Section 2

Project Background

2. Project Background

2.1 Project History

Cameco is proposing to develop the Project in the Shire of Wiluna, Western Australia (WA), located approximately 660 km north east of Perth and 420 km north of Kalgoorlie (Figure 1-1).

The Yeelirrie deposit was discovered by Western Mining Corporation (WMC) in 1972. In the decade that followed, WMC undertook further exploration leading to trial mining and the operation of a pilot processing plant. Environmental studies were undertaken and a draft Environmental Impact Statement (EIS) and an Environmental Review and Management Programme (ERMP) were submitted to the WA EPA and the Federal Environmental Agency in 1978 (Needham 2009). The Project was approved for mining by both the Australian and Western Australian governments in 1979 (EPA 1979).

Trial mining commenced and ore was extracted from three excavation pits. Between 1980 and 1982, ore was sent to the Kalgoorlie Research Plant (pilot metallurgical plant) for processing test work. The Project was placed on monitored care and maintenance in 1984, after the newly elected Australian Labor Government implemented its three mines policy in 1983 and the Western Australian Government assumed an anti-uranium position in the same year. Monitored care and maintenance allowed for WMC to undertake, inspect and maintain rehabilitation of already disturbed areas. From 2001, a closure plan was implemented with the objective of leaving the site in a safe and stable condition.

The project remained inactive until the purchase of WMC by a subsidiary of BHP Billiton Limited (BHP Billiton) in 2005. At the time, both Australian and Western Australian government uranium policies were not favourable to uranium mine development, with the Australian 'no new (uranium) mines' policy still in place and the Western Australian Government having an administrative ban on uranium mining in the State. These bans were lifted in 2007 and 2008 respectively.

In May 2009, BHP Billiton referred the proposed Yeelirrie development to the WA EPA under Section 38 of the EP Act and the Australian Environment Minister under the EPBC Act. In June 2009, the WA EPA set the level of assessment as an ERMP with a 10 week public review period. In response to appeals received during the public consultation period, the public review period for the ERMP was increased from 10 weeks to 14 weeks.

In June 2009, the Federal Environment Minister also determined that the proposed Project was a Controlled Action under the EPBC Act on the basis that it was a nuclear action and had the potential to have an impact on listed threatened species and communities, and listed migratory species.

From 2008 to 2011, BHP Billiton undertook extensive environmental and mine planning studies, including flora and fauna surveys, hydrogeological investigations, mine planning and ore processing studies. This work was finalised and documented in a draft ERMP, however in early 2011, BHP Billiton decided not to proceed with the Project and the document was not submitted to government for review.

In December 2012, Cameco Australia purchased the Project, including the Yeelirrie pastoral lease, from BHP Billiton.

In November 2014, Cameco decided to vary the Project. Cameco agreed with the EPA to terminate the previous referral lodged by BHP Billiton and make a new referral. This was because the EPA had adopted new administrative guidelines in 2012. In December 2014, the EPA determined the Project would be assessed as a PER.

Cameco also advised the Federal DoE of the change of proponent and proposed variation to the Project. In December 2014, the DoE accepted the proposed variation to the Project under section 156B of the EPBC Act.

Since purchasing the Project, Cameco has undertaken a comprehensive review of the work completed by both WMC and BHP Billiton. A gap analysis identified a number of areas where Cameco considered further work was required and additional studies have since been undertaken.

In preparing this PER, Cameco has considered and referenced much of the work undertaken by BHP Billiton and its consultants. The work undertaken by BHP Billiton and its consultants provides valuable historical reference material, much of which is relevant to the establishment of a current and contemporary baseline.

As part of this PER, Cameco and its consultants have assessed the extent to which historical studies and assessments remain both correct and contemporary (when compared to current guidelines). This has led to Cameco's consultants conducting further work, where required, to address current guidelines.

The PER applies current guidelines and current information.

2.2 Project Overview

Cameco is proposing to develop the Project, which comprises a uranium mine and associated treatment facilities. Ore would be mined from shallow open pits by open cut techniques. The ore would be processed using alkaline leaching, including the following steps: comminution via semi-autogenous grinding (SAG) milling, atmospheric alkaline leaching, counter current decantation (CCD), followed by direct precipitation of uranium oxide concentrate (UOC), product drying and packaging.

The mineral resource estimate, reported in accordance to NI 43-101[1] (and JORC Code[2]) is 127.3 million pounds (Mlbs) (57,742 tonnes) measured and indicated with an average grade of U_3O_8 of 0.16% or 1,600 ppm.

Over the anticipated 22 year life of the Project, it will produce an estimated 106 Mlbs (48,081 tonnes) of U_3O_8-equivalent UOC for export.

The UOC would be transported by road from the mine site to the Port of Adelaide, South Australia, via the Goldfields Highway, and the Eyre Highway.

This environmental assessment covers all transport within Western Australia. Transport within South Australia will be the subject of separate assessment and approvals processes.

2.3 Project Objectives

The objectives for the Yeelirrie Uranium Project are to:

- design, construct, operate and decommission an operation that minimises environmental impact and maximises benefits to the community;
- maximise the value of the deposit for the stakeholders, community and nation;
- enhance the current employment and lifestyle opportunities of local and regional communities;
- strengthen the relationship and communication with traditional claimant groups; and
- continuously improve the safety and environmental performance of the operation.

1. NI 43-101: National Instrument 43-101 is a Canadian mineral resource classification scheme used for the public disclosure of information relating to mineral properties.
2. JORC Code: Joint Ore Reserves Committee Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves.

2.4 Project Proponent

The proponent for the Project is Cameco Australia Ltd, a wholly owned subsidiary of Canadian based uranium miner, Cameco Corporation.

Proponent details are:

Cameco Australia Pty Ltd

ABN: 65 001 513 088
Office address: 24 Hasler Road, Osborne Park, WA 6017, Australia
Postal address: PO Box 748, Osborne Park, BC, WA 6196, Australia

Telephone: +61 8 9318 6600
Facsimile: +61 8 9318 6606

The contact for the Project for the approval process is:

Mr Simon Williamson, Environmental Manager.

2.4.1 Company History

Cameco is one of the world's largest uranium producers with uranium assets on three continents, including Australia. Cameco's head office is located in Saskatoon, Saskatchewan, Canada (Plate 2-1).

Plate 2-1: Cameco's head office in Saskatoon, Saskatchewan

Cameco Corporation was created from the merging of two government corporations, one owned by the province of Saskatchewan and the other owned by the Canadian Federal Government. Cameco was incorporated in Canada in June 1987 and began operating as the new combined entity a year later. Both of the predecessor companies, Saskatchewan Mining Development Corporation and Eldorado Nuclear Limited (the Canadian Federal Government company), had mining and milling assets in Saskatchewan. Eldorado Nuclear also owned uranium refining and conversion operations in the province of Ontario. Over time, the provincial government of Saskatchewan and the Canadian Federal Government divested all their common shares in Cameco. Cameco is now the world's largest publicly traded uranium company.

Cameco's shares are traded on both the Toronto Stock Exchange (CCO) and the New York Stock Exchange (CCJ).

2.4.2 Company Profile

Cameco is one of the world's largest uranium producers, accounting for about 16% of world production in 2014. Cameco holds approximately 429 Mlbs (194,500 tonnes) of proven and probable reserves, extensive resources and has exploration programs on three continents with land holdings that total approximately 1.7 million hectares (Figure 2-1).

Cameco employs more than 3,300 people worldwide, engaged in uranium mining, refining and conversion. Cameco's vision is to be a dominant nuclear energy company producing uranium fuel. Its goal is to be the supplier, partner, investment and employer of choice in the nuclear industry.

2.4.2.1 Operating Properties

McArthur River-Key Lake

Cameco is the operator and 70% owner of the McArthur River mine, the world's largest high-grade uranium mine. It is located in the Athabasca Basin of northern Saskatchewan, Canada.

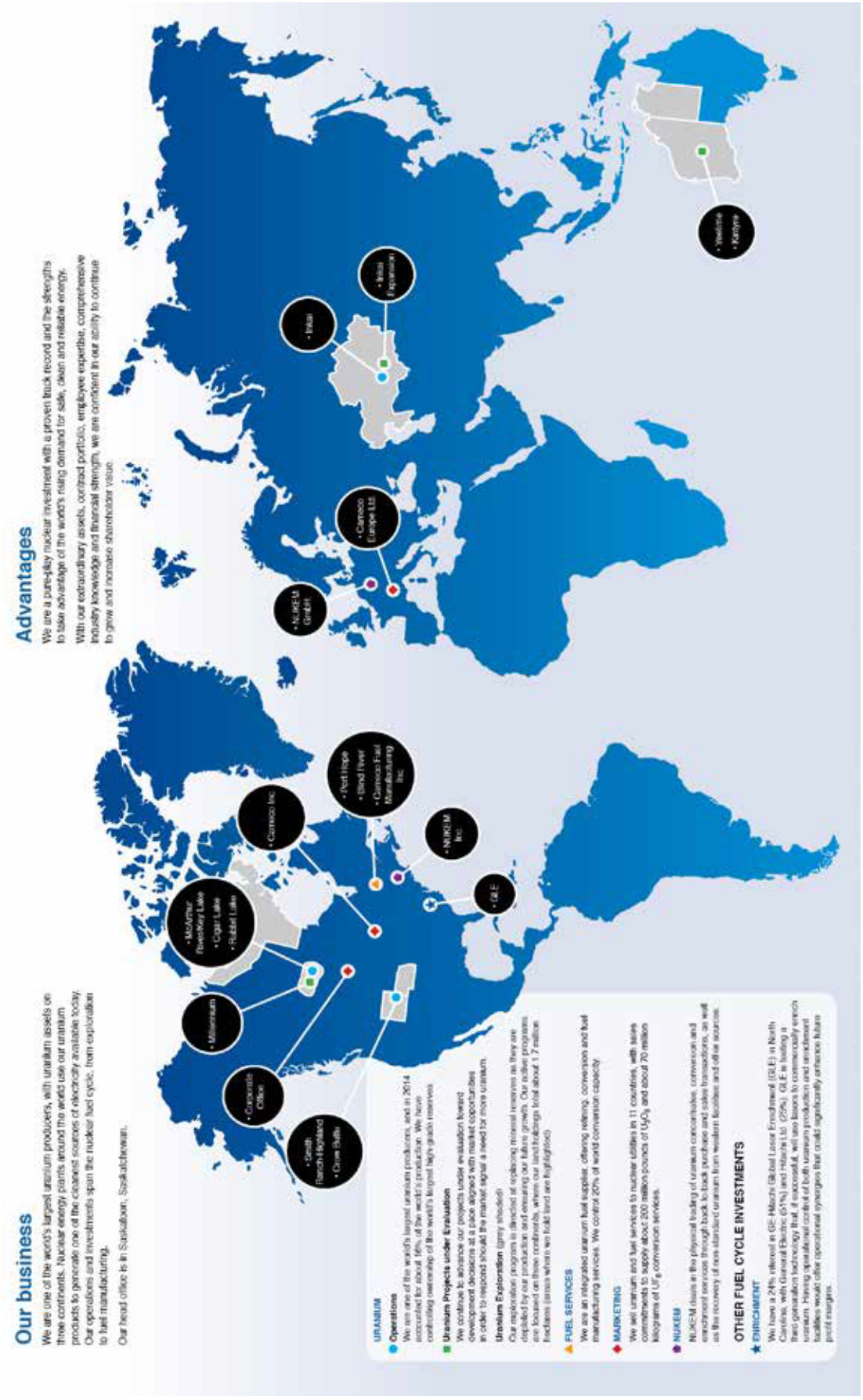

Figure 2-1: Worldwide operations - Cameco Corporation

Since 2000, the mine has produced 263.9 Mlbs (119,703 tonnes) of uranium for world markets. The uranium produced by McArthur River each year produces enough energy to meet about 8% of total electricity demand in the United States.

The McArthur River mine uses a number of innovative methods to safely mine the high-grade ore, including ground freezing to control groundwater and non-entry raise bore mining, which limits radiation exposure. The mine has twice been recognised by the Canadian Mining Institute for safety among Canadian metal mines by awarding it the prestigious John T. Ryan award.

McArthur River ore is processed underground into a slurry, pumped to the surface and then trucked 80 km to the Key Lake mill where the ore is processed into uranium oxide (U_3O_8).

Key Lake was the site of two former open cut uranium operations. One of the two Key Lake pits was converted into a specially engineered facility to ensure secure, long term containment of tailings.

Rabbit Lake

Rabbit Lake is the longest operating uranium production facility in North America. More than 1,904 Mlbs (863,640 tonnes) of uranium has been mined there since 1975, first in a series of open cut operations. For more than a decade, the high-capacity mill has processed ore from the Eagle Point underground mine, which is on the same surface mining lease. The mine life at Eagle Point has been continuously extended through discovery of new underground ore zones. The ore is lower grade than McArthur River, but is still relatively high grade by world standards.

Cigar Lake

The Cigar Lake mine is located in northern Saskatchewan. The mine plan for Cigar Lake, similar to McArthur River, incorporates extensive freezing of the ground around the orebody which is located within water-bearing sandstone about 460 m below the surface. This freezing is one of the tools used to prevent water penetration into the underground workings. The high-grade ore is safely mined using a remote mining method known as jet boring. It is an innovative system that uses pressurised water to remove the ore.

United States – In-Situ Recovery Mines

Cameco has two operations in the Western United States (US) that use the in-situ recovery (ISR) method of recovering uranium from water-bearing sandstone formations. The Smith Ranch-Highland operation in Wyoming and the nearby Crow Butte facility in north-eastern Nebraska make Cameco the largest uranium miner in the US.

Cameco has further leases near both operations where it is seeking approval to build satellite ***in-situ*** operations.

Joint Venture Inkai – Kazakhstan

Cameco produces uranium in Kazakhstan through a joint venture with state-owned Kazatomprom. The Inkai Joint Venture operates ISR mining and processing facilities in central Kazakhstan.

2.4.2.2 Projects Under Evaluation

In addition to the Project, Cameco has a number of other uranium projects under evaluation, including the Millennium Project in northern Saskatchewan and the Kintyre Project in Western Australia.

Exploration in Australia

In Australia, Cameco has active exploration projects in Western Australia and the Northern Territory.

2.4.2.3 Fuel Services

Cameco is an integrated uranium fuel supplier, offering refining, conversion and fuel manufacturing services from operations located in Ontario, Canada.

The refining of uranium oxide (U_3O_8 to UO_3) takes place at Blind River which provides uranium refining for producers from other parts of the world.

The Port Hope conversion facility in Ontario converts UO_3 to UF_6 which is the gas form of uranium required by companies which enrich uranium for light water reactors. The Port Hope conversion facility also has a plant producing natural UO_2, the form of uranium used in Canadian heavy water reactors.

Cameco Fuel Manufacturing, located in Port Hope, turns the natural UO_2 powder into fuel bundles. A satellite plant in nearby Cobourg produces zirconium-based metal components for reactors and fuel bundles.

2.4.3 Cameco's Safety, Health, Environment and Quality (SHEQ) Performance

Cameco measures its safety, environmental, social and financial performance using key performance indicators based around the following four measures of success:

- a safe, healthy and rewarding workplace;
- a clean environment;
- supportive communities; and
- outstanding financial performance.

The overall governance of safety, health, environment and quality at Cameco begins with the Safety Health Environment and Quality (SHEQ) policy, which states the commitment of the senior management of Cameco to the following principles:

- keeping risks at levels as low as reasonably achievable;
- prevention of pollution;
- complying with, and moving beyond legal and other requirements;
- ensuring quality of processes, products and services; and
- continually improving our overall performance.

Cameco's results in achieving its key performance indicators are available in Cameco's 2014 Sustainable Development Report at www.cameco.com/sustainable_development/2014/

Cameco has established risk-informed targets to reduce potential effects on air, water and land, optimise energy consumption, and manage waste. To ensure an effective approach to environmental performance, all operating sites have environmental management systems that are certified under the ISO-14001 standard.

Water: Cameco employs water treatment technologies that have improved the quality of the treated water released from Saskatchewan uranium mining and milling operations. For example, the amount of molybdenum, uranium and selenium in effluent at these operations has been dramatically reduced. For example, molybdenum discharged reduced by 87% from 14,908 kgs in 2009 to 1,985 kgs in 2013; and Selenium discharges were reduced by 35% from 70.8 kgs in 2009 to 45.7 kgs in 2013. Cameco continues to look at how to improve these treatment circuits and increase the efficiency of water use to achieve even better results at all operations.

Waste: Projects to reduce waste, improve the reclamation process and manage waste rock more effectively are continually underway. For example, at the Rabbit Lake operation, reclamation of over 8 million tonnes of waste rock in the B-Zone waste rock pile was completed during 2013.

Air: Cameco continues to revitalise facilities to extend the lifespan of operating sites. Although emissions have always met all regulatory requirements, they have been further improved by replacing some existing facilities. For example, replacement and upgrades to the sulphuric acid plants at Key Lake and Rabbit Lake have significantly reduced emissions of sulphur dioxide at those sites. Work to replace the calciner at Key Lake is also underway, which is expected to reduce emissions to air from the drying and packaging of the mill's final product.

2.4.4 Cameco's Radiation Management Performance

The corporate Radiation Protection Programme (RPP), operating within the governance of the SHEQ Policy, defines the minimum requirements for a radiation protection program at Cameco's sites and explains corporate management and oversight of the RPP. Because radiation protection is essentially a specialised occupational safety and health issue, Cameco has elected to base the corporate RPP on the general principals of the British occupational health and safety management standards, BSI 18000 series and subsequent BSI updates to these standards.

The RPP outlines requirements for site programs, including the areas of risk assessment, regulatory compliance, training, operational controls, emergency response, monitoring and measurement, non-conformance and corrective/preventive actions, audits and management review among others. This program also operates within the broader context of the Quality Management Programme and in conjunction with the other corporate level programs; specifically, the Safety and Health Management, Environment Management, Emergency Preparedness and Response, Contractor Safety and Environment and Management Systems Audit Programmes. Some of the specific requirements of the corporate RPP are discussed below.

Cameco is committed to complying with legal and other requirements relating to managing radiation protection issues. In some jurisdictions, the regulations are not prescriptive in all technical aspects. For example, internal dosimetry[3] requires the use of a number of models. In such cases, internationally accepted methods or standards are used. As most national regulations are based upon the scientific recommendations of the International Commission on Radiological Protection (ICRP) and standards of the International Atomic Energy Agency (IAEA), the publications of these two organisations are used as the primary source of guidance for technical issues.

As stated in the corporate RPP, each site is required to provide training in radiation protection. This training must include, at a minimum, orientation and supervisor training and is expected to address, among other aspects, the specific radiation risks found at a site, the protection measures to be followed, discussion of dose limits and health effects. Additional or specific training programs may be developed, as required by sites, for groups such as engineers and technical staff. Cameco has adopted the systematic approach to training and radiation training is developed and documented in line with this process.

Monitoring and measurement of individual doses and radiological conditions is a key aspect of a RPP and it provides both guidance and specific instruction in the monitoring and dose measurement. The RPP addresses expectations for measurement of gamma radiation, long lived radioactive dust and radon progeny doses. In addition, the program requires sites to develop engineering monitoring schedules for the appropriate types of radiation of concern. Engineering monitoring is a term used to describe types of monitoring not used for official dosimetry purposes. Most types of engineering monitoring are focussed on the workplace environment to control specific radiation parameters.

The corporate RPP also requires that several operational controls be in place at each site. Specifically, sites must have a program or process for ensuring doses are as low as reasonably achievable (ALARA) and consider social and economic factors. As low as reasonably achievable or the ALARA

3. Dosimetry is the measurement of doses received by individuals, in this case doses of ionising radiation.

Principle refers to the principle of optimisation of radiation protection, and is the key driver for ensuring that radiation doses are maintained at the lowest feasible level throughout the life cycle of a practice involving radioactive materials (DMP 2010). The ALARA Principle originally defined by the International Commission on Radiological Protection in 1977 (ICRP, 1977) takes into account economic and social factors and recognises that infinite resources could be spent on reducing radiation risks, but may result in minimal additional benefit. ALARA demonstrates a recognition that the health and safety of employees is of foremost importance. A site ALARA program includes a commitment by senior management to the ALARA program, responsibilities, control over work practices, qualifications and training, consideration of emergency or upset conditions, a review of monitoring results, and a communications plan.

The corporate RPP also requires sites to have a process, typically referred to as a radiation work permit, for setting of job-specific controls to help manage radiation doses in known high radiation conditions or high risk tasks. Finally, the corporate RPP states that each site must have a "code of practice" (or equivalent) which is a series of standard required actions in response to predetermined radiation levels. The actions are progressive in nature with an increasing management response as radiation levels increase. A code of practice helps to ensure a consistent response to unexpected radiation conditions.

How well sites conform to the requirements of the corporate RPP is assessed in many ways, from informal assessments to formal audits, and significant findings are reported to the Cameco Board of Directors. Corporate assistance is available to all sites to help overcome obstacles and achieve compliance with corporate requirements and regulations.

In addition to assisting with compliance, Cameco uses new science and technologies to aid sites in improving the accuracy of dosimetry results and dose reduction. Some specific examples include:

- dust particulate studies and the use of simulated lung fluid experiments, performed by Cameco at its in-house laboratory, to determine site specific solubility parameters for all of its uranium products to better assess doses from internal exposure;
- operational techniques to reduce dust in underground operations; and
- techniques to locate and manage sources of radon gas entering mine workings and mill workplaces.

Significant effort has been put into development of a company-wide database tool for collection of radiation information, calculation of doses, management of sampling compliance, management of equipment calibration and efficiency checks, and reporting of dosimetry and workplace radiological monitoring. This tool has been adapted for use in Canada, the US and Kazakhstan to date, and would be used at Yeelirrie. In addition, the corporate office has several technical experts to provide support to the sites.

Cameco has a strong commitment to radiation protection. As a minimum, the status of the RPP across the company is reported to senior management annually, and company-wide dose statistics are provided to senior management and the Board of Directors quarterly. Internal audit findings related to non-conformance or noncompliance with corporate programs, standards and applicable regulations are also presented to the Board of Directors, ensuring these matters receive prompt attention of senior management.

2.4.5 Cameco's Transport Management Performance

Cameco has significant experience with the transport of radioactive materials. The Cameco Canadian mills alone ship approximately 600 container loads of UOC by road annually with a total distance travelled at just under 2 million km. Using experience gained from many years of operation, Cameco has put into place a number of controls and initiatives to improve both the safety of transport as well as emergency preparedness and response to transport incidents. These include:

- Cameco Transport Standards;
- Emergency Preparedness and Response Program; and
- Emergency Response Assistance Plan.

The Cameco Transport Standards are mandatory corporate standards put in place to ensure Cameco operations worldwide comply with relevant regulations and additional Cameco specific requirements with respect to transport of radioactive materials. Packaging is a key focus of the standards, which puts in place minimum requirements to which each operation must adhere.

The Emergency Preparedness and Response Programme (EPRP), is a corporate program aimed at ensuring Cameco operations are ready and able to respond to the variety of incidents that may occur at Cameco operations. The EPRP is a broad program that encompasses all emergencies including transport. The effectiveness of the site programs is measured by a series of metrics reported annually by the sites and assessed by Cameco's corporate office.

The Cameco Emergency Response Assistance Plan (ERAP) has been in place for a number of years. The overall purpose of the ERAP is to ensure preparedness and response to incidents that may occur during transport of products. While the establishment and ongoing maintenance of the ERAP is a Canadian regulatory requirement, Cameco has extended the principles and methods of the ERAP to its worldwide operations. The ERAP includes a broad list of initiatives:

- Cameco emergency response teams;
- contracted emergency response networks;
- mutual aid agreements;
- First Responder Outreach Program;
- annual emergency response exercises;
- controls placed on Cameco carriers and freight-forwarders; and
- Cameco SHEQ audit program.

Cameco maintains emergency response teams at each operation. These teams train and practice on a regular basis and are equipped to respond to a variety of site specific surface and underground emergencies. Additionally, a corporate team attends all activations of the EPRP. These teams are typically composed of a hazardous materials/safety specialist, radiation specialists and an environmental specialist. Cameco radiation specialists being present during actual transport emergencies have proven to be most valuable over the years by providing a high level of technical oversight and effective communication to first responders.

Contracted emergency response networks have been established in North America in order to support the Cameco teams. The transport of Cameco products typically involves very long distances and a variety of transport modes. As a result, trained teams fully equipped and prepared to respond to Cameco events have been retained across the continent. These teams are trained by Cameco on a recurring schedule. Many of these contracted teams also participate in full-scale and table-top exercises conducted by Cameco.

In addition to the contracted commercial firms used by Cameco to support internal teams during a response, there are also mutual aid agreements set up with others in the nuclear fuel cycle. Cameco currently has an agreement with AREVA Resources whereby Cameco will respond with or on behalf of each other for transport incidents. Mutual aid partners are also included in applicable full-scale and table-top exercises.

Cameco has established a successful outreach program for first responders whereby representatives from Cameco conduct awareness sessions at strategic locations. The first response agencies targeted in Canada typically consist of full-time and volunteer fire departments because they are

normally in charge of a transport incident occurring on Canadian public roads. These sessions, which include radiation safety and hazardous materials response advice specific to Cameco products, have been well received over the 12 years of the program. These awareness sessions are conducted on a three year recurring schedule. In addition to first responders, Cameco also conducts outreach training for shipping port representatives, emergency management agencies, and routinely speaks at hazardous materials conferences in Canada.

Cameco will use the experience gained from years of operation in Canada to establish similar support arrangements with commercial emergency response organisations, other uranium companies, and professional and volunteer first responder organisations.

While not specifically required as part of the ERAP, Cameco places conditions and controls within contractual agreements with all carriers and freight-forwarders that transport its products. Specific conditions can include parking and route restrictions, reporting of any incidents, driver qualification and emergency instructions in the event of an accident.

All carriers and freight-forwarders transporting radioactive materials for Cameco undergo a regular SHEQ audit every two years. These audits, conducted by trained Cameco and third-party auditors, are a valuable tool to evaluate and keep in direct contact with transport vendors.

The controls that Cameco has placed on transport of its products have resulted in a dependable, safe and effective transport system. The core values of the company are reflected in the transport of its products worldwide.

2.4.6 Cameco's Corporate Social Responsibility Performance

Cameco is committed to earn the trust and support of local communities and stakeholders wherever it operates. In addition to maintaining safe, clean operations, Cameco pursues initiatives to ensure that local communities benefit from its activities. These initiatives, led by Cameco's corporate social responsibility group, are developed around five pillars:

- business development;
- community engagement;
- community investment;
- environmental stewardship; and
- workforce development.

In Canada, these initiatives have established Cameco as the nation's largest industrial employer of Aboriginal peoples. Due to preferential hiring policies, about half of the employees and contractors at its mining operations in northern Saskatchewan are residents of the remote, primarily Aboriginal region where mining operations are located. Cameco also favours local Aboriginal-owned business in contracting for services at its operations. During 2013, 67% of the services required to support Cameco's Saskatchewan operations were provided by Aboriginal-owned businesses. These policies build capacity and create opportunity for the Indigenous peoples of northern Saskatchewan. Cameco also conducts extensive stakeholder engagement activities to ensure that people are aware of and understand its activities. These efforts are complemented by community investment, workforce development, and direct support for education to ensure people can benefit from opportunities related to mining in their region. Cameco's efforts to build and sustain the trust and support of local communities have been rewarded with consistently high levels of public support confirmed through annual polling in Canada.

Cameco has achieved Gold level certification in the Progressive Aboriginal Relations Programme with the Canadian Council for Aboriginal Business four times for "innovative programs and engagement of Aboriginal Peoples that have made an enduring impact on the business and Aboriginal communities, and demonstrate best practice for those companies beginning their journey".

Moving into new global regions such as Australia, Cameco will adapt this successful model and implement location-specific programs and initiatives based on ongoing engagement with local communities.

Cameco supports indigenous communities in the Wiluna and Leonora regions through participation in the Murlpirrmarra Connection which assists and supports Aboriginal youth, improving opportunities in the areas of education, educational options, sporting pathways, health, rehabilitation, discipline, self-confidence and employment prospects for young Wiluna and Murchison based Aboriginal men and women. Cameco has also supported a range of community events in Wiluna.

2.5 The Nuclear Energy Industry

The following section has been presented to provide some background information on the global nuclear energy industry and uranium demand.

The long term outlook for the uranium industry continues to be very positive, despite the uncertainty that exists today. Against the backdrop of the world's growing need for safe, clean, reliable and large-scale sources of energy, nuclear energy continues to play a significant role in the global energy mix. The challenge for the industry is the pathway and timing of the transition from today's stagnant, over-supplied short-term market to the promise of nuclear growth and positive uranium market conditions in the long term.

Market conditions deteriorated following the events at the Fukushima power plant in 2011, and Cameco believes the uncertainty could continue, depending on how events unfold. In particular, the slower than expected pace of Japanese reactor restarts, unexpected reactor shutdowns in the United States and temporary shutdowns in South Korea have led to a reduction in demand, while supply has remained steady. The impact of these conditions has been an increase in inventory and downward price pressure.

This market dynamic has also led to a reduction in market contracting activity. Utilities are well covered under long term supply contracts for the time being and are not under pressure to buy. Similarly, existing suppliers appear reluctant to enter into meaningful contract volumes at current prices. The result has been very low levels of long term contracting, highlighting a stalemate between buyers and sellers. How this stalemate is resolved will be a key factor influencing the pace of market recovery.

2.5.1 Long-term Outlook

Electricity is essential to maintaining and improving the standard of living for people around the world. Demand for safe, clean, reliable, affordable energy continues to grow and the need for nuclear as part of the world's energy mix remains compelling.

Looking beyond the current market challenges, there have been several positive indications for the long term. In Japan, more clarity has been gained around the process for reactor restarts: the Nuclear Regulatory Authority (NRA) implemented measures that improved regulatory stability; restart applications have been submitted by 11 utilities covering 21 reactors; and, there has been observable confidence from Japanese utilities who are spending billions of dollars on plant upgrades in anticipation of a positive restart environment.

In other regions, China's remarkable nuclear growth program remains on track. The UK has also garnered positive attention as a result of a government-backed revenue arrangement with Électricité de France, designed to support new the construction of new plants in the UK.

The 2013 World Energy Outlook predicts that by 2035 electricity consumption will have grown by about 70% from current levels (Figure 2-2), driven mainly by growth in the developing world as it

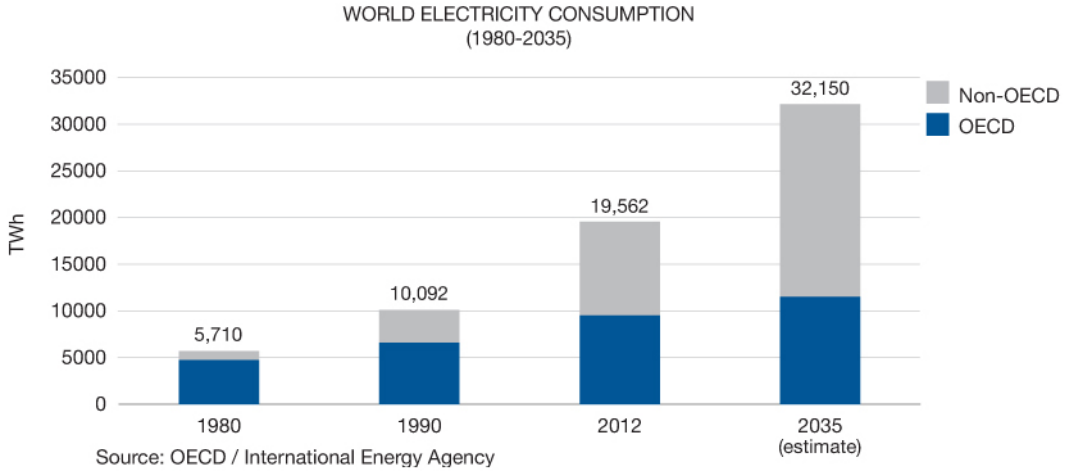

Figure 2-2: World electricity consumption 1980-2035

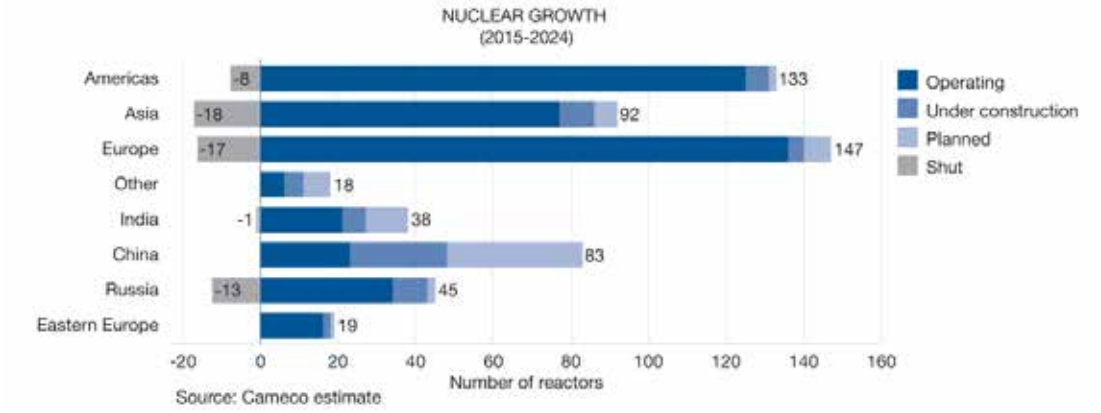

Figure 2-3: World nuclear growth 2015-2024

seeks to diversify sources of energy and provide security of supply (OECD/IEA, 2013). In January 2015, there were 437 operable commercial nuclear power reactors in 30 countries (World Nuclear Association, 2015), and by 2024, Cameco expects that to grow to 518 reactors (Figure 2-3). Most of this new build is being driven by rapidly developing countries like China and India, which have severe energy deficits and want clean sources of electricity to improve their environment and sustain economic growth.

It is clear that this growth will require new sources of uranium supply at a time when secondary supplies (uranium from sources other than mining, such as down-blended weapons material) are diminishing and current market conditions have resulted in deferrals and cancellations of several uranium projects.

Current prices are insufficient to drive new production. The end of the Russian Highly Enriched Uranium (HEU) commercial agreement in 2013, removing 24 Mlbs (10,886 tonnes) of annual secondary supply from the market, highlights the need for increasing reliance on primary uranium supply in the future. The timing of this required supply may well be muted in the near term due to the extension of the over-supply situation, but new supply will be required this decade. The development and execution of new uranium supply projects, as well as continued performance of existing supply, will also play a significant role in determining the timing and pace of market recovery.

Given Cameco's extensive base of mineral reserves and resources, diversified sources of supply and global exploration program, the company is well positioned to meet the growing demand for uranium.