Yeelirrie Uranium Project

Response to Submissions

Attachment 1

Review of Policies and Guidelines

Attachment 1

Yeelirrie Uranium Project Public Environmental Review (PER) Response to Submissions

Review of Relevant Environmental Policies

Reference	Requirements	Cameco Response
General Policies applicable to Cameco		

EPA (2013) Environmental Assessment Guidelines No. 10 Scoping a proposal	• Provides proposal specific guidelines of preliminary key environmental factors/issues that should be addressed in the ESD.
	• Identifies studies and investigations that the proponent must carry out and discuss in the ESD which includes the following key elements:
	  ○ Proposal definition
	  ○ Preliminary key environmental factors and objectives (refers to EAG 8)
	  ○ Scope of the work in relation to each environmental factor and mitigation measures
	  ○ Relevant policies for each key environmental factor
	  ○ Stakeholder consultation requirements
	  ○ Assessment timeline and
	  ○ Identification of decision making authorities and parallel processing.
		Environmental Scoping Document (ESD):
		• Provides a table defining the proposal.
		• Provides a table which lists the key environmental factors.
		• Acknowledges the need for stakeholder consultation
		• Provides assessment timeline table.
		• Lists other decision making authorities and notes the encouragement of parallel processing.
		In the PER, Table 8-1 (p.116) provides a summary of the key environmental factors and objects.

EPA (2012) Environmental Assessment Guidelines No. 1 Defining the key characteristics of a proposal	• Requires proponent to provide key elements of the proposal for which the proponent is seeking approval and clearly outline the elements that will be assessed. • Describes "elements" by reference to the "specific development, action, activities or processes to be performed in its implementation" which are likely to cause an impact on the environment. • Characteristics are "quantified and qualified".	Both the ESD and in the PER (Section 6, Table 6-1 p. 54) contain a key characteristics table which corresponds with the example in the EAG. The table provides quantified data such as amount of hectares cleared. The PER also contains spatial data showing the proposed boundaries at p.57- p.58.

Reference	Requirements	Cameco Response
	• Proposed boundaries of the proposal should be submitted as spatial data.	
EPA (2013) Environmental Assessment Guidelines No.6 Timelines for environmental impact assessment of proposals	• Provides guidance to EPA and proponents on the steps from pre-referral discussions to appealing the Minister's decision.	ESD includes assessment timeline (Table 3) as agreed between the proponent and the EPA.

EPA (2008) Environmental Assessment Guideline No.8 Environmental principles, factors and objectives	• Provides environmental principles which are the highest level goals that a proposal must meet in order to be found environmentally acceptable.
	• States the environmental principles of the Act:
	  ○ precautionary principle
	  ○ principle of intergenerational equity
	  ○ principle of the conservation of biological diversity and ecological integrity
	  ○ principles relating to improved valuation, pricing and incentive mechanism and
	  ○ principle of waste minimisation.
	• States the environmental principles of the EPA:
	  ○ contemporary best practice measures should be applied at time of implementation
	  ○ aim for continuous improvement in environmental performance.
	• Lists environmental factors and objectives - discussed under environmental factors below. If the objective is met it will indicate that the proposal is not expected to have a significant impact on that factor of the environment.
		Environmental objectives are listed in table 8-1 (p.116) in Assessment Framework of PER, with certain factors addressed as a key factor.
		In the PER at the beginning of each subsection, the EPA objective for that key factor is listed.
		
		Environmental principles are considered in Table 12-2 of the PER.

EPA (2015) Environmental Assessment Guidelines No.9 Application of a significance framework in the environmental impact assessment process	Where the significance of a proposal suggests it may meet the EPA's objectives the proposal is assessed. Depending on the likely impact on key environmental factors, the EPA imposes a certain assessment level on the proponent.	As there are several key environmental factors that may be impacted due to the proposal, the EPA has assessed the project at a high level.

Reference	Requirements	Cameco Response
	Where there are several key environmental factors which may be impacted by the proposal, the assessment is set at a high level.	
1. *Flora & Vegetation*		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA's objective for flora and vegetation is to maintain representation, diversity, viability and ecological function at the: 1. species, 2. population and 3. community level.	Cameco applies the mitigation hierarchy (as described in EAG 9) proposing to: • Avoid over clearing of land and clearing after rainfall for safe and efficient operation and reduce risk of erosion. • Minimise the potential for weed infestation by cleaning equipment and machinery before moving to new areas and monitor vegetation health under the *Flora and Vegetation Management Plan.* • Rehabilitate by temporarily stockpiling removed vegetation as a seed source and progressively rehabilitating areas no longer needed. Cameco acknowledges that residual impacts on significant flora will likely occur on account of the Project, particularly to *Atriplex* (Western genotype) and *Rhagodia.* Cameco has committed to the *Conservation Species Management Plan* (see Appendix E3 of the PER to offset these impacts.

Reference	Requirements	Cameco Response
		The offsets include permanent protection of *Atriplex* (Eastern genotype) and implementation of a research plan and a translocation plan for the *Atriplex* (Western genotype) to be work on with DPaw and EPA to the satisfaction of the EPA. Cameco considers that these measures sufficiently offset the environmental impact and Cameco will meet the EPA's objective.
EPA Checklist for documents submitted for EIA on marine and terrestrial biodiversity	Provides the basis for consultants and proponents to conduct initial in-house screening of the quality of their EIA documents A copy of this checklist certified by an appropriate proponent representative as complete and accurate must be lodged with EIA documentation submitted to the EPA. Completed checklists will be reviewed by the EPA when documents are lodged.	The reports in Appendix E were reviewed against this checklist.
EPA 2000. Environmental Protection of Native Vegetation in Western Australia. Position Statement No. 2. December 2000. EPA, Perth, Western Australia	"In assessing a proposal, the EPA's consideration of biological diversity will include the following basic elements: 1. A comparison of development scenarios, or options, to evaluate protection of biodiversity at the species and ecosystem levels, and demonstration that all reasonable steps have been taken to avoid disturbing native vegetation. 2. No known species of plant or animal is caused to become extinct as a consequence of the development and the risks to threatened species are considered to be acceptable. 3. No association or community of indigenous plants ceases to exist as a result of the project. 4. There would be an expectation that a proposal would demonstrate that the vegetation removal would not	Cameco has reviewed a number of development options for the Project (Section 5) and has used a hierarchical approach to management of impacts on biodiversity (Executive Summary Table E3). The Project will directly impact one vegetation association CMGbS (Mulga *Grevillea berryana* Shrubland) beyond the threshold level of 30% of the pre-clearing extent (Section 9.1.5.1; Table 9-11, p.148 of the PER). The component species are widespread and abundant where they occur, however the regional representation of Mulga - *Grevillea berryana* Shrubland on Calcrete is not known past the Local Study Area. This is most likely due to low intensity mapping outside Local Study Area but is expected to exist in similar land units

Reference	Requirements	Cameco Response
	compromise any vegetation type by taking it below the "threshold level" of 30% of the pre-clearing extent of the vegetation type. 5. Where a proposal would result in a reduction below the 30% level, the EPA would expect alternative mechanisms to be put forward to address the protection of biodiversity. 6. There is comprehensive, adequate and secure representation of scarce or endangered habitats within the project area and/or in areas which are biologically comparable to the project area, protected in secure reserves. 7. If the project area is large … the project area itself should include a comprehensive and adequate network of conservation areas and linking corridors whose integrity and biodiversity is secure and protected. 8. The on-site and off-site impacts of the project are identified and the proponent demonstrates that these impacts can be managed. 9. Clearing in these other areas of the State may be environmentally acceptable if the proponent demonstrates clearly that the proposal meets the above elements and that actions to meet the two key objectives of the National Strategy for the Conservation of Australia's Biological Diversity are being met.	where *Acacia ayersiana* and *Grevillia berryana* co-occur. Clearing on this vegetation association will be managed and minimised. Implementation of the Project will retain approximately 70% of the overall population of the species *Atriplex yeelirrie* (Section 9.1.5.3, p. 160 of the PER) but impact on the Western genotype. Cameco has developed a Conservation Species Management Plan (Appendix E3) to manage the impacts on *Atriplex yeelirrie* and other significant species to ensure no net loss of biological values relating to Threatened and Priority Flora (Section 1 of Appendix E3). Additional management, mitigation and recovery measures including a research program have been developed in consultation with DPaW and OEPA and are presented with the response to submissions. There are adequate and secure representation of endangered habitats. Cameco considers that all on-site and off-site impacts have been considered and can be managed to meet statutory levels and community standards.
EPA 2002. Terrestrial Biological Surveys as an Element of Biodiversity Protection. Position Statement No. 3. March 2002. EPA, Perth, Western Australia	EPA's Overarching Principles For Environmental Impact Assessment of Biodiversity: • The Environmental Protection Authority (EPA) adopts the definition of Biological Diversity and the Principles as defined in the National Strategy for the Conservation of Australia's Biological Diversity and will have regard for these in undertaking its role	The flora and vegetation surveys undertaken for the Project area presented in Appendix E and have been undertaken to address this guidance. The key aspect of the Project is the management of the impact on *Atriplex yeelirrie*, which is known to occur in two populations with significant genetic diversity identified.

Reference	Requirements	Cameco Response
	• The EPA expects proponents to demonstrate in their proposals that all reasonable measures have been undertaken to avoid impacts on biodiversity. Where some impact on biodiversity cannot be avoided, it is for the proponent to demonstrate that the impact will not result in unacceptable loss. • The EPA aims to ensure that the information gathered for environmental impact assessment in Western Australia meets State, National, and International Agreements, Legislation and Policy in regard to biodiversity conservation. • The EPA requires that the quality of information and scope of field surveys meets the standards, requirements and protocols as determined and published by the EPA. • The EPA will use the Interim Biogeographic Regionalisation of Australia (IBRA) as the largest unit for EIA decision-making in relation to the conservation of biodiversity. • The EPA expects proponents to ensure that terrestrial biological surveys provide sufficient information to address both biodiversity conservation and ecological function values within the context of the type of proposal being considered and the relevant EPA objectives for protection of the environment. • The EPA expects that terrestrial biological surveys will be made publicly available and will contribute to the bank of data available for the particular region, to aid the overall biodiversity understanding and assessment by facilitating transfer into State biological databases.	Cameco has developed a Conservation Species Management Plan (Appendix E3) to manage the impacts on the Western genotype of *Atriplex yeelirrie* to ensure no net loss of biological values relating to Threatened and Priority Flora (Section 1, Appendix E3). This plan and associated recovery and translocation plans are being further developed in consultation with DPaW and OEPA. The proposed translocation package considers multiple translocation sites for the Western genotype, supported by a practical research proposal to enhance the potential for successful translocation. Sub-populations of the Western genotype would not be disturbed until year 12 of the mining project providing a significant lead time to demonstrate success before the last of the natural population is disturbed and seed collection and storage has been proposed as an additional security measure. Cameco considers these measures reduce the risk to the species to an acceptable level. Preliminary offset packages to address the residual impact were presented in the PER and will be finalised with advice from the OEPA. Detailed surveys have been completed and reports of the surveys conducted for the assessment of the

Reference	Requirements	Cameco Response
	• In the absence of information that could provide the EPA with assurance that biodiversity will be protected, the EPA will adopt the precautionary principle. • Detailed surveys are required in all bioregions where potential impact is high. Best practice assessment now requires that biodiversity be considered to have two key aspects, namely: 1. its biodiversity value at the genetic, species, and ecosystem levels; and 2. its ecological functional value at the ecosystem level. • Notes that the intrinsic value of a species should not be judged only by its rarity or how threatened the taxon may be. Even though a species may occur in large numbers, it may be a major component for the sustainability of the system. Species must be considered in the context of its geographical range.	Project are available to the public on the corporate website. Cameco will consider sensitive environmental areas as well as significant flora under a proposed Flora and Vegetation Management Plan (see 9.1.5.1 on page 152). A broad overview of the ecosystem in the Project area is contained in 7.1 at p. 99. Cameco considers that all reasonable measures have been undertaken to avoid impacts on biodiversity.
EPA 2004. Guidance for the Assessment of Environmental Factors. Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, No. 51. June 2004. EPA, Perth, Western Australia	Provides the general standards and a common framework for terrestrial flora and vegetation surveys. Requires proponents to ensure that flora and vegetation surveys provide sufficient information to address both biodiversity conservation and ecological function values within the context of the type of proposal being considered and the relevant EPA objectives for protection of the environment (see EAG 8). This enables the EPA to assess impacts on the conservation values and status of the site in a regional and local context. Includes detail on survey design and methodologies specifically: • who should lead the survey • when the survey should be conducted • the extent and level of the survey required	Section 3.3 of Appendix E2 outlines that the baseline survey (Appendix E1) undertaken by the previous proponent and subsequent survey efforts undertaken by Cameco (Appendix E2) meet the requirements of this guidance. Cameco consider that both "biodiversity conservation" and "ecological function values" within the context of the type of proposal were addressed during the survey. Cameco considers the relevant EPA objectives for protection of the environment (see EAG 8) when conducting the survey have been met.

Reference	Requirements	Cameco Response

	• intensity of sampling is determined by complexity of the flora and vegetation considering the:
	  ○ landform, habitat,
	  ○ vegetation structure, diversity and seasonality,
	  ○ potential for priority or other significant flora to occur due to habitat
	  ○ results of preliminary sampling and
	  ○ information on adjacent areas and previous surveys
	• The survey should describe the methods used and the limitations of the method (i.e. completeness, timing, weather, access problems, resources, background information).
	• The data should be presented in quantitative form and contained in survey reports.
	• The survey should provide context for the survey i.e. review existing knowledge, the characteristics of the site, objective of survey and information being investigated.
	• The survey should be publically available.
		Cameco also considers that the survey design and methodologies were implemented in line with the Assessment Guide.

EPA 2006. Guidance for the Assessment of Environmental Factors. Rehabilitation of Terrestrial Ecosystems. No. 6. June 2006. EPA, Perth, Western Australia	The Guidance Statement promotes the use of completion criteria and definitions for the rehabilitation of natural ecosystems which (i) allow success to be measured within realistic timeframes (ii) are sufficiently precise to allow outcomes to be effectively audited, but are also flexible when required (iii) are based on sound scientific principles and (iv) acknowledge the consequences of permanent changes to landforms, soils and hydrology.	The development of Completion Criteria is addressed in Section 6 of the Mine Closure Plan (Appendix O). Development of completion criteria is an iterative process that will continue throughout the development, operation and closure of the Project, and will be informed by the baseline surveys outlined in Appendix E (flora and vegetation) and Appendix M (materials characterisation).

Reference	Requirements	Cameco Response
	The Guidance Statement promotes setting rehabilitation objectives that take into account the complexity of any restraints In relation to the Completion Criteria, the EPA requires the criteria to be: • specific enough to reflect the unique set of environmental, social and economic circumstances • flexible enough to adapt to changing circumstances without compromising objectives • include environmental indicators suitable for demonstrating that rehabilitation trends are heading in the right direction • undergo periodic review resulting in modification if required due to changed circumstances or improved knowledge and • based on targeted research which results in more informed decisions. These include standard criteria that apply to all projects, as well as site specific criteria used to measure the recovery of ecosystems relative to reference sites. Other key areas of discussion are the importance of scientific research and long-term monitoring of outcomes and effective management of information required to measure outcomes.	
Government of WA 2011. WA Environmental Offsets Policy. September 2011. Perth, Western Australia	Refer to factor 10.	Refer to factor 10.
Government of WA 2014. WA Environmental Offsets	Refer to factor 10.	Refer to factor 10.

Reference	Requirements	Cameco Response
Guidelines. August 2014. Perth Western Australia		
EPA 2014. Environmental Protection Bulletin No. 1. Environmental offsets. August 2014. EPA, Perth, Western Australia	Refer to factor 10.	Refer to factor 10.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	Environmental Management Plans are expected to reflect aims and principles of environmental impact assessment including: • the implementation of best practicable measures to avoid (where possible) and otherwise minimise, rehabilitate and offset impacts on the environment; and • the promotion of adaptive environmental management, positive environmental outcomes and continual improvement through learning and knowledge gained through the environmental impact assessment process and proposal implementation.	Cameco has stated in Section 12.3 in the PER that it will develop and implement Environmental Management Plans. These will be developed in consultation with relevant decision making authorities and government agencies and made available to the public via Cameco's website Cameco has included a Conservation Species Management Plan (Appendix E3) in the PER. The Plan is management based and is mainly concerned with the management of *Atriplex Yeelirrie* and the rehabilitation of the Western genotype through replanting. Cameco has revised the plan and management actions multiple times and the plan has risk based management actions through additional needed research to find host locations for the replanting.
2. Human Health (Radiation)		
EPA (2008) Environmental Assessment Guideline No. 8	The EPA's objective for human health is to ensure that human health is not adversely affected.	Cameco undertakes to meet the EPA objective as stipulated in the ESD and 9.6.1 of the PER to

Reference	Requirements	Cameco Response
Environmental principles, factors and objectives		"ensure that human health is not adversely affected". Cameco intends to manage the exposure of radiation to workers and other parties near the site through avoid and minimise measures (summarised on p. 327-328) and a commitment to rehabilitate (p.328). As part of these measures, Cameco commits to develop: • a Radiation Management Plan and • a Transport Radiation Management Plan. Cameco considers Australian guidelines published by other government agencies and international publications as guidance in their approach to radiation (see p. 296 & p. 316) and has adopted the As Low as Reasonably Achievable Principle in relation to dosage levels for possibly affected persons. Cameco's proposed management measures are consistent with best practice.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	See factor 1	Cameco has stated in its PER that it will develop and implement the following management plans: • Radiation Management Plan and • Transport Radiation Management Plan including an Emergency Response Plan. The Radiation Management Plan will be developed in consultation with the Department of Mines and Petroleum and the Radiological Council and will

Reference	Requirements	Cameco Response
		include details of radiation protection and radioactive waste management specific to the plant. The approved Management Plans will be made publically available via Cameco's website.
EPA (2014) Environmental Assessment Guideline No. 13 Consideration of environmental impacts from noise	The guideline outlines how the EPA considers the impacts of noise emissions. The EPA expects proponents to: 1. use best practice noise management to minimise impacts on human health and amenity 2. achieve compliance with other regulations and policies and 3. address their contribution to cumulative noise emissions. The guideline also provides a mitigation hierarchy for management of noise generating activities is: 1. avoid generation of noise 2. design a proposal such that implementation will not cause noise impacts at noise sensitive premises 3. contain emissions within the individual land use site boundary and 4. mitigate and manage emissions so that there are no unacceptable noise impacts on the adjacent and surrounding noise sensitive premises. Proponents are expected to avoid, minimise and mitigate the anticipated impacts from noise using best practice and technology.	Cameco notes that the location of the project is remote, with the closest sensitive premise being 14km from the project area. All noise emissions comply with the regulations and policies and no additional noise controls are required. Cameco will however minimise noise emission by operating and maintaining equipment in accordance with manufactures requirements and will require its transport contractors to regularly maintain and operate vehicles in accordance with manufactures requirement to minimise noise emissions.
EPA (2012-2013) Annual Report	The Annual Report considers the key issue of uranium and human health at p.69 of the report. The Report notes that:	Cameco has reiterated the existing regulatory framework (section 9.6.2 p. 296-297 of the PER). Cameco has committed to developing Management Plans which will be provided to the DMP and

Reference	Requirements	Cameco Response
	• The key environmental agencies responsible for regulating uranium mining and transport are DMP, Radiological Council and DoH. • The EPA has formed the view that the existing regulatory framework provided a comprehensive legislative system for regulating uranium mining and transport. • The EPA recommends that all environmental management plans approved by the agencies should be made publically available.	Radiological Council prior to construction (section 9.6.6 p. 316 of the PER). The approved Management Plans will be made publically available via Cameco's website.
3. Hydrological Processes / Inland Waters Environmental Quality		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA's objectives for: • hydrological processes is to maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance are protected; and • inland waters environmental quality is to maintain the quality of groundwater and surface water, sediment and biota so that the environmental values. Both ecological and social are protected.	In relation to surface water, Cameco commits to developing a surface water management plan and has proposed management measures (section 9.4.6 p. 262). Cameco will maintain abstraction rates and levels at a minimum for safe operation and project water supply. Cameco will continue baseline monitoring to demonstrate maintenance of the quality of ground and surface water. Details will be contained in the Groundwater Operating Strategy which Cameco commits to prepare and implement which includes a Groundwater Management Plan. Considering the above measures Cameco considers that the project will meet the EPA's objectives.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management	See factor 1	Cameco will develop a Surface Water Management Plan and Groundwater Management Plan.

Reference	Requirements	Cameco Response
plans under Part IV of the Environmental Protection Act 1986		
EPA (2004) Position Statement No. 4: Environmental Protection of Wetlands, Perth, Western Australia.	The purpose of this Position Statement is to define those environmental values and functions of wetlands that the EPA considers important, and to explain why they are worthy of protection. This Position Statement focuses on terrestrial wetlands with permanent or temporary inundation, excluding rivers, creeks, estuaries, caves, and constructed wetlands.	There are no terrestrial wetlands as defined by this Position Statement that occur in the Project Area, or are likely to be affected by the Project (Sections 9.4.4 and 9.4.5 p. 239-261 of the PER). Therefore this Position Statement is not considered directly applicable to the Project.
EPA (2000) Position Statement No. 2: Environmental Protection of Native Vegetation, Perth, Western Australia	Refer to Factor 1 above.	Refer to Factor 1 above. The impacts of changes to groundwater and surface water on native vegetation within the Project area are addressed in Section 9.1.5.1. at p. 147-158 of the PER.
4. Subterranean Fauna		
Government of WA 2011. WA Environmental Offsets Policy. September 2011. Perth, Western Australia	Refer to factor 10.	Refer to factor 10.
Government of WA 2014. WA Environmental Offsets Guidelines. August 2014. Perth Western Australia	Refer to factor 10.	Refer to factor 10.
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for subterranean fauna is to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.	Objective is reiterated at 9.2.1. on p. 173 of the PER. Cameco lists potential management options (at 9.2.7, p. 196-197) and proposed to utilise the hierarchy of control to manage the impact of the Project on stygofauna by:

Reference	Requirements	Cameco Response
		• Avoidance through no abstraction wells being located within the palaeochannel to the northwest of the pit, as this area supports many stygofauna species; and • Minimising impacts by relocating abstraction wells throughout the supply area to reduce the groundwater impact as much as possible. • Not exceeding drawdown 0.5m as mapped on Figure 9-17 of the PER to minimise loss of habitat. • Undertaking further testing of the wellfields during a Definitive Feasibility Study to explore more opportunities to minimise this impact. • The creation of a Troglofauna Protection Area to exclude mining from an area of the open pit to preserve 4 species of troglofauna until further work can demonstrate extension of habitat to the satisfaction of the EPA CEO. Cameco proposes to develop a Subterranean Fauna Management Plan which will be integrated with the Groundwater Management Plan. The Subterranean Fauna Management Plan will include the following as a minimum: • the location of monitoring bores; • a detailed monitoring program for both water quality and groundwater level;

Reference	Requirements	Cameco Response
		• baseline data for both water quality and absolute water level at the monitoring bore locations; • internal trigger criteria, threshold criteria and associated contingency actions; and • regulator reporting requirements. Cameco is also committed to having further discussions with OEPA and DPaW to determine a suitable offset in relation to the calcrete habitat, a priority ecological community. Cameco considers that having regard to the Project design, proposed management measures and proposed offsets of ongoing restrictions that Cameco can meet the EPA objective for subterranean fauna.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	See factor 1	Cameco proposes to develop a Subterranean Fauna Management Plan which will be integrated with the Groundwater Management Plan.
EPA (2007) Draft Guidance Statement No. 54a: Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia (2007);	This Guidance Statement provides further technical detail on sampling methods. It provides a framework for acceptable sampling efforts and methodologies for subterranean fauna and describes the reporting requirements (as required under Guideline No. 12) in detail. It recommends proponents aim to collect 95% of the species in the area to be impacted by development.	Sampling effort and survey coverage exceeded the requirements outlined in EPA Guidance Statement 54a (2007) (Appendix F1 and Appendix F2). The Assessment Report (Appendix F1) of the survey states that 84% of the estimated stygofauna species and 69% of the estimated troglofauna species have been collected. The reason the large sampling effort was unable to collect 95% of the species present is

Reference	Requirements	Cameco Response
	Recommends for stygofauna: • Sampling in bores - through haul nets, pumping or traps. • Notes that for stygofauna there may be uneven yield from bores, recommends in areas where it is likely there are significant stygofauna values, a total of 40 samples taken from at least 10 bores within the impact zone will be required. • Recommends sampling should occur in at least two season. • Recommends that all bores sampled are at least 6 months old. Recommends for troglofauna: • Sampling through traps which are lowered into a bore. • Principles for stygofauna generally apply. • Recommended at least 60 samples should be collected from areas likely to have significant troglofauna values. • Recommends two seasons of sampling but if restricted to one it must be the wet season.	likely due to the high spatial turnover of species across calcrete. The survey comprised seven zones and a total of 641 stygofauna samples and 461 troglofauna samples were collected from 259 bores throughout the study area some outside the Project area. The survey was taken over 6 sampling trips from March 2009 to September 2010. The sampling of bores were done in 5-7 month increments (i.e. over different seasons). As several bores were not 6 months old, a pumping method was used to overcome the need for bore colonisation. The report (Appendix F2) contained all the reporting requirements listed in EPA Guidance Statement 54a.
EPA (2013) Environmental Assessment Guideline No 12 Consideration of subterranean fauna in environmental impact assessment in Western Australia, Perth, Western Australia.	Level 2 (reconnaissance) surveys are required for all moderate or high impacts, except where the likelihood of habitat of supporting subterranean fauna is low. Outlines survey design including sampling, use of genetics, use of surrogates, specimen vouchering & lodgement, interpreting and reporting.	The survey design and methods employed in the Level 2 field sampling program fit the framework outlined in the EPA's Environmental Assessment Guideline 12 (Appendix F1).
EPA Checklist for documents submitted for EIA on marine and terrestrial biodiversity	Provides the basis for consultants and proponents to conduct initial in-house screening of the quality of their EIA documents.	The requirements of this Checklist were addressed in Section 9.2 and Appendices F1 and F2.
5. Terrestrial Fauna		

Reference	Requirements	Cameco Response
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for terrestrial fauna is to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.	Sections 9.3.4.4 at p. 214-216 of the PER provide an overview of the conservation of significant invertebrate species and Table 9-34 (p. 228-230) explores the potential impacts on these species due to the Project. Impacts on conservation significant vertebrate species is summarised in Table 9-33 (p. 223-228) and on p.206. Table 9-35 (p. 230-231) provides the proposed actions to counteract these impacts for both invertebrate and vertebrate fauna. Cameco considers the Fauna Management Plan will meet the EPA objectives for CSS fauna.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	See factor 1	Cameco commits to develop and implement the Fauna Management Plan. Cameco will consider the Guidance Statement in developing this plan.
Government of WA 2011. WA Environmental Offsets Policy. September 2011. Perth, Western Australia	Refer to factor 10.	There are not expected to be any significant residual impact to terrestrial fauna, and therefore offsets do not apply to this factor.
Government of WA 2014. WA Environmental Offsets Guidelines. August 2014. Perth Western Australia	Refer to factor 10.	There are not expected to be any significant residual impact to terrestrial fauna, and therefore offsets do not apply to this factor.
EPA 2002. Terrestrial Biological Surveys as an Element of	Refer to factor 1.	Cameco and its consultants have reviewed the fauna surveys undertaken for the Project to confirm

Reference	Requirements	Cameco Response
Biodiversity Protection. Position Statement No. 3. March 2002. EPA, Perth, Western Australia		the surveys met the requirements for Level 2 biological surveys for assessment of the impacts of the Project (Section 9.3.2 and Appendices G1 and G2 of the PER).
EPA 2006. Guidance for the Assessment of Environmental Factors. Rehabilitation of Terrestrial Ecosystems. No. 6. June 2006. EPA, Perth, Western Australia	Refer to factor 1.	The development of Completion Criteria is addressed in Section 6 of the Mine Closure Plan (Appendix O). Development of completion criteria is an iterative process that will continue throughout the development, operation and closure of the Project, and will be informed by the baseline surveys outlined in Appendix G (terrestrial fauna) and Appendix M (materials characterisation).
EPA (2009) Guidance Statement No. 20: Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia, Perth, Western Australia	Provides that the EPA objectives for SRE fauna are to: • ensure the protection of key habitats for SRE species • maintain the distribution, abundance and productivity of populations of SRE taxa and • ensure that the conservation status of SRE taxa is not adversely changed as a result of development proposals. The EPA will expect the requirements of this Guidance to be met when SRE fauna is a relevant factor for proposals, including sampling outside of the proposed impact area when searching for SREs. The EPA seeks from the proponent sufficient information, through habitat assessment, sampling, and within the constraints of reasonably available knowledge, to assess the risk that the conservation status of a SRE taxon would be adversely affected as a result of the proposal.	Section 9.3.3.2 (p.204) and Appendix G2 indicate the SRE surveys were conducted in accordance with Guidance Statement No. 20. Sections 9.3.4.4 (p.214-p.216) provide an overview of the conservation significant invertebrate species and Table 9-34 (p.228-p.230) explores the potential impacts on SRE due to the Project and Table 9-35 (p.230-p.231) provides the proposed actions to counteract these impacts. It is noted in this table that the impact on invertebrate fauna is minor. As a result Cameco considers the Fauna Management Plan will meet the EPA objectives for SRE fauna.

Reference	Requirements	Cameco Response
	Provides guidance on sampling design and methodology, preservation, identification, analysis and reporting.	
EPA (2004) Guidance Statement No. 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, Perth, Western Australia.	Provides the general standards and protocols for terrestrial fauna surveys Includes detail on survey design and reporting.	Vertebrate fauna surveys undertaken for the Yeelirrie Project are equivalent to a Level 2 survey and meet the requirements of Guidance Statement No. 56 (Section 9.3.3 and Appendices G1 and G3 of the PER).
EPA and DEC (2010) Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment, Perth, Western Australia.	This guide provides advice on fauna sampling techniques and methodologies for different regions of the State and the analysis, interpretation and reporting requirements for EIA. It should be read in conjunction with EPA Guidance Statement No. 56.	The initial vertebrate fauna surveys were undertaken between March 2009 and May 2010 (Table 3 of Appendix G3) before the release of this guidance in September 2010. A review of these surveys and further work undertaken by Cameco indicate that these surveys also comply with the 2010 Technical Guide (Appendix G1).
EPA Checklist for documents submitted for EIA on marine and terrestrial biodiversity	Provides the basis for consultants and proponents to conduct initial in-house screening of the quality of their EIA documents.	The requirements of this Checklist were addressed in Sections 9.1 – 9.3 of the PER and associated Appendices.
6. Air Quality and Atmospheric Gases		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for air quality and atmospheric gases to maintain air quality is to protect the environment and human health and amenity, and to minimise the emission of greenhouse and other atmospheric gases through the application of best practice.	Cameco will develop a dust management plan. Cameco will develop a GHG and Energy Management plan. Cameco considers that the proposed management measures in relation to dust (contained in section 9.8.6, p. 343) and greenhouse gas emissions (contained in section 9.9.6, p.349-p.350) together meet the EPA objective in relation to air quality and atmospheric gases.

Reference	Requirements	Cameco Response
		The potential to use gas rather than diesel for power generation will further reduce GHG emissions and the proposed CO2 capture from the generators for use in the mineral processing plant will also reduce CO2 emissions and is considered best practise.
EPA (2002) Guidance Statement No. 12: Minimising Greenhouse Gas Emissions, Perth, Western Australia. EPA (2015) Environmental Protection Bulletin No. 24 - Greenhouse gas emissions and considerations of projected climate change impacts in the EIA process.	The 2002 EPA Guidance Statement has been superseded by the EPA's Environmental Protection Bulletin No. 24 - Greenhouse gas emissions and consideration of projected climate change impacts in the EIA process (EPA, 2015). The Bulletin outlines the circumstances under which the EPA will assess greenhouse gas emissions associated with development proposals; describes the principles the EPA will expect proposals to meet with regard to minimising greenhouse gas emissions consistent with the objectives of the EP Act 1986; and outlines the EPA's expectations for EIA with respect to projected climate change impacts. The Bulletin states the EPA may require the proponent to: • identify all greenhouse gas emission sources and calculate indirect and direct emission sources • demonstrate that the proposal is designed and will be operated in a manner which maximises energy efficiency and minimises greenhouse gas emissions as far as practicable and • provide an analysis of greenhouse gas intensity. The Bulletin notes that the EPA will consider the proposal's likely impacts on climate change using the following criteria: • the operating longevity of the proposal extends over a period during which current projections suggest observable climatic changes will occur and	The principles and requirements outlined in the Bulletin are addressed in Section 9.9 of the PER and Appendix L2. The PER and Appendix L2 references the 2002 EPA Guidance Statement, although the content complies with the requirements of the 2012 Bulletin. Specifically in tables 9-70 (p.347) and 9-71 (p.347), Cameco identifies the direct and indirect emission sources. Cameco calculates the intensity of the emission sources in table 9-72 (p. 348) and provides an analysis on the effects of the emissions on climate change during the life of the project (being 22 years) Cameco demonstrates that the project will maximise energy efficiency and minimise greenhouse gas emissions in section 9.9.6. (p.349-p.350) (these are expanded upon above) Cameco also undertakes to develop and implement a GHG and Energy Management Plan.

Reference	Requirements	Cameco Response
	• the nature of the proposal is such that climate change could increase the frequency or consequences of adverse events related to the proposal that may lead to environmental harm.	
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	See factor 1	Cameco commits to develop and implement a GHG and Energy Management Plan and a Dust Management Plan.
7. Terrestrial Environmental Quality		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for terrestrial fauna is to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.	Cameco is proposing avoidance, minimisation and rehabilitation management measures (section 9.10.5.7, p. 362). Many of these measures link to other environmental factors and the management of terrestrial fauna will be included in: • The Fauna Management Plan • the Surface Water Management Plan, • the Radiation Management Plan and • the Dust Management Plan and • onsite permit systems to manage clearing and ground disturbance. Cameco considers that the above measures ensure that the project will meet the EPA's objective for terrestrial environmental quality.
8. Heritage		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for heritage is to ensure that historical and cultural associations, and natural heritage, are not adversely affected.	Cameco commits to develop and implement a Cultural Aboriginal Heritage Management Plan. (see section 9.11.6, p.371-p.372)

Reference	Requirements	Cameco Response
		Taking into account the above measures, Cameco will meet the EPA's objective with regard to heritage.
EPA (2015) Environmental Assessment Guideline No. 17 Preparation of management plans under Part IV of the Environmental Protection Act 1986	See factor 1.	Cameco commits to develop and implement a Cultural Aboriginal Heritage Management Plan.
EPA (2004) Guidance Statement No.41: Assessment of Aboriginal Heritage, Perth, Western Australia.	Consult with staff of the DIA and review any site records (desk-top review) in accordance with the AH Act. Undertake an Aboriginal heritage survey (if it is noted from a desk-top review that an adequate survey has not been undertaken for an area to be developed) which should include both consultation with appropriate Aboriginal people, which may include an anthropological survey, and, if necessary, an archaeological survey. Inform the relevant Aboriginal people about details of the proposed development, including potential environmental impacts. Consult with relevant Aboriginal people to enable them to make known to the proponent their concerns in regard to environmental impacts as they affect heritage matters. Demonstrate that any concerns raised by Aboriginal people have been adequately considered by the proponent in its management of environmental impacts, and any changes as a result of this process are made known to the relevant Aboriginal people.	Cameco has undertaken desktop and field surveys as outlined in this Guidance (Section 9.11.3, p. 364-p.368 and Appendix N of the PER). Cameco has consulted with the DIA about site records. Consultation with the relevant Aboriginal groups is summarised in Section 4 of the PER. Issues of concern to the Aboriginal community and Cameco's response are summarised in Section 4.5 (p.35) of the PER. Cameco commits to consulting with DIA further and the Tjiwari Native Title claimants and other Aboriginal community representatives about the proposal for a Management Area to protect ethnographic sites north and south of the development envelope. Cameco commits to develop and implement a Cultural Aboriginal Heritage Management Plan. The plan will include a pre-disturbance protocol to check

Reference	Requirements	Cameco Response
		for areas of significant and minimise ground disturbance and clearing activities.
9. Rehabilitation and Decommissioning		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for rehabilitation and decommission is to ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.	Cameco notes that closure and rehabilitation of the project in accordance with the Mine Closure Plan will ensure construction of a safe, stable, non-polluting post-mine landform that is capable of sustaining agreed post-operational land use and does not impact on surrounding environmental values or uses. Cameco considers that the in-pit tailing storage is consistent with best practice in relation to the closure of uranium mines.
EPA/DMP (2011) Guidelines for Preparing Mine Closure Plans, Perth, Western Australia. (Updated 2015)	At all stages, from the project approval stage onwards, the Mine Closure Plan should demonstrate that ecologically sustainable mine closure can be achieved consistent with agreed post-mining outcomes and land uses, and without unacceptable liability to the State. Planning for mine closure should be fully integrated in the life of mine planning, and should start as early as possible and continue through to final closure and relinquishment. For new projects, closure planning should start in the project feasibility stage (before project approvals). Mine closure plans must be site-specific. Generic "off-the-shelf" closure plans will not be acceptable. Closure planning should be risk-based taking into account results of materials characterisation, data on the local environmental and climatic conditions, and consideration of	The Conceptual Mine Closure Plan presented in Appendix O of the PER addresses the requirements of the 2015 version of the guidelines. Cameco notes that due to the early stages of the development of the proposal the current Mine Closure Plan only covers the Backfilled Mine Pit and In-Pit TSF closure domains in detail. However as required by the Guidelines, more detail will be contained in subsequent plans (as plans need to be submitted every three years).

Reference	Requirements	Cameco Response
	potential impacts through contaminant pathways and environmental receptors. Consultation should take place between proponents and stakeholders which should include acknowledging and responding to stakeholder's concerns. Information from consultation is central to closure planning and risk management. Post-mining land uses should be identified and agreed upon through consultation before approval of new projects. This should take into account the operational life span of the project, and should include consideration of opportunities to improve management outcomes of the wider environmental setting and landscape, and possibilities for multiple land uses. For existing mining projects, post-mining land uses should be agreed as soon as practicable. Characterisation of materials needs to be carried out prior to project approval to a sufficient level of detail to develop a workable closure plan. This is fundamental to effective closure planning. For existing operations, this work should start as soon as possible. Characterisation of materials should include the identification of materials with potential to produce acid, metalliferous or saline drainage, dispersive materials, fibrous and asbestiform materials, and radioactive materials, as well as benign materials intended for use in mine rehabilitation activities. Closure planning should be based on adaptive management. Closure plans should identify relevant experience and	

Reference	Requirements	Cameco Response
	research, and how lessons learned from these are to be applied. Closure plans should demonstrate that appropriate systems for closure performance monitoring and maintenance, and for record keeping and management are in place.	
EPA 2006. Guidance for the Assessment of Environmental Factors. Rehabilitation of Terrestrial Ecosystems. No. 6. June 2006. EPA, Perth, Western Australia.	See factor 1	The development of Completion Criteria is addressed in Section 6 of the Mine Closure Plan (Appendix O). Development of completion criteria is an iterative process that will continue throughout the development, operation and closure of the Project, and will be informed by the baseline surveys outlined in Appendix E (flora and vegetation), Appendix G (terrestrial fauna) and Appendix M (materials characterisation).
10. Offsets		
EPA (2008) Environmental Assessment Guideline No. 8 Environmental principles, factors and objectives	The EPA objective for offsets is to counterbalance any significant residual environmental impacts or uncertainty through the application of offsets.	Cameco is planning to develop an offset measure to counterbalance the residual impacts to *Atriplex Yeelirrie* (section 9.1.5.3, p. 160) from the proposal. The offsets package is currently being further developed in consultation with DPaW and OEPA.
WA Environmental Offsets Policy, September 2011, Perth, Western Australia.	The use of environmental offsets will not replace proper on-site environmental practices, such as avoidance and mitigation. Offsets will be used to compensate for residual environmental impacts and be designed to achieve long-term outcomes, building upon existing conservation programs and initiatives.	Cameco is proposing avoid, minimisation and mitigation management strategies (Executive Summary Table E3) and the new proposal presented with the Response to Submissions. After implementing these measures there are residual impacts likely to occur to threatened species *Atriplex yeelirrie* and subterranean fauna.

Reference	Requirements	Cameco Response
	It serves as an overarching framework to underpin environmental offset assessment and decision-making in Western Australia. The Western Australian Government will endeavour to work cooperatively with the Australian Government to avoid duplication of offsets. Offsets may be 'Direct' or 'Indirect'. Principles: 1. Environmental offsets will only be considered after avoidance and mitigation options have been pursued 2. Environmental offsets are not appropriate for all projects. 3. Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted. 4. Environmental offsets will be based on sound environmental information and knowledge 5. Environmental offsets will be applied within a framework of adaptive management. 6. Environmental offsets will be focussed on longer term strategic outcomes.	Therefore Cameco has proposed an offsets package (Section 12.4, p. 431-p.432 of the PER). The offsets package is currently being further developed in consultation with DPaW and OEPA.
WA Environmental Offsets Guidelines, August 2014, Perth Western Australia.	Environmental offsets will only be applied where the residual impacts of a project are determined to be significant, after avoidance, minimisation and rehabilitation have been pursued. Offsets are undertaken outside of the project area and counterbalance significant residual impacts. Applies the significance model: • Unacceptable impacts – those impacts which are environmentally unacceptable or where no offset can be applied to reduce the impact.	Further to the PER, Cameco has presented additional management and mitigation plans for the two key aspects, subterranean fauna and Atriplex yeelirrie to reduce the impact to a level that is considered to be counterbalanced with an offset. Mitigation proposals include: • On ground management outside of the project area • Research project

Reference	Requirements	Cameco Response
	• Significant impacts requiring an offset – any significant residual impact of this nature will require an offset. • Potentially significant impact which may require an offset – the residual impact may be significant depending on the context and extent of the impact. • Impacts which are not significant –do not require an offset. Types of offsets (should be like-for-like where possible): • Land acquisition offsets • On-ground management (outside of Project area) and • Research projects. Proponents need to use offsets calculator to: • Quantify the significant residual impact and • Quantify environmental value of offsets. Environmental Offsets Register (www.offsetsregister.wa.gov.au)	• Land management (potential to secure land within conservation tenure) Cameco recognises the residual impacts may be significant and is working with OEPA to finalise an offsets package to counterbalance the impact of the Project.
EPA (2014) Environmental Protection Bulletin No 1: Environmental Offsets, Perth, Western Australia.	Offsets should only be used as a last resort and only be considered after the mitigation hierarchy has been applied It is the EPA's preference to recommend specific offset conditions to the Minister rather than identifying the need for an offset plan to be developed post approval. Details about the offset should include: • proposed offset projects – details of offset projects, related management activities and stakeholder consultation undertaken, and how they relate to the environmental values being significantly impacted;	Cameco has applied the mitigation hierarchy throughout the PER Information on offsets is presented as Section 12.4 (p.431-p.432) and Table 12-2 (p.435-p.436) of the PER and in a new proposal submitted with the response to submissions.

Reference	Requirements	Cameco Response
	• objectives and completion criteria – an outline of objectives and intended outcomes, and details of completion criteria for each offset project; • plans and policies – an outline of how the offset aligns with relevant plans and policies and how these projects align with them (e.g. species recovery plan); • timelines, milestones – schedule of offset project implementation including an outline of key activities, stages of implementation, and milestones towards completion; • governance arrangements – an outline of stakeholder responsibilities for implementing the offset projects, including contractual arrangements for third parties involved and legal obligations; • financial arrangements – details of offset project budget and recipients of funds if projects are being undertaken by third parties; • risk management – an outline of potential risks involved for offset projects and contingency measures; • monitoring – identify monitoring activities to assess progress with offset project implementation and for compliance purposes; and • reporting – schedules and means for reporting details of offset implementation.	