SILEX Uranium Enrichment Project Update

13 June 2023

- **Global Laser Enrichment LLC (GLE) - the jointly-controlled venture between Silex and Cameco Corporation, with 51% and 49% ownership interest respectively, is uniquely positioned to address the '*Triple Opportunity'* emerging in the global nuclear fuel supply chain;**

- **In February 2023, GLE's owners agreed to a plan and budget for CY2023 that accelerates activities in the commercial-scale pilot demonstration project for the SILEX uranium enrichment technology to leverage this '*Triple Opportunity*';**

- **Acceleration of GLE's commercialisation activities preserves the option of commencing commercial operations at the planned Paducah Laser Enrichment Facility (PLEF) as early as 2027/28, up to three years earlier than originally planned;**

- **Silex and GLE are accordingly accelerating construction of full-scale laser and separator equipment being deployed in GLE's Test Loop facility in Wilmington, NC, with the aim of completing a commercial-scale pilot (TRL-6[1]) demonstration of the SILEX technology as early as mid-2024;**

- **GLE signed a non-binding Letter of Intent (LOI) with US nuclear utility Dominion Energy in April 2023, following two similar LOIs signed with Constellation Energy Generation and Duke Energy in 2022;**

- **The US Department of Energy (DOE) released its draft Request for Proposal on 5 June 2023 for comment in relation to the establishment of a HALEU Availability Program funded under the Inflation Reduction Act (IRA), passed by Congress in August 2022 with a US$700m funding package;**

- **Other draft bills which would potentially fund additional nuclear fuel initiatives are currently before Congress awaiting resolution. GLE will explore opportunities to participate in these programs as they unfold.**

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

Silex Systems Limited | ABN 69 003 372 067
LHSTC, New Illawarra Road, Lucas Heights NSW 2234
Telephone: +61 2 9704 8888 | Facsimile: +61 2 9704 8851 | Website: www.silex.com.au

Silex Systems Limited (Silex) (ASX: SLX; OTCQX: SILXY) is pleased to provide an update on the uranium enrichment pilot demonstration project being conducted with GLE, the exclusive SILEX uranium enrichment technology licensee and jointly-controlled venture between Silex and Cameco. With success in this project, GLE will be uniquely positioned to address the emerging '*Triple Opportunity'* in the nuclear fuel supply chain, with the potential to produce three different grades of fuel for today's conventional large scale reactors and tomorrow's advanced small modular reactors:

i) Natural grade UF_6;
ii) Low enriched uranium (LEU); and
iii) High assay LEU (HALEU)

GLE's owners in February 2023 decided to approximately double project expenditures compared to CY2022, to accelerate CY2023 activities in the commercial-scale pilot demonstration project for the SILEX uranium enrichment technology. Since that time, significant progress has continued to be made with the construction of full-scale laser and separator equipment being deployed in GLE's Test Loop facility in Wilmington, NC.

Acceleration of GLE's CY2023 activities creates the potential opportunity to complete the pilot demonstration project as early as mid-2024. If the technology demonstration project can be successfully completed on an accelerated timeline, this preserves the option to commence commercial operations at the PLEF up to three years earlier than originally planned, subject to the availability of government and industry support, as well as geopolitical and market factors.

Michael Goldsworthy, Silex's CEO and Managing Director said:

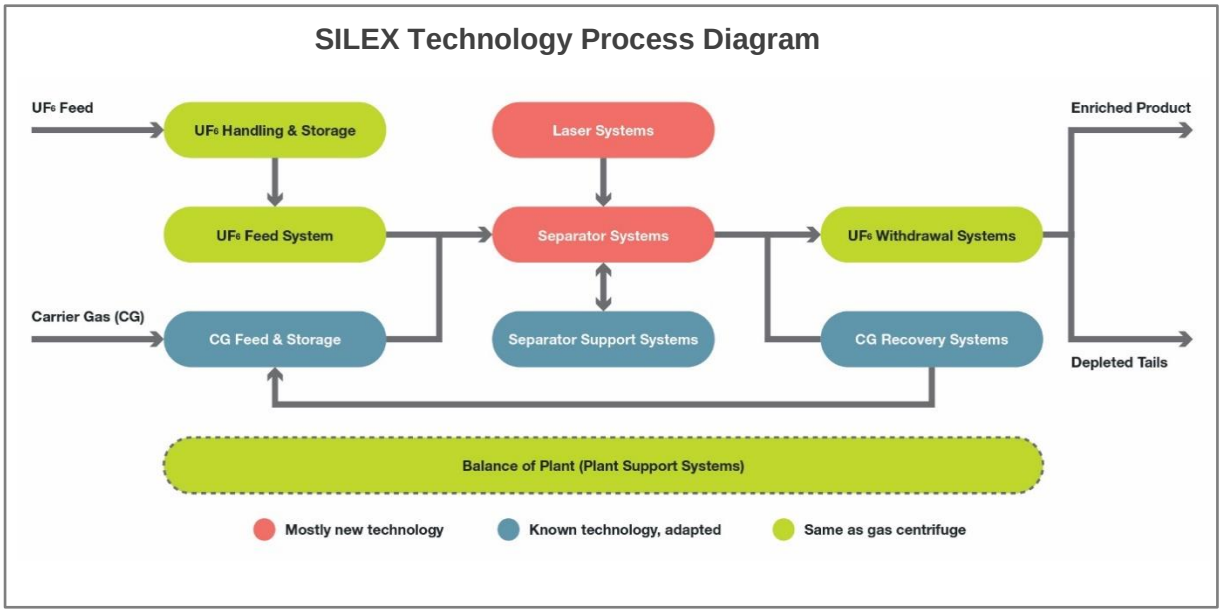
"Since the decision made by Silex and Cameco in February to accelerate CY2023 activities, there has been an appreciable uplift in the pace of recruitment of new team members, and a commensurate increase in the pace of project activities. The two teams, in Sydney and Wilmington, are making rapid progress in the construction and assembly of the commercial-scale pilot facility based in Wilmington, and are currently on track to commence commissioning activities as early as Q1 CY2024. There is a very positive momentum shift underway, as we take the SILEX technology to commercial-scale for the first time".

"The key driver for the decision to accelerate is the emergence of the 'Triple Opportunity' which has been precipitated by Russia's invasion of Ukraine, creating the urgent need for the Western nuclear fuel industry to establish a secure supply chain with new production capacity for UF_6, LEU and HALEU. The combination of this and the transition to a decarbonised global economy has created market conditions and opportunities never seen before," he added.

Commercial-Scale Pilot Demonstration Program Update:

The primary focus of the commercial-scale pilot demonstration program being conducted jointly by Silex and GLE is the construction and testing of full-scale laser systems, separator systems and the associated gas handling equipment. Construction and integration of the pilot-scale equipment is currently on track to be completed around the end of CY2023, with commissioning to commence as early as Q1 CY2024. Following commissioning activities, the full SILEX technology pilot demonstration facility is expected to be put into service as early as Q2 CY2024.

At the core of the SILEX technology are the laser systems and separator systems which form the vast majority of the classified intellectual property licensed to GLE, as depicted by the red blocks shown in the diagram below:



An update on progress with these key technology systems follows:

Laser Systems

The first full-scale laser system module, designed and built at Silex's Lucas Heights laser technology development centre, has been installed in GLE's Test Loop facility in Wilmington and is currently being commissioned in preparation for enrichment operations.

Construction of a second, identical laser system module required for the pilot demonstration project has recently been completed, with the various subsystems currently undergoing commissioning activities before system integration. This second commercial-scale laser system module is expected to be shipped to the Wilmington Test Loop in Q3 CY2023, subject to logistics and related scheduling.

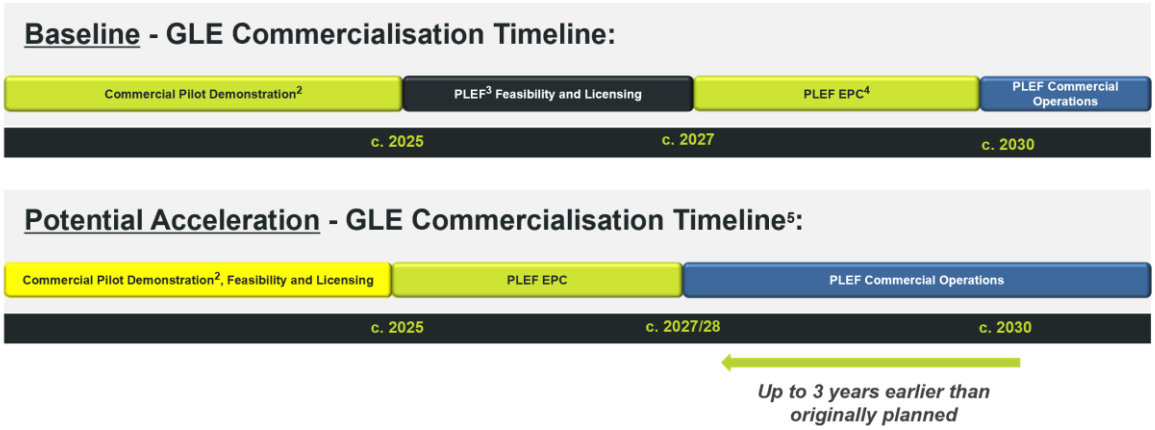
Development of the Beam Control System (BCS), which controls all the individual laser beam components between the laser sub-systems and the separator, has been completed and is currently being commissioned at Lucas Heights in preparation for testing, prior to shipment to Wilmington. The BCS is a unique state-of-the-art fully automated industrial-grade control system which aims to enable reliable 24/7 operation of the commercial plant laser system.

Separator Systems

The joint GLE-Silex engineering team based at the Test Loop facility in Wilmington has been making solid progress scaling up the separator and gas handling systems required for the pilot demonstration program. Component testing is well advanced and integrated system assembly is progressing rapidly. Additionally, GLE is in the process of significantly expanding its in-house manufacturing capability as well as expanding the engineering and operations teams.

Commercialisation Timeline:

The accelerated timeline currently anticipates completion of the pilot demonstration program as early as mid-2024, with a view to commencing commercial operations as early as 2027/28, depending on market factors and the level of support available from various government and industry initiatives. This could also involve bringing forward a commercial feasibility assessment and NRC licensing activities for the proposed PLEF project. The diagram below shows the original baseline and accelerated timelines for commercialisation activities:



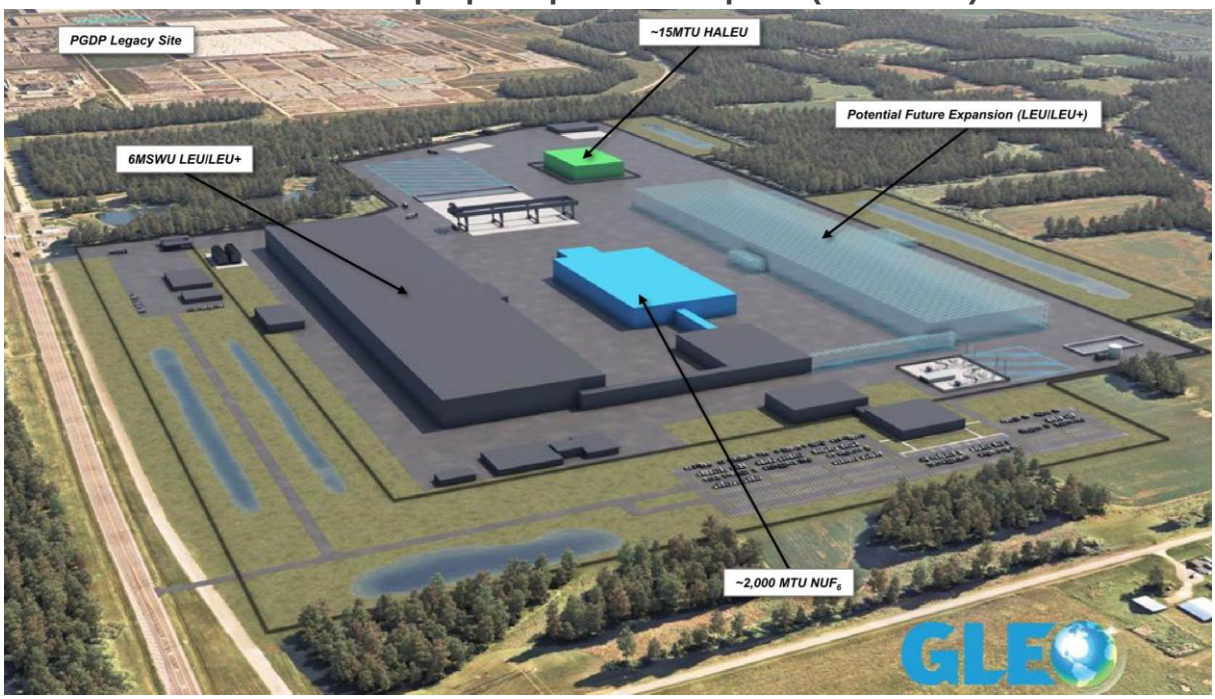
1. Timelines subject to technology demonstration outcomes, market conditions, licensing, commercial support and other factors
2. Includes achievement of Technology Readiness Level 6 (TRL-6) as defined by DOE Technology Readiness Assessment Guide (G 413.3-4A)
3. PLEF: Paducah Laser Enrichment Facility
4. Engineering, Procurement and Construction (EPC) of commercial plant
5. Potential acceleration remains subject to due diligence assessment and may vary according to differing scenarios

GLE has also commenced preliminary activities for the engineering design of the PLEF. In addition to hiring in-house plant and systems engineering specialists, GLE engaged a third-party contractor to undertake the PLEF front-end engineering design (FEED). In addition to advancing the facility design, engineering cost model and plant economic study, GLE's efforts in 2023 are also focusing on assessing regulatory licensing and site acquisition activities for the PLEF.

The 'Triple Opportunity' for GLE and the PLEF multi-purpose production plant:
The evolving favourable market conditions present GLE with its '*Triple Opportunity'* to produce three different grades of nuclear fuel – all via the deployment of SILEX laser-based uranium enrichment technology at the proposed PLEF multi-purpose production plant:

1) **PLEF UF_6 Production:** Production of natural grade UF_6 (with U-235 assay of 0.7%) via processing of depleted tails (U-235 assays of 0.25% to 0.5%) with the SILEX technology (the original PLEF Project) which would come in the form of already converted uranium, thereby potentially helping to alleviate UF_6 conversion supply pressure;
2) **PLEF LEU Production:** Production of low enriched uranium (LEU) (U-235 assays up to 5%) and LEU+ (assays from 5% to 10%) from natural grade UF_6 with separate SILEX enrichment capacity – to supply fuel for existing reactors;
3) **PLEF HALEU Production:** Production of high assay LEU (HALEU) (U-235 assays up to ~20%) via enrichment with SILEX technology to supply fuel for next generation advanced SMRs.

PLEF multi-purpose production plant (indicative)



Source: GLE, Multi-purpose PLEF (indicative)

The PLEF opportunities are underpinned by the 2016 GLE/DOE agreement, which provides the feedstock for the production of natural grade uranium hexafluoride (UF_6) over three decades, with the output sold into the global uranium market at an expected production rate equivalent to a uranium mine producing an annual output of up to 5 million pounds of uranium oxide, which would rank in the top 10 of today's uranium mines by production volume. Preliminary analysis by Silex of the PLEF UF_6 Production Project indicates it could rank equal to a 'Tier 1' uranium project based on current estimates of the long-life and low cost of production.

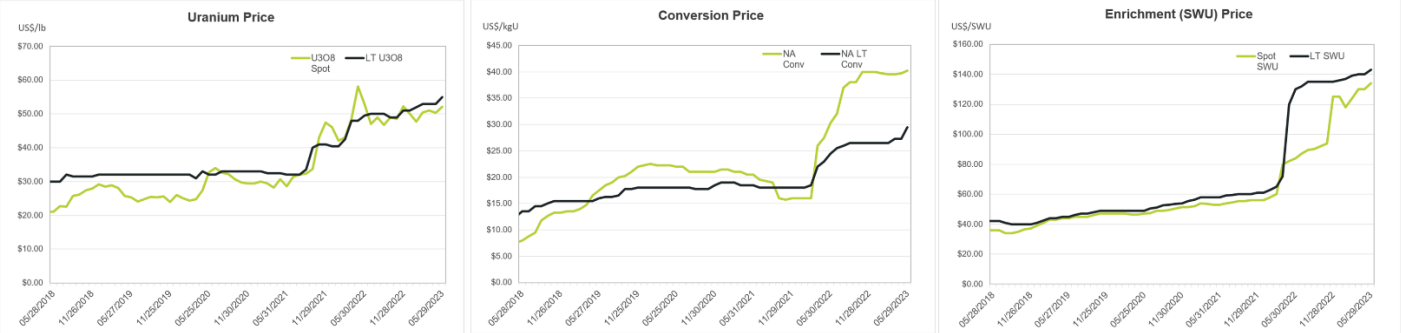
With Russia currently holding around 45% of the world's uranium enrichment capacity, there is an urgent need for the Western nuclear industry to minimise or eliminate reliance on the sourcing of enriched nuclear fuel from Russia. This opens up the second opportunity for the PLEF facility – for the production of LEU fuel for the existing nuclear reactor fleet.

Potential production of HALEU at the PLEF has become a third, significant opportunity as Western nuclear fuel supply chains prepare for the exclusion of Russian-sourced HALEU required to fuel many advanced reactor designs, including SMRs.

Nuclear Industry Update:

Many countries are prioritising government policy initiatives to address the climate crisis and to ensure energy security by supporting energy platforms that ensure nuclear power forms a meaningful part of their future energy mix. These factors, coupled with potential near term disruptions in the Western nuclear fuel supply chain precipitated by the Russian invasion of Ukraine, have resulted in market conditions and opportunities that have not previously been seen in the nuclear industry.

With Russia currently providing the global nuclear industry with ~14% of its uranium requirements, ~27% of its conversion services and ~45% of enrichment capacity, Western governments and utilities are seeking to establish secure nuclear fuel production capabilities free of Russian (and Chinese) influence. As the nuclear industry bifurcates, Western utilities are under the growing threat of sanctions on Russian sourced uranium and enriched nuclear fuel. Consequently, the market prices for uranium, conversion and enrichment are likely to continue to rise during this transition until new capacity can be brought online.



Source: UxC

In summary, we believe Western nuclear fuel markets are undergoing a fundamental realignment over the next 12 to 24 months towards a more resilient and sustainable footing, with the aim of becoming less dependent on, or free of, reliance on Russian and other State-Owned nuclear fuel suppliers. We believe this realignment could endure for decades, given the renewed focus on long term energy security.

Government and Industry Support:

US Government Initiatives

The US nuclear industry, which currently supplies around 20% of the nation's electricity, relies on Russian imports for around 20% of its enriched nuclear fuel requirements. In light of this alarming exposure, the US Government has been moving to provide clear legislative signals that will support the establishment of new nuclear fuel production capacity in the US. The first measure was implemented in August 2022 when the US Congress passed the Inflation Reduction Act which carries US$700 million in funding support for the DOE's HALEU Availability Program.

The DOE released its draft Request for Proposal (RFP in relation to this program on 5 June 2023. The issuance of this draft RFP is intended to allow interested parties to provide feedback to the DOE prior to the release of the final RFP. The feedback received will be considered for implementation in the final RFP, which will solicit proposals for potential award. Submissions in response to the draft RFP are due by 6 July 2023 and GLE's commercial team will be working on GLE's response over the coming weeks.

Additionally, the US Congress is currently debating the Nuclear Fuel Security Act after the draft Bill passed through the Senate Committee phase with bi-partisan support. If passed, this Act would potentially provide further significant US Government funding initiatives for new nuclear fuel production capacity. GLE will explore opportunities to participate in DOE Programs as they unfold. Other various draft Bills potentially supporting US nuclear fuel suppliers, including legislation for the potential prohibition of Russian imports of nuclear fuel, are also making their way through US Congress with bi-partisan support.

US Nuclear Utility Support

In April 2023, a non-binding Letter of Intent (LOI) between GLE and Dominion Energy Services Inc. was executed for the purpose of developing areas of mutual interest and potential cooperation in the nuclear fuel supply chain. This follows on from similar LOIs signed with Constellation Energy Generation and Duke Energy in mid-2022. The LOIs identify a number of key areas of potential cooperation, including supporting the acceleration of GLE's deployment of the SILEX laser enrichment technology in the United States and additional activities related to the planned PLEF. The LOIs reflect the broader support of the US nuclear industry in establishing diversification in the supply of nuclear fuel.

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:

Michael Goldsworthy
CEO/Managing Director
T +61 2 9704 8888
E investor.relations@silex.com.au

Julie Russell
CFO/Company Secretary
T +61 2 9704 8888
E investor.relations@silex.com.au

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 engineering scale-up program and nuclear fuel market conditions 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 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing. The 'Zero-Spin Silicon' project remains dependent on the outcomes of the project and the viability of silicon quantum computing and is therefore subject to various risks. 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.

Additionally, Silex has an interest in a unique semiconductor technology known as 'cREO®' through its 100% ownership of subsidiary Translucent Inc. The cREO® technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE has paused the development of the cREO® technology until a commercial opportunity arises. The future of IQE's development program for cREO® is very uncertain and remains subject to various technology and market risks.

Forward Looking Statements

The commercial potential of these technologies 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, Zero-Spin Silicon production, medical and other isotope separation projects, the cREO® technology and any associated commercial prospects are forward-looking and are subject to a number of variables, including but not limited to, 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 due to management's analysis of Silex's business, changes in industry trends, government policies and any 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 the impacts of the COVID-19 pandemic; geopolitical risks, in particular relating to Russia's invasion of Ukraine and tensions between China and Taiwan which may impact global supply chains among other risks; uncertainties related to the effects of climate change and mitigation efforts; the results of the GLE/SILEX uranium enrichment engineering development program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing; the outcome of the Medical Isotope Separation Technology 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; whether IQE's commercialisation program for cREO® is resumed, the results from the program and the market opportunities for cREO® products; 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.