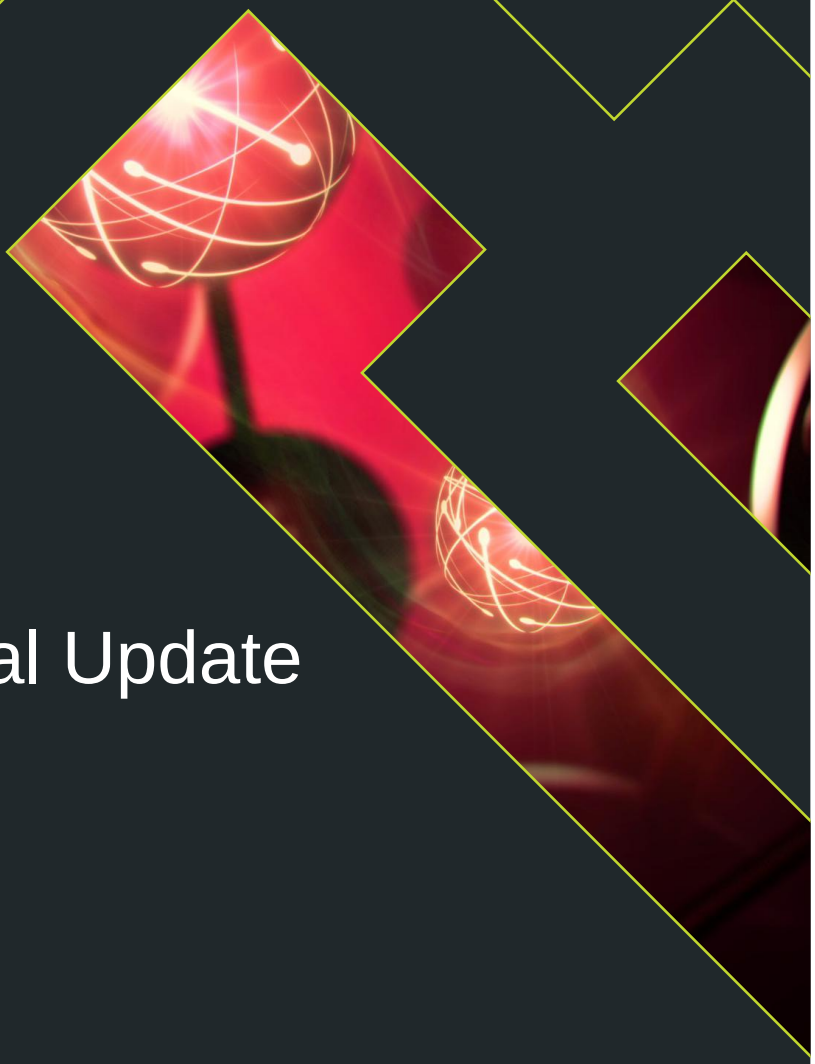

Half Year Operational Update

21 February 2025

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Recent Highlights and Progress

- During the half-year ended 31 December 2024, the Company continued to make significant progress in its various enrichment technology projects, with a primary focus on the continued execution of the commercialisation program for the SILEX laser-based uranium enrichment technology in conjunction with exclusive licensee, Global Laser Enrichment LLC (GLE), in the US;
- GLE and Silex have continued to advance the technology demonstration program for the SILEX uranium enrichment technology. Preliminary testing commenced in late CY2024 and triggered some minor engineering modifications to the Test Loop pilot demonstration facility which have been recently completed. Commencement of full (TRL-6[1]) enrichment testing is imminent;
- GLE aims to complete TRL-6 testing for the SILEX technology around mid-CY2025, with completion of the TRL-6 project subject to an independent assessment and report which will follow the TRL-6 testing;
- In parallel with the TRL-6 technology demonstration program, GLE has been progressing other key commercialisation activities, notably including activities related to the planned Paducah Laser Enrichment Facility (PLEF);
- GLE acquired a 665-acre parcel of land for the planned PLEF in November 2024. The site is strategically located adjacent the US Department of Energy's (DOE) former first-generation Paducah Gaseous Diffusion Plant, and provides access to the cylinder yards where the tails inventories are stored for the PLEF;
- In December 2024, GLE was selected by the DOE as one of six awardees under the DOE's LEU Enrichment Acquisition Request for Proposals (RFP). The award provides a maximum aggregate value for all awardees totalling US$3.4bn. The potential funding that may be awarded under the program could support GLE's aim of becoming a significant uranium enrichment supplier in the US market at the planned PLEF;
- In late December, GLE submitted an Environmental Report to the US Nuclear Regulatory Commission (NRC) in support of site licensing for the planned PLEF. This submission aids the NRC in developing an Environmental Impact Statement for the facility. GLE plans to submit the Safety Analysis Report in mid-CY2025, which will complete the licence application to the NRC.

Other Highlights:

- The construction of the first full-scale Quantum Silicon (Q-Si) Production Plant continues at the Company's Lucas Heights facility. The Q-Si Production Project is supported by $5.1m of funding from the Federal Government's Defence Trailblazer program and a further $4.35m cash contribution from longstanding offtake partner, Silicon Quantum Computing Pty Ltd (SQC);

[1] Technology Readiness Level 6 (TRL-6), as defined by DOE Technology Readiness Assessment Guide (G 413.3-4A)

- Stage 2 of the Medical Isotope Separation Technology (MIST) Project continues, which aims to achieve technology validation through a prototype demonstration system to produce enriched Ytterbium-176 (Yb-176), the precursor isotope required for Lutetium-177 (Lu-177), a breakthrough development for the diagnosis and treatment of aggressive metastatic cancers;
- The Company held cash and term deposits at 31 December 2024 of ~$93.1m, with no corporate debt.

Our Strategy

We are committed to the commercialisation of our innovative SILEX laser enrichment technology across multiple global markets, with a priority focus on contributing to the reliable and sustainable supply of nuclear fuel for the global nuclear power industry, a vital part of the world's energy security and clean energy needs. The execution of this strategy is primarily focused on the pursuit of the *'Triple Opportunity'* in the global nuclear fuel supply chain for the SILEX uranium enrichment technology, through exclusive uranium technology licensee, GLE.

The 'Triple Opportunity' for GLE and SILEX Technology

The *'Triple Opportunity'* for nuclear fuel production has emerged as a result of international developments, which are driving a transformation of the global nuclear fuel supply chain:

- the shift to the utilisation of nuclear power by many countries around the world in response to heightened concerns over global climate change and the need to establish emissions-free electrical energy systems;
- the significant increase in global demand for electricity, driven by population and economic growth factors, including substantial investments in artificial intelligence (AI), data centres, and electric vehicles; and
- the impact of geopolitical developments on global energy security, principally Russia's invasion of Ukraine, resulting in the bifurcation of the international nuclear fuel market.

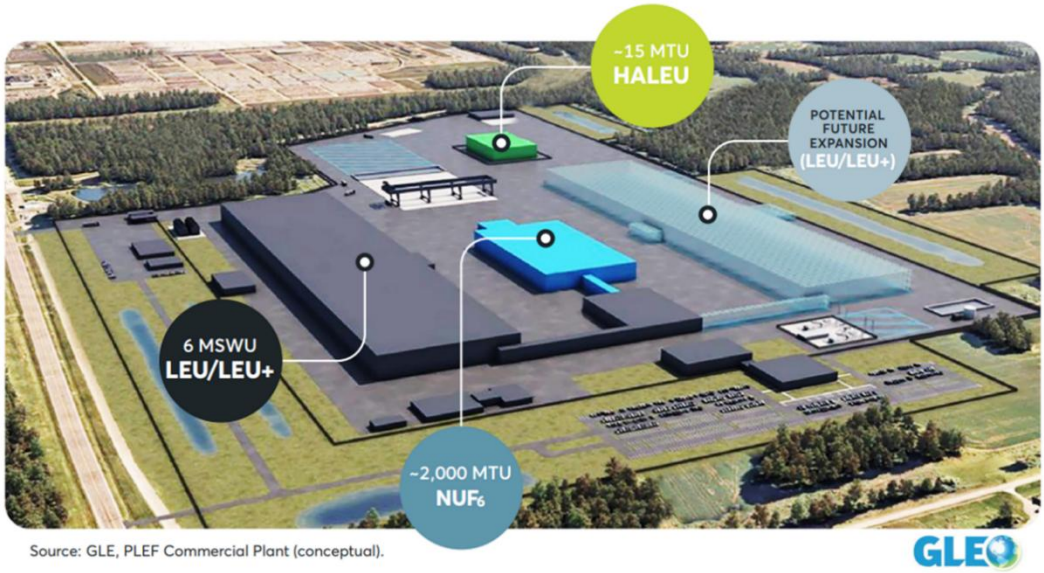
The *'Triple Opportunity'* could involve production of three different grades of nuclear fuel – all via the deployment of the SILEX laser-based uranium enrichment technology in the US, including:

1) **PLEF UF_6 Production:** Production of natural grade UF_6 (with U-235 assay of 0.7%) via processing of depleted UF_6 tails (U-235 assays of 0.25% to 0.5%) with the SILEX technology, which, being already converted, would also help alleviate UF_6 conversion supply pressures;

2) **PLEF LEU Production:** Production of LEU (U-235 assays up to 5%) and LEU+ (assays from 5% to 10%) from natural grade UF_6 with additional SILEX enrichment capacity – to supply fuel for existing and future large-scale conventional and advanced reactors;

3) **PLEF HALEU Production:** Production of HALEU (U-235 assays up to ~20%) via enrichment with the SILEX technology to supply fuel for next-generation advanced reactors, including small modular reactors (SMRs).

PLEF Commercial Plant Opportunities (conceptual)



Source: GLE, PLEF Commercial Plant (conceptual).

The PLEF commercial opportunities are underpinned by the 2016 agreement between GLE and the DOE, which, through the acquisition of over 200,000 metric tonnes of depleted uranium tails owned by the DOE, provides the feedstock for the production of natural grade uranium hexafluoride (UF_6) over three decades. The output of the proposed plant would be sold into the global uranium market at an expected production rate equivalent to a uranium mine with an annual output of up to 5 million pounds of uranium oxide, which would rank in the top 10 of today's uranium mines.

With Russia currently holding around 44% of the world's uranium enrichment capacity, and given the May 2024 enactment of legislation in the US to prohibit the importation of uranium and nuclear fuel from Russia from 2028, there is an urgent need for the global nuclear industry to minimise or eliminate reliance on Russia. This opens up the second and potentially most significant opportunity for GLE and the PLEF – the production of LEU fuel used in the existing global nuclear power reactor fleet.

Potential production of HALEU at the PLEF is emerging as a third opportunity as Western nuclear fuel supply chains move to exclude Russian-sourced HALEU material. HALEU will be required to fuel many next-generation advanced ('Gen IV') reactor designs, including a number of SMRs, and to fuel Western research reactors.

GLE's Commercialisation Program

TRL-6 Pilot Demonstration Program Update:

The primary focus of the TRL-6 Pilot Demonstration Program being undertaken by Silex and GLE has been the construction and testing of pilot-scale laser systems, separator systems, and associated gas handling equipment, with large-scale enrichment testing under relevant plant-like conditions to be assessed for achievement of the pivotal TRL-6 technology demonstration. GLE received approval from the NRC in March 2024 to load UF_6 for TRL-6 testing and preliminary testing commenced in late CY2024. The preliminary testing triggered some minor engineering modifications to the Test Loop pilot demonstration facility which have been recently completed. Commencement of full (TRL-6) enrichment testing is imminent.

GLE aims to complete TRL-6 testing for the SILEX technology around mid-CY2025, with completion of the TRL-6 project subject to an independent assessment and report which will follow the TRL-6 testing.

GLE's Commercialisation Timeline and Activities:

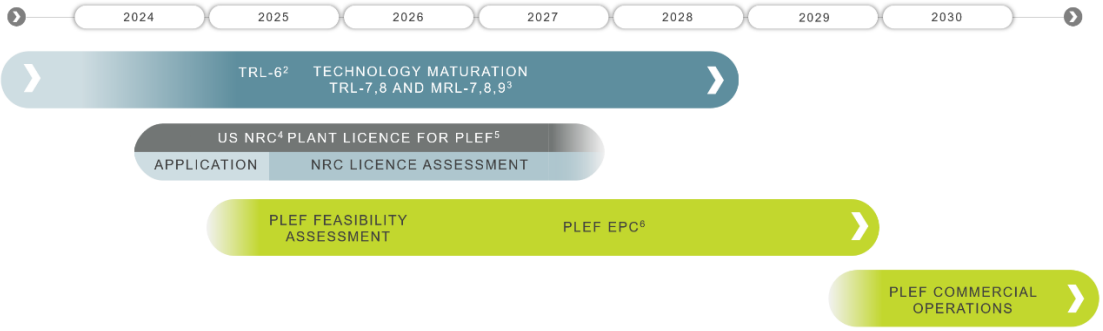
In parallel with the TRL-6 technology demonstration program, GLE has made good progress in other key commercialisation activities, including significant activities related to the planned PLEF. GLE's key PLEF commercialisation activities, which are ongoing, include:

- Advancing technology maturation (i.e., TRL-7 and 8) and manufacturing activities (i.e., MRL-7[2] and 8), including the establishment of significant in-house manufacturing capability at GLE's new headquarters facility, to support the commercialisation program (Note: TRL-9 is the final step that is achieved upon commencement of commercial operations);
- A third full-scale laser system, designed and built at Silex's Lucas Heights facility, will shortly be shipped to GLE's new headquarters. The third laser system represents an iterative design and will be used for TRL-7+ and MRL-7+ activities, which focus on long-term operability and manufacturability;
- Paducah, KY site acquisition activities, with GLE acquiring a 665-acre parcel of land for the planned PLEF – situated adjacent to the DOE's former first-generation Paducah Gaseous Diffusion Plant, at which the legacy depleted uranium inventories (PLEF feedstock) are located;
- Progressing the NRC commercial plant licence for the PLEF, including the submission of an Environmental Report to the US NRC in support of licensing for the planned PLEF. This submission aids the NRC in developing an Environmental Impact Statement for the facility. GLE plans to submit the NRC's Safety Analysis Report in mid-CY2025, which will complete the licence application to the NRC. GLE has a highly experienced regulatory team to support the licence application and review process with the NRC.

[2] MRL: Manufacturing Readiness Level (DOD Guide at dodmrl.com/MRL_Definitions_2010.pdf)

Subject to various factors, including the successful completion of TRL-6 pilot demonstration, industry and government support, a feasibility study for the PLEF, and supportive market conditions, GLE will continue to advance these commercialisation activities in order to support the potential commencement of commercial operations at the PLEF, at the latest by 2030.

GLE's Tentative Commercialisation Timeline[1]



1. Tentative timeline subject to technology demonstration outcomes, market conditions, licensing, industry and government support, PLEF feasibility assessment and other factors and may vary according to changing circumstances and differing scenarios
2. Technology Readiness Level 6 (TRL-6) as defined by *DOE Technology Readiness Assessment Guide* (G413.3-4A)
3. MRL: Manufacturing Readiness Level (DOD Guide at dodmrl.com/MRL_Definitions_2010.pdf)
4. NRC: Nuclear Regulatory Commission
5. PLEF: Paducah Laser Enrichment Facility
6. EPC: Engineering, Procurement and Construction of commercial plant

Government and Industry Support:

GLE actively engages with government and industry organisations to attract strategic support and develop opportunities to help expedite and de-risk the commercialisation program for the SILEX uranium enrichment technology.

US Government Initiatives

In response to evolving geopolitical developments, energy security concerns, and the need decarbonise electricity generation, the US Congress has enacted pivotal legislation with strong bipartisan support to incentivise the new nuclear fuel production capacity in the US, as well as to reassert America's global nuclear industry leadership. The strong bipartisan support for the US nuclear industry appears to be continuing under the new Trump Administration.

In September 2024, GLE submitted its response to the DOE's LEU Enrichment Acquisition Request for Proposals (RFP). GLE was one of six awardees announced by the DOE for LEU Production in December 2024. The award provides a maximum aggregate value for all awardees totalling US$3.4bn. The final award value will depend on agreed task orders, which remain to be issued by the DOE. The funding initiative seeks to build domestic uranium enrichment capacity, promote market and technology diversity, and provide a reliable supply of commercial nuclear fuel to support energy security free from Russian influence.

GLE also is preparing a submission to the High-Assay Low-Enriched Uranium (HALEU) Nuclear Fuel Supply Chain Innovative Technology Notice of Funding Opportunity (NOFO), under which ~US$80m in funding is available to support Demonstration Projects and Research and Development Projects aimed at addressing technological advancement across the front-end nuclear fuel cycle. The funding is made available under the DOE's HALEU Availability Program, authorised under the *Inflation Reduction Act* (IRA) in August 2022, with submissions due by 12 March 2025.

US Nuclear Utility Support

GLE continues to receive support from leading US nuclear generators, with four Letters of Intent (LOIs) in place between GLE and Constellation Energy Generation, Duke Energy, Dominion Energy Services Inc, and another undisclosed entity. The LOIs reflect the strong interest of the US nuclear industry in establishing greater diversification in the supply of nuclear fuel and in the diversity of technology underpinning that supply.

GLE engages extensively and proactively with the US nuclear industry to explore opportunities to partner with stakeholders to obtain support for its commercialisation strategy and the planned PLEF.

Nuclear Power Outlook and Fuel Market Update

Nuclear Power Outlook:

Nuclear power is playing an increasingly important role in the supply of carbon-free, baseload electricity, and is anticipated to play a much greater role in the global energy mix as countries around the world adopt policies to meet more urgent net-zero emissions targets. Twenty-five countries, including the US, Canada, the UK, and France, pledged to triple nuclear energy capacity by 2050 at COP28, in Dubai in December 2023, with a further six countries signing the pledge at COP29, in Baku, Azerbaijan, in November 2024.

Growth in demand for nuclear power is evident in the granting of life extensions for existing reactors and in the planned return to service of idled reactors with potential restarts announced in response to growing electricity demand from data centres and AI during the half-year. Key among the announcements is the planned return to service of Pennsylvania's Three Mile Island Unit 1 reactor – in a deal signed between Microsoft and Constellation, in addition to potential reactor restarts in Iowa and Michigan.

There is also significant international investment in the development of next-generation advanced reactor technologies, including SMRs. With substantial growth forecast in nuclear power generation around the world and the ever-increasing awareness of the potential contribution of nuclear energy to mitigate the adverse effects of climate change, as well as to power AI, data centres, and electric vehicles, among other industrial uses of electricity, we are encouraged by the multiple opportunities for the SILEX uranium enrichment technology and GLE.

Fuel Market Update:

With many countries prioritising energy policy initiatives to address the compounding issues of climate change, electrification, and geopolitical disruptions to energy markets, we expect to see nuclear power form a more meaningful part of the energy mix for a growing number of countries. This is resulting in market conditions and opportunities for nuclear fuel that have not been seen in the nuclear industry for many decades.

For many years, global nuclear fuel markets have been highly dependent on Russian supply, as summarised in the table below. The desired shift away from Russian-sourced material in the wake of its February 2022 invasion of Ukraine has created urgency in establishing alternative supply sources for the medium to long term, while increasing the prices witnessed across all components of the fuel cycle. Since February 2022, when the term price of uranium traded at ~US$42 per pound, the term price of uranium has rallied to ~US$80 per pound. Term conversion prices have increased from ~US$18/kg to ~US$50/kg, and term enrichment prices from ~US$65/SWU to ~US$165/SWU over the same period.

	Russian Share of Global Production Capacity[1]	EU Nuclear Fuel Supplied by Russia[2]	US Nuclear Fuel Supplied by Russia[1,3]
Uranium (U_3O_8)	~14%	~23%	~12%
Conversion	~22%	~27%	~18%
Enrichment (SWU)	~44%	~38%	~27%

1. UxC, various sources 2024
2. Euratom Supply Agency Annual Report 2023, published August 2024
3. EIA, 2023 Uranium Marketing Annual Report, June 2024

We believe global nuclear fuel markets will continue to undergo fundamental realignment and move towards a more resilient and sustainable footing, with the aim of becoming less dependent on Russian and other state-owned nuclear fuel suppliers.

Quantum Silicon (Q-Si) Production Project

Silex's Q-Si Production Project, which commenced in August 2023, is being undertaken in conjunction with partners, SQC and UNSW Sydney (UNSW). The Project's objective is to establish the first Q-Si production module and to develop the skills and capability to manufacture Q-Si products, produced from Zero-Spin Silicon (ZS-Si), in multiple product forms at commercial scale.

The 3.5-year Project is supported with $5.1m in funding from the Federal Government's Defence Trailblazer for Concept to Sovereign Capability Program and a cash contribution of $4.35m from initial offtake partner, SQC.

It is anticipated that the Q-Si production module will produce up to 20kg annually of ZS-Si, which will be converted to Q-Si product forms (gaseous and solid) required by potential customers in the global silicon-based quantum computing industry. A key benefit of the SILEX laser isotope separation technology is its modular nature, allowing for the Production Plant capacity to be incrementally increased with the addition of more production modules depending on market demand and other factors.

During the half-year, Silex continued to make substantial progress on the construction of the Q-Si production module, including in-house laser and plant component manufacture. In addition, Silex continued to engage with silicon-based quantum computing developers and other potential industrial users of Q-Si to develop a customer base for the Company's products. Silex will retain 100% ownership of the Q-Si production technology and related IP developed through the Project.

Quantum Computing and Q-Si Outlook:

Australia has been at the forefront of global efforts to develop and commercialise quantum computers, which have the potential to underpin transformational technological advancements in complex global industries, including defence and aerospace, finance, biomedical science, chemicals, and logistics. Silex partners, UNSW and its commercial spin out, SQC, are world leaders in developing silicon-based quantum computing technology, which, if successful, will allow Australia to establish sovereign capability in a key strategic technology that will advance the country's future defence, national security, and economic competitiveness in the emerging quantum era.

Silicon-based quantum computing technology is reliant on the production of enriched silicon-28 (Q-Si). Current methods for production of Q-Si are limited and costly, with only small quantities produced annually, mostly using gas centrifuge technology in Russia. Due to the Russian invasion of Ukraine, this fragile supply chain has been disrupted, threatening the commercial viability and technical feasibility of silicon-based quantum computing. Through the Q-Si Production Project, Silex aims to provide a significant new Western source of supply for this critical and in-demand material.

Medical Isotope Separation Technology (MIST) Project

Silex continues to advance stage 2 of the MIST Project, which is initially focused on the development and demonstration of a process to economically produce enriched Yb-176, the precursor isotope required for Lu-177 production. Lu-177 is a breakthrough development for the diagnosis and treatment of a number of types of aggressive metastatic cancers, which has been approved for use in several applications in the US, Europe, and the UK, and is under trial in Australia. Enriched Yb-176 previously was sourced almost entirely from Russia, with supply disrupted by the war in Ukraine.

Stage 2 aims to demonstrate Technology Validation at prototype scale, involving enrichment testing using an in-house built small-scale enrichment process system. At the time of writing, enrichment testing continues to produce interesting results. If successful, the MIST Yb-176 process may have potential application to other high-value medical and industrial isotopes, with the technology and all associated IP wholly owned by Silex.

Corporate

The Company appointed Mr Peter Pein as Silex's Chief Technology Officer (CTO) on 17 February 2025. The CTO appointment is a further expansion of the Company's executive team, following the appointment of Dr Geordie Graetz as Chief Commercial Officer in November 2022. Peter's appointment continues his 25-year career with Silex to date. Prior to commencing as CTO, Peter was the SILEX Engineering Manager and Project Manager of the Company's SILEX uranium enrichment project. Peter is well placed to support the Company's ongoing technology maturation and commercialisation efforts, and to further leverage Silex's extensive expertise and technology portfolio in the execution of the Company's strategy.

Financial Overview

As at 31 December 2024, the Company held ~$93.1m in cash and term deposits, with no corporate debt. Silex is required to contribute 51% of GLE's funding requirements in accordance with its equity holding. Following the approval of the Q1 CY2025 capital call by GLE's Governing Board in late January, Silex is contributing approximately US$9.7m to GLE with payment due shortly (Silex's contribution to GLE's Q1 CY2024 capital call was US$7.1m).

Workplace Health and Safety

The health, safety, and well-being of our people is paramount. We have a constant focus on the health, safety, and well-being of our team members across all sites. We reported no lost time injuries or reportable incidents at our project sites during the half-year.

Authorised for release by the Silex Board of Directors.

Further information on the Company's activities can be found on the Silex website: www.silex.com.au or by contacting:

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Forward Looking Statements and Risk Factors:

About Silex Systems Limited (ASX: SLX) (OTCQX: SILXY)

Silex Systems Limited ABN 69 003 372 067 (Silex) is a technology commercialisation company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology has been under development for uranium enrichment jointly with US-based exclusive licensee Global Laser Enrichment LLC (GLE) for a number of years. Success of the SILEX uranium enrichment technology development program and the proposed Paducah commercial project remain subject to a number of factors including the satisfactory completion of the TRL-6 pilot demonstration program, nuclear fuel market conditions, industry and government support, project feasibility and commercial plant licensing, and therefore remains subject to associated risks.

Silex is also at various stages of development of additional commercial applications of the SILEX technology, including the production of 'Quantum Silicon' for the emerging technology of silicon-based quantum computing. The 'Quantum Silicon' project remains dependent on the outcomes of the project as well as the successful development of silicon quantum computing technology by third parties, and is therefore subject to various risks. Silex is also conducting early-stage research activities in its Medical Isotope Separation Technology (MIST) Project, which is also subject to various risks and unknowns. The commercial future of the SILEX technology in application to uranium, silicon, medical and other isotopes is therefore uncertain and any plans for commercial deployment are speculative.

Forward Looking Statements

The commercial potential of the abovementioned technologies and activities is currently unknown. Accordingly, no guarantees as to the future performance of these technologies can be made. The nature of the statements in this Announcement regarding the future of the SILEX technology as applied to uranium enrichment, Quantum Silicon production, medical and other isotope separation projects, and any associated commercial prospects, including TRL-6 achievement and other commercialisation milestones at GLE, are forward-looking and are subject to a number of variables, including but not limited to, known and unknown risks, contingencies and assumptions which may be beyond the control of Silex, its directors and management. You should not place reliance on any forward-looking statements as actual results could be materially different from those expressed or implied by such forward-looking statements as a result of various risk factors. Further, the forward-looking statements contained in this Announcement involve subjective judgement and analysis and are subject to: change at any time due to variations in the outlook for, and management of, Silex's business activities (including project outcomes); changes in industry trends and government policies; and new or unforeseen circumstances. The Company's management believes that there are reasonable grounds to make such statements as at the date of this Announcement. Silex does not intend, and is not obligated, to update the forward-looking statements except to the extent required by law or the ASX Listing Rules.

Risk Factors

Risk factors that could affect future results and commercial prospects of Silex include, but are not limited to: ongoing economic and social uncertainty, including in relation to global economic stresses such as interest rates and inflation; geopolitical risks, in particular relating to Russia's invasion of Ukraine and tensions between China and Taiwan which may impact global supply chains; uncertainties related to the effects of climate change and mitigation efforts; the results of the GLE/SILEX uranium enrichment pilot demonstration (TRL-6) program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of Quantum Silicon for the emerging technology of silicon-based quantum computing; the outcome of the MIST program; the potential development of, or competition from alternative technologies; the potential for third party claims against the Company's ownership of Intellectual Property; the potential impact of prevailing laws or government regulations or policies in the USA, Australia or elsewhere; actions taken by the Company's commercialisation partners and other stakeholders that could adversely affect the technology development programs and commercialisation strategies; and the outcomes of various strategies and projects undertaken by the Company.