

The Nuclear Review

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Nuclear Power Generation in 2016

Spotlight on Mining— Berkeley Energia



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BERKELEYenergia

AIM- and ASX-listed Berkeley Energia Limited is focused on bringing its wholly owned Salamanca Uranium Project into production, commencing initial development this month. The project is being developed in an historic mining area in western Spain. The company has received all European Union (EU) and National approvals required for initial development of the project, located about three hours west of Madrid.

Berkeley Energia is well positioned to capitalize on the world's growing demand for nuclear power and its Salamanca Project will contribute to security of supply for nuclear power utilities, in particular, those in the EU, where the Euratom Supply Agency has rated "lack of investment in new mines" as a primary risk facing the regional utilities that operate nuclear power plants.

In this article, "The Nuclear Review" has a conversation with Berkeley Energia's Managing Director Paul Atherley, who has extensive experience in the financing and development of mining and energy projects globally across a range of commodities.

company ENUSA, which ended in 2012, and resulted in Berkeley taking on 100 percent interest in a number of high-quality uranium deposits, collectively known as the Salamanca Project.

The project was completely transformed just over one year ago when our geologists discovered the Zona 7 deposit, which contains more than 30 million pounds of high-grade uranium and sits just four meters below the surface. This discovery transformed the economics of the project.

TNR: *What is Berkeley Energia's operational strategy today?*

TNR: *What is the history of Berkeley Energia and its mineral properties?*

Berkeley has been operating in Spain for nearly a decade, formerly under a consortium with State uranium

Atherley: In mid 2015, a new management team was brought in to secure financing and develop the

Atherley: Berkeley Energia is developing the Salamanca Project, Europe's largest uranium mine, a mine that will require less than US\$100 million to build and have ultra-low operating costs of \$15.60 per pound in steady state.

At 4.3 million pounds of production during steady state, the mine will rank within the top 10 uranium mines globally. The company is listed in London and Australia and is focused only on the Salamanca Project and its timely development.

The project lies in a historical uranium mining district of western Spain, richly endowed with near-surface uranium deposits (**Figure 1**).



Figure 2 Salamanca Uranium Project, Spain
Source: Berkeley Energia

Salamanca Project following the Zona 7 discovery and has been focused on rapidly integrating the new deposit into the overall project.

Berkeley just made the exciting transition from the exploration and study phase of the project into the development phase. This month Berkeley announced the selection of contractors for initial construction, including a major road deviation and upgrading of the existing power lines. Our operational strategy is to bring the mine into production on time and on budget.

TNR: *What are the mineral resources at the Salamanca Uranium Project and how did the recent upgraded Mineral Resource Estimate change the economics of the project?*

Atherley: The Salamanca Project has a total Mineral Resource Estimate of 90.5 million pounds U₃O₈ across a number of deposits, all within trucking distance of the planned centralized processing plant at Retortillo. The Mineral Resource Estimate for the Retortillo deposit was updated in January 2016, resulting in a 15 percent increase in ore grade. This updated resource estimate is now being included in the optimization studies and has further strengthened the already robust economics of the project.

TNR: *What is Berkeley's development plan for the Salamanca Project?*

Atherley: All major permits are in place and the formal ground breaking ceremony will take place in June of this year, with major construction activities commencing toward the end of this year. Construction is expected to take 12 to 14 months, with the first full year of production occurring in 2018.

TNR: *What are the expected capital costs with respect to Berkeley Energia's preferred development plan?*

Atherley: One of the major advantages of the project is the low upfront capital requirement of less than \$100 million. This is largely a result of the project being located adjacent to an abundance of first world infrastructure, including highways, power, water, and local sources of sulfuric acid. In comparison, we believe a similar operation developed in a remote jurisdiction would require at least another \$150 million to match the infrastructure we have on our

"The combination of low mining costs, low heap leach processing costs, the abundance of infrastructure in Spain, and the weakening of the Euro against the US Dollar all come together to drive [Salamanca] operating costs down."

—Paul Atherley

Managing Director, Berkeley Energia

doorstep. Not only does this represent a significant cost saving but it also shortens our time to market.

The upfront capital cost for the first pit at Retortillo and for the centralized processing plant is \$81.4 million, which will be invested this year. During the first year of operations we will develop the Zona 7 deposit for an additional \$53.9 million. Any further development capital from that point is likely to be funded from anticipated cash flows.

TNR: *What can you tell us about further exploration at Salamanca satellite deposits and at Zona 7, specifically?*

Atherley: The discovery of Zona 7 just 14 months ago has blown the whole region wide open to new discoveries. Zona 7 is a different style of mineralization compared to the deposits discovered previously, which has resulted in a change in our thinking about where similar deposits might occur. We have carried out an extensive geological review which has identified 11 new targets with the potential to host the new style of mineralization discovered at the Zona 7 deposit. Exploration at the first of these targets began earlier this month and we will update the market with any significant results as we receive them.

In January we reported broad, high-grade intersections immediately below the Zona 7 deposit, highlighting the likelihood for discovery of depth extensions to this already phenomenal deposit (**Figure 2**).

TNR: *Where does the project stand today in the development schedule? Any recent developments in permits and financing?*

Atherley: We have all the permits in place to begin initial construction. Following the Board's decision to push ahead with the overall development of the project and the recent positive project feasibility study and permitting announcements, the company has received a number of approaches from potential financiers.

Berkeley is exploring a wide range of financing alternatives in order to maximize competitive tension across all balance sheet alternatives.

The company's mine financing program has commenced, with

engagements now underway with strategic equity partners, nuclear utilities, global trading houses, royalty financiers, project financiers, institutional equity investors, and private equity funds.

In late 2015, the company commenced offtake discussions with major nuclear utilities and trading houses. These discussions included potential financing alternatives associated with offtake agreements.

Contracting discussions are now also underway with major nuclear utilities in Asia, Europe, and North America, which have demonstrated significant interest in the project.

Berkeley's Salamanca Project is one of the only large-scale, low-cost uranium mines globally being developed during 2016.

TNR: *With respect to the uranium market, how does Berkeley Energia's development plan for Salamanca align with current market conditions? Looking forward, what are your expectations for the uranium market in the future?*

Atherley: We believe we are developing our Salamanca mine at the right time in the cycle, with the first full year of production being in 2018, when many believe the market will be tightening.

Recognizing that US and European utilities have increasing uncovered uranium requirements from 2018 onward and from our direct discussions with these groups, we expect to see long-term contract tendering in the spring and summer of this year, which ties in well with our development timeline.

Aside from US and European utilities, we expect considerable long-term demand growth from China, India, and the Middle East, and we will be one of the few new developments globally to supply uranium into this growth story.

TNR: *Does Berkeley Energia's marketing plan favor term contracting?*

Atherley: We intend to enter into term/multi-year sales agreements, incorporating a spectrum of pricing mechanisms for the majority of the planned production, but will also leave some direct exposure to the spot market.

TNR: *What does Berkeley Energia's operational plan look like (production, capital expenses)?*

Atherley: During steady state the Salamanca mine will produce some 4.3 million pounds U₃O₈ per annum.

The current planned mine life is 18 years and includes three deposits (Retortillo, Zona 7, and Alameda);

however, there is considerable potential to expand production to other deposits, such as Gambuta, which are within trucking distance of the centralized plant.

The upfront capital cost for the first pit at Retortillo and for the centralized processing plant is \$81.4 million, which will be invested this year. During the first year of operations we will develop the Zona 7 deposit for an additional \$53.9 million. Any further development capital from that point is likely to be funded from existing cash flows.

TNR: *Much attention has turned to Berkeley Energia's expected operational costs at Salamanca; what are the operational advantages that support Berkeley Energia's cost estimates?*

Atherley: Salamanca's C1 cash operating cost is just \$15.60 per pound U₃O₈ during steady state of operations. This ultra-low cost is a function of a few key elements of the project:

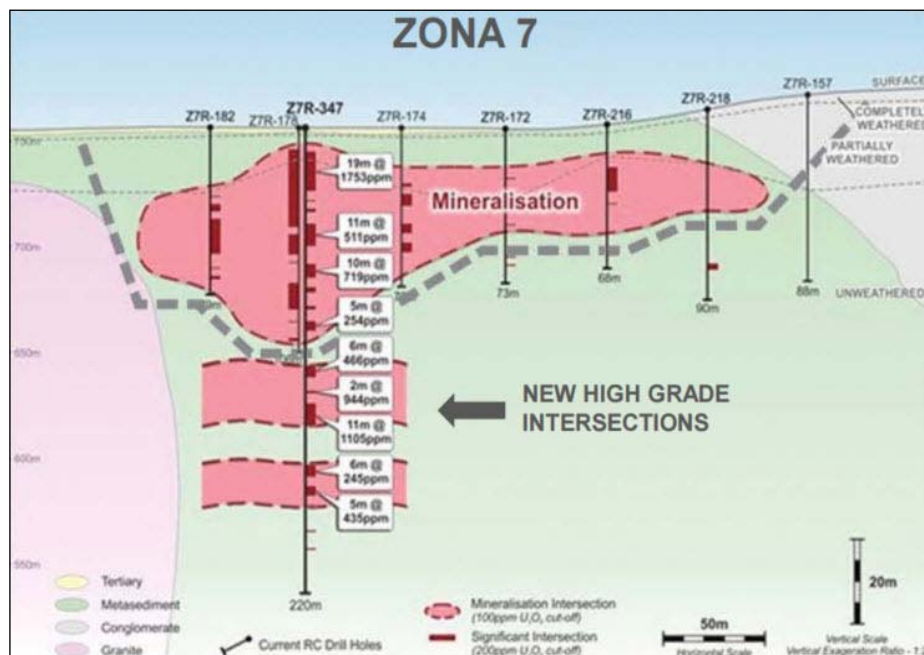


Figure 2 Salamanca Uranium Project, Zona 7 Deposit
Source: Berkeley Energia

Zona 7 is extremely shallow, sitting just four meters below surface. As a result, the stripping ratio is only 1 to 1, which means mining costs are very low—around \$5 per pound of uranium produced.

The deposit is also very high grade for an open-pit mine and has simple, highly consistent geology. With close to 30 million pounds of uranium at a grade of 735ppm (Indicated category) Zona 7 will be one of the world's highest-grade, open-pit uranium mines when in operation (**Figure 3**).

Another key factor is the highly favorable metallurgy of the Salamanca deposits, which lends the ore to heap leaching with very high recoveries of > 85 percent and with low acid consumption and accelerated leaching times. One of our main input costs will be the cost of sulfuric acid for use on the heap leach pads and we are fortunate to have two major sources of acid on our doorstep in Spain that can provide very low cost secure sources of material for us.

The combination of low mining costs, low heap leach processing costs, the abundance of infrastructure in Spain, and the weakening of the Euro against the US Dollar all come together to drive the operating costs down.

TNR: *Berkeley's optimization studies last quarter (December 2015) were focused toward ranking Salamanca among the world's lowest-cost producers. Are there any specific aspects of your approach toward grade control and reconciliation at the Zona 7 and Retortillo ore bodies that will ensure the company achieves this target?*

Atherley: The main drivers of the optimization are the new pit slope design, improved recoveries from the Zona 7 ore, competitive mining schedule of rates, and an increase in throughput of existing plant through efficiency gains.

TNR: *Are there any operational challenges that are unique to the Salamanca Project; if so, how do you expect to overcome these challenges?*

Atherley: We haven't encountered any operational challenges that would be described as unique to the Salamanca Project, but obviously the major challenges that all junior mining companies face is keeping the development on time and on budget.

The potential for major cost overruns is mitigated to an extent by the low absolute capital required to build the project and we are fortunate that Spain has an exceptionally capable engineering and construction industry with a strong track record of project delivery.

TNR: *Have there been advantages (regulatory, geological, or otherwise) specific to Spain that sets that nation apart from operations in other countries?*

Atherley: As mentioned previously, Spain is blessed with infrastructure, which is the key driver behind the low-cost nature of this project. The majority of uranium development opportunities globally are in areas with very little infrastructure or otherwise challenging natural environments, like the Athabasca Basin in Canada or remote regions of Africa or Australia.

Working in a highly developed economy has other benefits like available skilled labor forces, well-developed supply chains, rule of law, and well-defined permitting regimes.

A number of mining companies are now operating in Spain and there is a growing consensus that the country is one of the best mining jurisdictions around and where major new mining projects are being approved.



Figure 3 Landscape of the Salamanca Uranium Project in Spain
Source: Berkeley Energia

TNR: *What separates the Salamanca Project from other open-pit operations associated with higher operating costs, and how sustainable are Berkeley Energia's low-cost projections given changes to grade at depth?*

Atherley: The Salamanca project is characterized by relatively high grade, near-surface deposits with very low strip ratio and impressive metallurgy, thereby driving low mining costs and low upfront capital.

The operating cost projects have been quoted over the life of mine and over steady state and sustainable in both cases.

TNR: *What are the key points that potential investors should know about Berkeley Energia today?*

Atherley: We have an outstanding project that offers near-term development with low upfront capital and low operating costs within a first world jurisdiction—the project, when

built, will be worth many multiples of our current market capitalization and if you are in the uranium business you have to be looking at this project.

