensive small scale mining in the South Alligator Valley produced gold as a by-product from several of the 12 now abandoned uranium mines. Subsequently, the economic geology of the South Alligator Valley has been reappraised, indicating its gold/platinum/palladium potential. This is quite analogous to the Kambalda nickel mining field, where WMC commenced producing nickel in the mid 1960's with gold produced as a by-product. It was not until about 1980 that the potential for developing separate gold operations from within the nickel mineralization was recognised. WMC has since developed the area into a major gold mining field through progressive stages, with a stand-alone gold plant now being commissioned at Kambalda to treat up to 3 million tonnes of gold ore per annum.

The sequential gold development history at Kambalda is quite typical of many mining fields, and which could easily be repeated in the Conservation Zone, subject to a rational development plan to protect environmental and Aboriginal values. The Kambalda development history followed on from improvements in geological understanding of the area gained through the initial mining work, and the dramatic increase in the gold price in the 1970's.

- . 1980-81 WMC realized the gold potential and installed gravity gold recovery equipment in the nickel plant to treat 120,000 tonnes per annum (tpa) of nickel ore to recover coarse gold from the underground mines. Production was of the order of 15,000 ounces of gold per annum.
- . 1981-82 WMC proved up sufficient ore reserves to install a 500,000 tpa carbon-in-pulp gold plant within the existing nickel plant, for an additional investment of \$8 million, and additional employment of 120. Production was of the order of 50,000 ounces of gold per annum.
- . 1983-87 WMC continued to locate additional gold ore bodies and thus increase the reserves to 8.5 million tonnes grading 4.8 grams gold per tonne. The gold plant capacity was progressively expanded to above 1.0 million tpa with production of about 100,000 ounces of gold per annum.

- . 1987-88 By gaining an understanding of the regional geology, WMC substantially increased reserves to 14 million tonnes grading 4.5 grams per tonne. WMC have installed and are now commissioning a stand-alone gold plant at St. Ives to treat up to 3 million tpa of ore (around 300,000 ounces of gold per annum). The investment was about \$35 million for the metallurgical plant and around \$20 million for the mine development capital. Employment is around 200.

Development Scenario in the South Alligator Valley

As explained by analogy with the Kambalda gold field development, no mining field starts with all deposits discovered and fully defined. It is normal to start with an economic initial production level and expand from there as additional ore is located and the geology, mining and metallurgy become better understood. In the Conservation Zone it is likely that initial annual production at Coronation Hill will be of the order of 50,000 ounces gold, 1,600 ounces platinum and 7,000 ounces palladium extracted from an open cut mine. This should expand step wise to 100,000 ounces gold, 3,500 ounces platinum and 15,000 ounces of palladium with the introduction and expansion of underground mining operations.

Initial capital expenditure on fixed plant and infrastructure would amount to some \$30 million. Around 80% of that would be spent on Australian products and services. A further \$20m would be spent on mining plant which would be sourced from Australian suppliers where competitive. Subsequent expansions and the introduction of underground operations would cost at least a further \$20m.

Development of three such mines in the Conservation Zone could involve capital investment of around \$200 million in 1988 dollar values. If two mines were to be in peak production concurrently, annual output could be of the order of 200,000 ounces gold, 7,000 ounces platinum and 30,000 ounces palladium.

Such sequential development is the most rational strategy not only from an economic viewpoint. The initial operations can be used to demonstrate, and confirm or modify the environmental safeguards, procedures and practices initially adopted, before applying them on a larger scale during subsequently expanded operations.

Economic Benefits from the Coronation Hill Project

The minerals sector, like all others, purchases products from other sectors for use in its production and investment activities. Through the intricate chain of intersectoral sales in the Australian economy, an initial change in the minerals sector has a wide-spread secondary influence.

The output multiplier for the minerals sector indicates that each dollar of mineral sales (exports) generates an economy-wide increase in output of approximately \$0.70.

Thus at a projected production at Coronation Hill of 100,000 oz gold, 3,500 ounces platinum and 15,000 ounces palladium, export earnings would be around \$65 million at current prices. This should stimulate an additional \$46 million in output elsewhere in the economy.

Employment Benefits

The development phase of Coronation Hill will involve a workforce of 200. The operational phase will involve an initial permanent workforce of around 150, rising with projected mine expansion to 200-250. However the impact of employment does not end there. Studies of the flow-on or 'multiplier' effects demonstrate that for every job generated directly by mining a further 0.7 jobs are generated elsewhere in the economy. (Cook, L.H. "The Input Output Calculations of Mine Sector Linkages and Multipliers", Monash University, December, 1982). Hence, 250 direct jobs would generate another 175 indirect jobs.

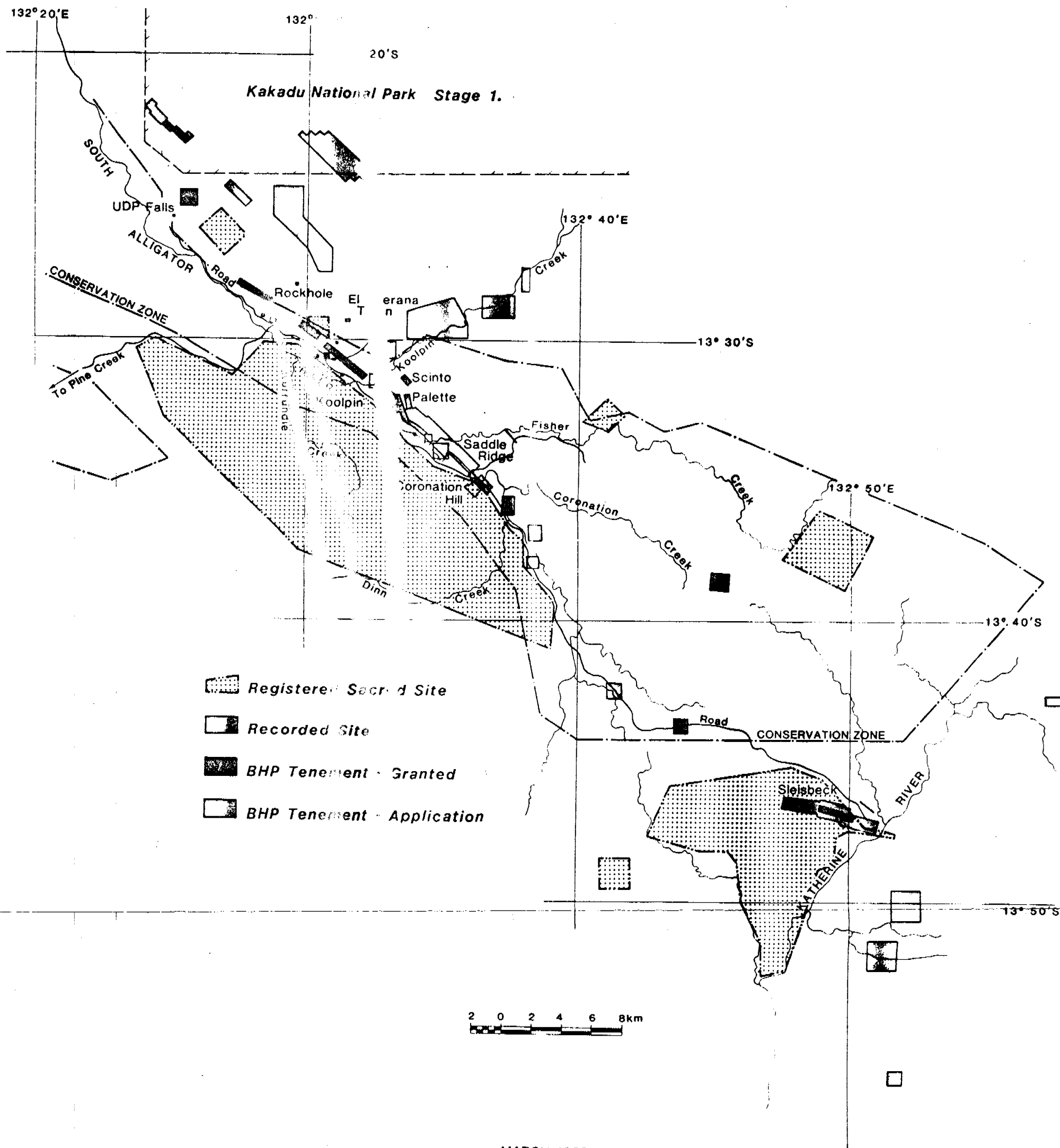
These figures can then be extrapolated to cover the three postulated gold/platinum/palladium deposits in the Conservation Zone, two of which perhaps could be in full production at the same time. That would give maximum direct employment of 500.

An important aspect of the CHJV operations to date has been the emphasis on and the success with Aboriginal employment. The CHJV is confident that it will be able to recruit, train and retain sufficient Aborigines to form an increasingly significant component of our workforce. Thus of the 200 strong construction workforce, at least 30 Aborigines could be expected to be involved as on-the-job trainees, who would then transfer to the 150 strong initial operations workforce. Of the final Coronation Hill workforce of 200-250, it is planned to have trained and retained 50-60 Aborigines. This would have a dramatic impact on the economic well being of the extended Aboriginal families in the Katherine area.

By fostering and giving encouragement to Aboriginal contractors and suppliers, the benefits to Aborigines can be significantly increased. As an example, the Gagadju Association of the Northern Territory, which provides transport services to the Ranger Mine, is one of Australia's most successful Aboriginal businesses.

CORONATION HILL PROJECT NORTHERN TERRITORY

Project Tenements and Aboriginal Sites



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