

The Wiluna Uranium Project, Western Australia: Bringing a new project to the market

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The Wiluna Uranium Project is the first uranium mine in Western Australia to receive Government environmental approval since government policy was changed in 2008 to allow uranium mining in Western Australia. Located 960 Km northeast of Perth in remote central Western Australia, the Wiluna Project comprises 76.5 million pounds (Mlb) U₃O₈ in six shallow, calcrete-hosted carnotite uranium deposits. Mining is planned at a rate of 1.3 million tonnes annually to produce 2 Mlb U₃O₈ using an alkali leach process. The Project requires initial capital investment of AUD315M and has an operating cost of US\$29-31 per pound.

During the four years it has taken to gain environmental approval, Toro also progressed technical studies to validate the Project's economic and technical viability. These included the initial Preliminary Feasibility (PFS) to define the processing train; mining optimisation studies, a Resource Evaluation Pit (REP) and a commercial scale Pilot Plant to verify the mining and processing technologies; and finally, Phase 1 of the Definitive Feasibility Study (DFS) which focussed on the processing plant design.

The REP and Pilot Plant demonstrated Toro's commitment to developing a technically robust mine, based on proven mining practices and rigorous metallurgy. The 45,000 tonne REP was constructed in the Centipede deposit at the margin of the Lake Way salt pan, to demonstrate the successful use of a continuous surface miner in shallow (<10m deep) deposits, to test various water barriers to control groundwater ingress, and to evaluate a new in-pit grade control technique for 300mm mining benches.

From the REP, a 15 tonne blended metallurgical sample and a 40 tonne groundwater sample were then used in the Pilot Plant to demonstrate the technical viability of the alkaline leach process across both calcrete and clay dominant ore types. The plant confirmed that the process is technically viable with a consistent recovery of 85% using a fully integrated hydrometallurgical circuit. Lessons from the REP and Pilot Plant were incorporated into the Phase 1 DFS, from which the process design, mass balance and process model, plant layout and preliminary costs were determined.

Since 2009, Toro has acquired further regional resources around Wiluna to strengthen the mine's value proposition. Through the addition of four deposits to the original two, Toro was able to grow the resource base from 24 to 76.5 Mlb. More importantly, this resource now includes 36.7 Mlb of U₃O₈ at an average grade of 930 ppm (500 ppm cut-off), which places Wiluna as an attractive and competitive proposition for calcrete-hosted deposits world-wide.

The combination of the strong technical viability, local community and government support and environmental permits for Wiluna means that the Project is ready to become a new uranium supply to meet global demand when the uranium market stabilises and a price recovery appears. The major lessons in bringing a new Australian mine to market have been to maintain a transparent approach with all stakeholders, use robust science to test the technical veracity of the proposal and be patient and diligent in all technical, regulatory and community aspects.

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