



Silex
Systems Limited

Operational Update

28 February 2020

Key points:

- Silex announced on 16 December 2019 the signing of a binding Membership Interest Purchase Agreement (MIPA) between Silex, GE-Hitachi Nuclear Energy (GEH) and Canadian uranium miner Cameco Corporation for the restructure of SILEX technology Licensee GE-Hitachi Global Laser Enrichment LLC (GLE);
- Subject to obtaining US Government approvals, the MIPA will result in the joint purchase by Silex and Cameco of GEH's 76% interest in GLE, with Silex acquiring a 51% interest and Cameco increasing their interest from 24% to 49%;
- Good progress has been made towards obtaining US Government approvals with the preparation of required documentation and initial filing in mid-February 2020;
- The transaction preserves the path to market for GLE and the SILEX technology, underpinned by the Paducah commercial plant opportunity and the agreement between GLE and the US Department of Energy (DOE) for access to DOE tails inventories;
- Silex announced on 12 December 2019 a project to develop a process for commercial production of high-purity 'Zero-Spin Silicon' using a variant of the SILEX laser isotope separation technology in conjunction with end-user Silicon Quantum Computing (SQC);
- On 10 February 2020 Silex announced, in collaboration with UNSW Sydney and SQC, the award of a \$3 million CRC-P funding grant to support the Zero-Spin Silicon project;
- Pursuant to the sale of Silex subsidiary Translucent Inc's cREO™ semiconductor technology to IQE Plc (IQE) in early 2018, the first minimum annual royalty of US\$400,000 is due for payment in early CY2020;
- The Company's balance sheet as at 31 December 2019 includes net assets of ~\$29.3 million, including ~\$22.4 million in cash, IQE shares of ~\$8.6 million and receivables and other assets of \$1.9 million. Liabilities were ~\$3.6 million.

Our Strategy

The Company's strategic focus is on the commercialisation of our core asset, the SILEX technology. Fundamental to the execution of our strategy are the following:

- increasing Silex's involvement in the SILEX technology commercialisation program through the GLE restructure;
- continuing to build our relationship with GLE shareholder, Cameco - one of the world's largest uranium and nuclear fuel suppliers;
- strengthening our presence in the US, the primary target market for deployment of the SILEX technology;
- preserving the 2016 GLE-DOE Sales Agreement which underpins the proposed Paducah commercial plant project;
- diversifying the utility of our core laser isotope separation technology by developing alternative applications, such as silicon enrichment for Zero-Spin Silicon quantum chips;
- retaining our talent and maintaining our Sydney facility as a centre of innovation; and
- focusing on effective cost management to ensure the most efficient use of cash reserves.

The SILEX Technology Update

The SILEX technology, which is the only known third-generation laser-based uranium enrichment technology under commercial development today, could become a major contributor to nuclear fuel production for the world's nuclear reactor fleet, in the form of:

- **natural grade uranium** via the re-enrichment of tails inventories (i.e. the Paducah commercial plant project); and
- **enriched uranium** for use as fuel in today's conventional nuclear power reactors - in the form of low enriched uranium (LEU), as well as customised fuel for the next generation fleet of Small Modular Reactors (SMRs) - in the form of high assay LEU.

Uranium supply and enrichment are the two largest value drivers of the nuclear fuel cycle.

We remain committed to the commercialisation program for the SILEX uranium enrichment technology and to licensee GLE, with the aim of enabling the SILEX technology to become a key component of the nuclear fuel cycle in the coming years.

i) The GLE Restructure:

On 16 December 2019, Silex announced it had executed a binding Membership Interest Purchase Agreement (MIPA) between Silex, Cameco Corporation (Cameco) and GE-Hitachi Nuclear Energy (GEH) for the joint purchase of GEH's 76% interest in GLE. Closing of the Agreement, which remains subject to US government approvals and other factors, would result in Silex acquiring a 51% interest in GLE and Cameco increasing its interest from 24% to 49%.

The initial application for US Government approval of the transaction has been prepared and was submitted to the US Nuclear Regulatory Commission in mid-February. The US Government approval process is a multi-staged, multi-US Government agency process and involves several significant filings. US Government approval for the GLE restructure is expected to be received by the end of CY2020.

The MIPA includes a number of key financial terms and provisions including the Purchasers' obligation to reimburse GEH for its share of funding for GLE's Wilmington activities. From 1 January 2020, Silex is required to reimburse GEH US\$170,000 per month. In addition, on 6 February 2020 Silex paid GEH US\$1.125 million being for the reimbursement of costs held over from a Term Sheet agreed between the parties in 2016.

Silex and Cameco have also negotiated terms for an option for Cameco to purchase from Silex at fair market value, an additional 26% interest in GLE, potentially increasing their interest to 75% (subject to USG approvals). As one of the world's leading uranium and nuclear fuel suppliers, Cameco's desire to remain involved in GLE and to ultimately support the path to market through the Paducah project is a reflection of Cameco's belief in the potential of the SILEX technology.

ii) The Paducah Project Opportunity:

The Paducah commercial plant opportunity continues to be viewed as an ideal path to market for the SILEX technology. The opportunity would allow for the initial commercial deployment of the technology on a smaller scale and at a lower cost, representing a lower risk path to market for the Company and all stakeholders.

The opportunity would involve construction of GLE's proposed 'Paducah Laser Enrichment Facility' (PLEF) utilising the SILEX technology to re-enrich large stockpiles of depleted tails inventories owned by the DOE. An agreement between GLE and the DOE providing for the sale of the tails inventories to GLE was signed in November 2016. Efforts during 2019 focused on ensuring that the agreement between the DOE and GLE remains in effect through to the anticipated recovery in the nuclear fuel markets.

The tails re-enrichment project at the PLEF would continue over several decades, resulting in the production of natural grade uranium which could then be sold into the expanding global uranium market at a nominal production rate of around 2,000 metric tons of natural uranium hexafluoride (UF₆) per year (subject to applicable regulations). Subject to a recovery in uranium market pricing and receipt of required regulatory approvals and securing project financing, preliminary economic analysis of the project indicates that it would rank as a large 'Tier 1' uranium mine by today's standards with respect to the long-life and cost of production.

iii) **Project Update:**

In parallel with the GLE restructure activities, a focused effort continued on the technology commercialisation program at both the Silex, Sydney and GLE, Wilmington, North Carolina project sites. Laser system development activities in Sydney included design upgrades and optimisation for the prototype commercial-scale plant laser system. Activities in Wilmington included the preparation of the Test Loop facility for future deployment of prototype plant-scale equipment required for pre-commercial uranium enrichment testing.

iv) **Nuclear Power Outlook:**

As a result of ongoing delays to the restart of the Japanese nuclear fleet and the premature retirement of plants in the US, Japan and Europe, the short to medium-term demand for uranium and enrichment remains stagnant and prices continue to remain depressed. However, the long-term value proposition for nuclear energy and its fuel markets remains positive with a significant number of new nuclear reactors being constructed around the world. Furthermore, there are many countries which have prioritised government policy initiatives relating to climate change and energy security, stating that nuclear power should form a meaningful part of their energy mix in the future.

According to the World Nuclear Association (world-nuclear.org) there are currently 442 operable nuclear reactors today, and 53 nuclear reactors under construction. The US is the world's largest producer of nuclear power, with 96 operable reactors accounting for more than 30% of worldwide nuclear generation of electricity. China is the fastest growing nuclear energy market, with 47 reactors in operation, 11 reactors under construction and a pipeline of over 200 proposed reactors for construction. In addition, there is the potential for commercialisation of next-generation SMRs, which may offer significant advantages over large conventional nuclear power reactors. SMRs have the potential to be cheaper and simpler to construct, and as a production platform for base load generation, to compete favourably with intermittent distributed generation such as solar and wind. There are currently numerous SMR development programs advancing around the world.

The Zero-Spin Silicon Project

On 12 December 2019, Silex announced the launch of a R&D project to develop a process for the commercial production of high-purity 'Zero-Spin Silicon' using a variant of the SILEX laser isotope separation technology. Zero-Spin Silicon (ZS-Si) is a unique form of isotopically enriched silicon required for the fabrication of next generation processor chips which will power silicon-based quantum computers. Silex's laser isotope separation technology has the potential to efficiently produce ZS-Si to provide a secure supply of this material for project partner, Silicon Quantum Computing Pty Ltd (SQC) in support of its world-leading efforts to commercialise silicon-based quantum computing in conjunction with the University of NSW (UNSW).

The launch of the project was marked by the signing of a product offtake agreement between Silex and SQC, which includes SQC making three annual payments of \$300,000 as an offset against future purchases of ZS-Si produced by Silex. The first payment was received in December 2019. Furthermore, SQC signed a Subscription Agreement with Silex which resulted in SQC acquiring 2.3 million fully paid ordinary shares in the capital of Silex through a \$900,000 private placement completed on 7 January 2020, bringing the total value of the transaction with SQC to \$1.8 million.

On 10 February 2020, Silex announced, in collaboration with UNSW Sydney (UNSW) and SQC, the award of a funding grant of \$3 million by the Commonwealth Cooperative Research Centres Projects (CRC-P) in support of the 'Zero-Spin Silicon' project. The \$3 million funding grant from CRC-P remains conditional on the signing of a Partners' Agreement currently being negotiated between Silex, UNSW and SQC. The total project is anticipated to cost (including cash and in-kind contributions) approximately \$8 million over three years, of which Silex's contribution (cash and in-kind) after the CRC-P grant will be approximately \$4 million over the duration of the project.

Quantum computers are expected to be thousands of times more powerful than the most advanced of today's conventional computers, opening new frontiers and opportunities in many industries, including medicine, artificial intelligence, cybersecurity and global financial systems.

The cREO™ Semiconductor Technology

Silex subsidiary Translucent's cREO™ technology was purchased by UK-based IQE (AIM: IQE) in early 2018 in accordance with the 2015 License and Assignment Agreement between Translucent and IQE. As a result, payment of US\$5 million was received in September 2018 (in IQE stock). In addition, a perpetual royalty between 3% and 6% will be payable to Translucent on the sale of any IQE products that utilise the cREO™ technology. Minimum annual royalties are due to commence being paid for the year ended 31 December 2019. The initial minimum annual royalty of US\$400,000 is due for payment in early CY2020.

IQE is the global leader in the design and manufacture of advanced semiconductor wafer products used in many of today's advanced semiconductor devices, such as smart phones and wireless technologies. IQE have reported steady progress with the development and demonstration of the cREO™ technology for the potential integration of advanced high-performance compound semiconductor materials in several areas of IQE's portfolio. In particular, IQE reported continued good progress in the development of their unique 5G RF Filter Materials Portfolio based on the cREO™ technology and are actively engaged with several semiconductor customers to bring this product to market.

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 Business Risks:

Silex Systems Limited (Silex) is a research and development company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology was licensed exclusively in 2006 to GE-Hitachi Global Laser Enrichment LLC (GLE) in the USA for application to uranium enrichment. GLE has been undergoing a restructure for a number of years after GE-Hitachi disclosed it was seeking to exit the venture. In view of the continuing uncertainty surrounding the GLE restructure and the continuing depressed nuclear fuel market conditions, plans for commercial deployment of the SILEX technology have been significantly delayed, and remain at risk.

Silex is also in the early stages of pursuing 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 confirming third party funding contributions and on the outcomes of the project and is therefore at risk.

The future of the SILEX technology is therefore highly uncertain and any plans for commercial deployment are speculative.

Silex also has an interest in a unique semiconductor technology known as 'cREO™' through its ownership of subsidiary Translucent Inc. The cREO™ technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE is progressing the cREO™ technology towards commercial deployment in various advanced semiconductor products. The outcome of IQE's commercialisation program is also highly uncertain and remains subject to various technology and market risks.

The commercial potential of these technologies is currently unknown. Accordingly, the statements in this announcement regarding the future of the SILEX technology, the cREO™ technology and any associated commercial prospects are forward looking and actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors.

Risk factors that could affect future results and commercial prospects include, but are not limited to: the outcome of the GLE restructure; the results of the 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 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; results from IQE's commercialisation program and the market demand for cREO™ products; and the outcomes of various strategies and projects undertaken by the Company.