Government of **Western Australia**
Office of the **Environmental Protection Authority**

Kintyre Uranium Project

Environmental Review Management Programme
ASSESSMENT NO. 1845

SUMMARY OF PUBLIC SUBMISSIONS

This document forms a summary of public submissions regarding the Environmental Review Management Programme (ERMP) for the Kintyre Uranium Project proposed by Cameco Australia Ltd. This summary was prepared by the Office of the Environmental Protection Authority (OEPA); the proponent should refer to the submissions for context and further detail.

The 14 week public review period for the proposal commenced on 8 November 2013 and ended on 14 February 2014. A total of 43 individual submissions and 2569 proforma submissions were received. Ten individual submissions were from government agencies.

The principle issues raised in the submissions and advice received included environmental and social issues as well as issues focussed on questions of fact and technical aspects of the proposal. Although not all of the issues raised in the submissions are environmental, the proponent is asked to address all issues, comments and questions, as they are relevant to the proposal.

Where submissions cited references to support their arguments, a submission number has been included in brackets to assist the proponent in identifying that submission and relevant references for use in their response.

Contents

1. Rehabilitation and Closure

1.1 Pit Lake

	Submitter	Comment	Response to Comment
59	DER	The submitter requests that the proponent commit to long term water quality monitoring of the pit lake post closure and appropriate management measures should a risk be shown to receptors.	Regular, routine groundwater sampling will be conducted during the operational period: • as part of the operational environmental management and risk monitoring; and • to inform long-term closure plans. Water quality monitoring post closure will be discussed with regulators as part of the mine closure planning process.
60	Members of the Public	The submitter is unclear on what safety measures will be put in place if a pit lake forms and the water quality deteriorates in the lake after mine closure.	The ERMP states that numerical modelling confirms that a pit lake is expected to form post mining (refer to section 8.4.5.3 of the ERMP). Over time the water quality in the pit lake is expected to deteriorate and become highly saline. However, the pit lake is a terminal sink (refer also to the submission from the Department of Water) and the water quality in the lake will not affect regional groundwater quality. The high salinity of the pit lake is expected to deter wildlife. The ERMP (page 148) contains a commitment to undertake an ecological risk assessment with a focus on avian fauna, of the final pit lake, using an updated pit void closure model, prior to the conclusion of mining. A preliminary ecological risk assessment has been completed. It found that, • Pit water is predicted to reach unpalatable salinity level within five to six years. Stratification may result in lower salinity at the surface and extend the time that the lake water may be palatable to fauna. • While the water is palatable it may be drunk by birds, bats and other fauna if they can climb the steep slopes of the pit. • While Mammals appear to be more susceptible to uranium poisoning

			than birds, the predicted Uranium levels in the pit water are lower than the NOAEL drinking water benchmarks for both mammals and birds, • Various scenarios were developed to consider the potential transfer of uranium from the pit to the environment via a pathway of excrement or bird deaths and is considered to be negligible. • As an example scenario, if 1000 Grey Teal land in the pit lake, drink and fly off to another lake or elsewhere and die (or excrete the Uranium), the flock could transport 700mg of Uranium. This scenario assumes that each bird drinks 20% of its body weight (about 140ml per 700g bird which is a high proportion but may be realistic for waterbirds attempting long flights across an otherwise arid landscape) and that the Uranium concentration in the water is 5mg/L, resulting in a 0.7mg dose per bird. A copy of a report on the impacts of the pit lake on fauna is attached as Attachment 3. At closure the pit will be secured to be in line with Department of Mines and Petroleum closure safety requirements.
61	Members of the public	The submitters contend that the mine pit should be backfill and returned to the original land form to avoid possible groundwater contamination and public health issues e.g. people swimming in lake. The submitters note that PAF material should be placed below the water table.	It is preferable not to backfill the open pit (refer to page 148 of the ERMP). Section 8.4.5.3 of the ERMP discusses how different types of open pits interact with groundwater. If left open, the Kintyre pit will result in a terminal sink from which no water or seepage will escape into the regional groundwater. If the pit is backfilled the pit will become a through-flow system potentially leaching into the surrounding aquifer. Leaving the pit open as a terminal sink is considered to be the option that will result in the lowest environmental impact and smallest footprint. In reference to PAF material, as a result of the carbonaceous nature of the deposit no material has been classified as potentially acid forming (refer to section 8.13.6 of the ERMP). In addition, the Pit Lake model (page 145 of the ERMP) predicts pH stabilising at approximately 7.5.
62	Members of the	The submitter contends that the final landform with	Final landform is addressed in section 8.2.5 of the ERMP. Section 8.2.7 of

	Public	a pit lake cannot make it compatible with current land uses or fit in with the landscape.	the ERMP states that: "*It is expected that the potential impacts on landforms and soils will be manageable and will not result in land degradation in the short or long term. Final landforms will blend in with the natural topography as far as is practicable notwithstanding the need to design to ensure long-term erosional stability of the structures.* *Cameco believes that the integrity, ecological functions and environmental values of the soil and landforms of the area will be protected*".
63	CCWA, ACF, FotE, WS, ANAWA	The submitter is concerned how the pit lake will interact with the mineralised ore surrounding the pit and its potential impacts on groundwater, nearby surface waterways, fauna and the public. The submitter is unclear who will remain the custodian of the pit lake.	Cameco has undertaken modelling to predict the interaction between the pit lake and the mineralised material exposed on the Pit wall. A map of the geology of the pit wall has been used in the model to predict water quality, including metals leached from the wall as the water level in the pit rebounds. The results of this work are presented in section 8.4.5.3 of the ERMP. Work undertaken by Cameco predicts that the open pit will function as a terminal sink, effectively retaining water within the pit. The potential seepage is unlikely to impact the groundwater. There is no connection between the pit and surface waterways. Similarly there is no connection between groundwater and surface water. Therefore there is no potential for pit water to affect surface water. In response to comment from the Office of the Environmental Protection Authority, Cameco has undertaken a study of the effect of pit lake water on fauna (in particular avian fauna). This study suggests there will be limited impact on fauna. (see comment 60 above) There will be limited impact from the closed mine on the public. Cameco will be the custodian of the pit lake through the process of mine closure.
64	DoW	The submitter notes that the pit lake will be a	Noted. This is addressed in section 8.4.5.3 of the ERMP.

		terminal sink due to high evaporation and the risk associated with the lake will be addressed in the mine closure plan.	
65	Members of the Public	The submitter believes that the proponent cannot guarantee public safety from the pit lake in perpetuity.	Pit closure will be undertaken in accordance with statutory guidelines, including public safety. Cameco notes that the proposed pit is remotely located and not likely to be an attraction for members of the public.

1.2 Integrated Waste Landform, Waste Rock Dump and Tailings Management facility

	Submitter	Comment	
66	CCWA, ACF, FotE, WS, ANAWA	The submitter is concerned that there are not enough details on waste rock management, including prevention of seepage from the waste rock dumps.	The WRLs will be designed to prevent seepage to nearby ground water receptors. Cameco has undertaken geochemical evaluation of the material types and considered placement of waste rock to minimise potential seepage from the WRLs. The WRL design criteria includes suitable drainage and foundation design to minimise the risk of leachate. In addition, Cameco has committed (in section 8.13.7 of the ERMP) to "*prepare a waste rock dumping schedule to manage and separate potentially acid/metalliferous minerals and prevent acid rock drainage from occurring*". Section 8.13.6 of the ERMP identifies that "*The potential impact from the low concentrations of potentially acid forming minerals is considered to be low, and may be further mitigated by encapsulation within the waste rock dumps, surrounded by carbonate rock types*".
67	DER	The submitter requests the proponent to commit to assessing the long term radiological transport, levels and risks at the site, including from the pit void, TMF (and cover) and waste rock landform.	The ERMP contains a radiation impact assessment in section 8.11 of the ERMP. Monitoring of radiation levels will also occur throughout the life of mine to further inform the Mine Closure Plan. Monitoring will continue post closure. Section 6 of the Radiation Management Plan presented in Appendix D2 of the ERMP outlines the monitoring proposed to be carried out. This will be

			assessed by regulators when the RMP is approved prior to the commencement of mining.
68	Members of the Public	The submitter notes there are inconsistencies regarding the amount of non mineralised waste to be placed in the waste rock landform and ore mined.	The following figures are presented in Section 6-3 of the ERMP. The Kintyre open pit material balance is summarised as follows: - Total material movement is 152 Mt - Total ore mined is 4 Mt - Total non-mineralised overburden is 142 Mt - Total mineralised overburden is 6 Mt Of the 142 Mt of non-mineralised overburden: - 119 Mt will be placed in the WRLs, and - 23 Mt will be backfilled into the pit.
69	Greens	The submitter notes that best practice tailings management needs to be implemented in accordance with the most recent ICRP report on "Radiological Protection in Geological Disposal of Long-Live Radioactive Waste" (2013).	The document referred to by the submitter is in draft form. It also refers specifically to geological disposal of medium and high level radioactive waste, rather than near surface disposal for low level waste (as will occur for this project). The ICRP report is therefore not relevant for the proposed tailings facility. Sections 6.4.3 and 8.12 of the ERMP outlines the design of the proposed TMF. Relevant guidelines for the design of the proposed facility have been considered. A commitment to best available technology in the design of the TMF has been made.
70	Members of the public, CCWA, ACF, FotE, WS, ANAWA, Greens	The submitters contend that integrity of the TMF and liners cannot be assured over a long term time period and how the functioning of the tailing management facility, including leaks and seepage into groundwater, be monitored following closure of the mine.	<u>Integrity of the TMF</u> The focus of the TMF long-term closure strategy is to cover the tailings mass with an appropriate capping system, minimize erosion and promote landform stability. Closure of the TMF will consist of two main elements: a cover system for the tailings deposited in the TMF facility, and a surface water management system. The cover system will be designed to be water shedding so as remove the

			potential for infiltration of rain water after closure (refer to section 8.12.5.5 of the ERMP and section 4.5.4 of Appendix E). The engineered cover will be designed and constructed to provide long term integrity. The engineering specifications for the further detailed in the revised Mine Closure Plan, as part of the mine closure planning process. <u>Integrity of the Liners</u> During operation, tailings liquor may seep through the TMF. Any seepage through the first layer of HDPE liner is captured in slotted pipe and pumped back to surface for discharge. Modelling based on the design of the liner system estimates approximately 29 litres per second will seep to the drainage system. Monitoring of the volume of discharge provides evidence of the status of the liner. Following closure the drainage system will continue to be operated to remove seepage from the final tails profile. At decommissioning, pumping systems will be removed. The closure plan expects that the HDPE liners will eventually fail in the long term. However, the closure cover will be designed to shed rainfall (which will limit seepage through the tailings profile). Additionally, the clay base will impede any seepage. The pit modelling (which is discussed in section 8.4.5.3 of the ERMP), identifies that any seepage will flow to the pit lake. A network of monitoring wells will be located down-gradient of the TMF and Evaporation Pond to monitor for seepage. Perimeter wells will be located within 100 m of the facility. These wells will also be monitored post closure to determine whether leakage has occurred.
71	Members of the public, MAfPoW, CCWA, ACF, FotE,	The submitters are concerned that there is the potential for radiation and radionuclides to be released into the environment from the TMF	The final cover system is designed to provide long-term protection for tailings from wind and water erosion (refer to section 4.5.4.6 of Appendix E) and to limit water infiltration into the tailings mass. The cover is designed to

	WS, ANAWA, PfND(WA)	through erosion over a long period of time, including to Yandagooge and Coolbro creeks and eventually the Rudall River system. For this reason tailings need to be stored below ground level in a manner that is consistent with world best practice guidance and prevents seepage to the groundwater for a long period of time in excess of the 1000 year design life. An example of this would be near surface burial below ground and progressive capping or within the backfilled pit void.	be effective for 1,000 years, to the extent reasonably achievable. Target limit for radon flux from the cover surface to <20 pCi/m2/s [0.74 Becquerel per square meter per second (Bq/m2/s)]. Infiltration of moisture and the release of contaminated liquid from the tailings will be limited to mitigate environmental effects to downstream receptors. The cover consists of three layers (refer to section 8.12.4.5 of the ERMP): • Erosion barrier – provides protection against erosion • Upper portion of cover – limits infiltration, provides a growth medium, provides the primary barrier to radon release from tailings • Re-grading layer – provides immediate protection against windborne release of tailings after operations and prior to the placement of the upper cover, serves as a base layer for construction operations when placing the upper cover, and allows grading of the cover to promote surface drainage to the perimeter of the TMF cells. Erosional stability analysis was performed to determine a cover at closure that will not be prone to erode during extreme storm events. Based on the results of the erosional stability analysis the cover design is 3.1 m thick. This is considered a minimum and may be higher in some areas depending on the final placement of non-mineralised waste. The regrading layer will consist of a 1 m (minimum) thickness of waste rock. This minimum thickness was set to provide a stable surface for construction of the upper cover. The upper cover will consist of 2 m (minimum) of native on-site fine-grained soils classified as silty sand, clayey silt, silty clay, and sandy silty gravel. On top of the upper cover will be an erosion barrier consisting of 100 mm (minimum) of crushed rock mulch for protection. Cameco has also committed to undertaking landform evolution modelling to confirm and inform mine closure proposals.

			More detailed information on the TMF cover is in Section 4.5.4.6 of ERMP and Appendix E).
72	Members of the Public, CCWA, ACF, FotE, WS, ANAWA	The submitters note that the proponent should undertake more detailed modelling of groundwater flowing out of the pit lake and TMF under different climate scenarios.	The pit lake has been modelled and found to be a terminal sink. The possibility of pit filling and overtopping has been assessed for different rainfall and flooding scenarios and the volume of water, duration and magnitude of the rainfall event required to fill and overtop the pit, has been modelled for scenarios that take into account levee failure, no levee and creek capture. Leaving the pit open as a terminal sink is considered to be the option that will result in the lowest environmental impact and smallest footprint. As directed by the Office of the Environmental Protection Authority, Cameco is undertaking ongoing modelling of the final pit lake including further assessment of density driven seepage from the pit to groundwater. A copy of the study report is attached. See Attachment 1.
73	WDLAC	The submitter would like further information on the rate of waste rock decay.	Cameco is not sure what the submitter is referring to. If this is referring to radioactive decay in the rock, the management of radioactive waste materials is outlined in section 8.11.6.5 and further details of the management of waste rock are provided in appendix D section 3.4. The majority of the waste rock from the mine (approximately 94%) contains on average 10ppm of uranium. At these levels, the waste rock is inert with uranium levels consistent with the natural background levels. Approximately 6% of the waste rock contains U concentrations at an average of 530ppm. This material is to be segregated for potential treatment through the processing plant. If this material is not treated, it will be enclosed in inert waste rock. Sufficient inert material would be available to ensure that any potential radon emissions are negligible and that there is no seepage from this material.

			If the submitter is referring to geochemical or geotechnical decay, weathering tests have been undertaken to assess the sulphide oxidation rate on all material types including non-mineralised overburden, mineralised overburden, ore and tailings as defined in the ERMP (refer to section 8.13.4 of the ERMP). The accelerated weathering tests showed that the waste rock is not acid generating. The rate of erosion of the waste rock is dependent on a range of factors including WRL design, particle size distribution, levels of compaction, precipitation levels and success of rehabilitation and revegetation. Erosion management will be further refined through the landform evolution model as part of the closure planning process.
74	WDLAC	The submitter notes that the long term stability of the waste rock landform should be demonstrated through an appropriate landform evolution model.	Cameco commits to undertaking appropriate landform evolution modelling during the feasibility study stage of the project to demonstrate long-term stability of the WRLs. The results of the modelling will be reported in the updated mine closure plan prior to the commencement of construction.
75	DMP	The submitter notes that the final design should take into account the physical and chemical properties of the waste materials and be validated through field trials.	Noted. Characterisation of waste rock has been completed. Characterisation of surface and subsurface soils to determine the suitability as material for rehabilitation will be completed and reported in an updated version of the mine closure plan prior to the commencement of construction.
76	DMP	The submitter notes that the slopes on the waste rock dumps are likely to cause erosion of soils place on them if the angle is 37 degrees and the size of the waste rock dumps will be larger than stated if they have been be changed to achieve stability and rehabilitation criteria.	Noted. Following the completion of materials characterisation the waste rock landform slope angles will be reviewed. Any changes will be reported in an updated version of the mine closure plan prior to the commencement of construction.
77	WDLAC	The submitter notes that the proponent should consider various options before suggesting in pit disposal is uneconomic.	Cameco has considered all options for in pit disposal of waste rock. These are discussed in section 8.4.5.3 of the ERMP. This has included modelling the cost of backfilling during mining, and has

			determined that partial backfilling is both logistically and economically possible. Re-handling waste from the waste dump for disposal back into the pit at the completion of mining is not financially viable and results in the Project becoming economically unviable. Complete backfilling also removes the potential for the development of underground operation in the future by rendering it geo-technically unsound.
78	WDLAC	The submitter notes that should in pit disposal be not uneconomic the proponent should consider returning tailings to the pit for long term storage.	Cameco will continue to review options for the disposal of waste rock and tailings during mining as part of the ongoing review and revision of the mine closure plan.
79	WDLAC	The submitter notes that the depth to which tailings will be buried or covered should be clearer.	See response to comment 71.

1.3 Geochemistry

	Submitter	Comment	Response to comment
80	Members of the public, FfP, CCWA, ACF, FotE, WS, ANAWA	The submitter believes that the ERMP has focused on acid mine drainage from the rock and ore around the site. The submitter is concerned that the company will use more acid for processing tailings than anticipated and this will lead to acid mine drainage from the tailings.	This submission reflects a misunderstanding of the project. Higher volumes of acid will be required for the project due to the higher alkalinity of the ore (refer below). The increased use of acid will not result in tailings with a higher acidity. Tailings neutralisation was identified as a project risk and mitigating controls have been designed into the process (refer to sections 8.13.6 to 8.13.8 of the ERMP and section 3.1 of Appendix E). Kintyre ore occurs in carbonate veins hosted in predominantly chlorite-quartz-schist lithology. These carbonate units provide a significant buffering capacity to neutralise any potential acid generation through processing. The tailings treated in the plant will be neutralised with lime, and once deposited would continue to buffer with the remaining carbonaceous components of the rock.

			Cameco has completed a significant amount of long duration testing on the tailings. The aging tailings test work completed to date indicates that the ore post leach still has significant buffer capacity, to the point that after six or more months there is still a gradual increase in pH of the tailings samples. Cameco therefore does not foresee any acidic runoff during any point of tailings deposition.
81	DER	The submitters note that the proponent should continue to undertake geochemical testing of waste materials during the operational phases of the project, as the geology of the site is unusual and leaching of metals may occur from the presence of carbonates	Noted. Further testing of waste rock and tailings material will take place according to the testing for each mine phase as required under guidelines. Cameco will work with DER to ensure their requirements are met.
82	Members of the Public, WDLAC	The submitters are concerned that the proponent has not adequately considered the impacts of acid mine drainage.	The deposit has a very large amount of neutralising material and very small amounts of potentially acid forming material. This has been assessed in the geochemical programme and presented in section 8.13.4 and 8.13.5 of the ERMP, section 3.3 of Appendix E and geochemistry appendix (Appendix P). As a result of the large amount of carbonaceous neutralising material no acid drainage is expected to occur. Should acid drainage occur it will be quickly neutralised by the presence of carbonate minerals and is not expected to have a significant impact. Three separate studies conducted by both Rio Tinto and Cameco (i.e. Graeme Campbell and Associates (1997), CSA Global (2011) (Attachments 6 and 7) and Tetra Tech (2012) (Appendix P), which are referred to in section 8.13.4 of the ERMP), have been undertaken. All are conclusive that the risk of AMD from waste rock is very low.

1.4 Mine Closure Plan and Regulation of Mine Closure

	Submitter	Comment	Response to comment

83	FfP, CCWA, ACF, FotE, WS, ANAWA, Greens, Members of the Public	The submitters contend that there has not been an Australian uranium mine and mill rehabilitation program that has resulted in success rehabilitation.	Regardless of the commodity, the acceptable standards for mine closure of 20 or 30 years ago are unlikely to be acceptable today. Indeed the industry accepts this and is always striving for continuous improvement. Cameco has successfully rehabilitated mining operations in Canada and with appropriate planning and implementation, the company will work to achieve successful rehabilitation at Kintyre.
84	Members of the Public	The submitter notes that the final mine closure plan should be subject to an independent review.	Mine Closure Plans will be approved by the Department of Mines and Petroleum in accordance with the joint policy of the Department of Mines and Petroleum and the Environmental Protection Authority.
85	Members of the Public, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters are concerned that the mine closure guidelines are not adequate for regulation of mine closure and the implementation of the MRF removes the requirement for bonds and incentives to rehabilitate.	The Environmental Protection Authority determined in report 1437 (May 2012) that: "*Based on the design, monitoring and maintenance information provided by the proponent and the advice provided by the DMP, the EPA is satisfied that the TSF can be operated and managed in a safe and secure manner, and can be adequately regulated by the DMP and the Radiological Council. The EPA considers the factor of mine closure and rehabilitation can be adequately addressed and the environmental objective for this factor can be met*" (page v). Cameco notes that the Department of Mines and Petroleum has stated in its submission: "*At this stage DMP is comfortable with the level of detail in the ERMP from Cameco for the Kintyre project. The proponent demonstrates a good understanding of DMP's requirements. The DMP will look at the finer detail of the project when Cameco submits their Mining Proposal, Mine Closure Plan, Project Management Plan and Radiation Management Plan to the department*".
86	CCWA, ACF, FotE, WS, ANAWA	The submitter was concerned that DMP had not implemented the recommendations from the uranium advisory group and DMPs ability to enforce	The Department of Mines and Petroleum has legislative power under the Mining Act 1978 to enforce environmental conditions.

		conditions on mine sites.	Cameco understands that the Department of Mines and Petroleum is implementing the Reforming Environmental Regulation programme. In addition, Cameco notes that it will require approval from the Department of Environment Regulation under Part V of the Environmental Protection Act 1986 to undertake milling and tailings disposal processes. The approval process under Part V includes public consultation and third party appeals. In addition the Department of Environment Regulation has enforcement powers. Cameco will continue to work closely with Agencies to ensure their requirements are met.
87	CCWA, ACF, FotE, WS, ANAWA, Members of the Public	The submitters are concerned that the low profitability of project will lead to poor rehabilitation and the public will need to pay for rehabilitation of the site.	Mining will not commence at Kintyre unless the project is forecast to be profitable.
88	CCWA, ACF, FotE, WS, ANAWA	The submitter is concerned that the mine closure plan is conceptual and does not include enough baseline information. The submitter would like more public engagement on the mine closure plans.	The Mine Closure Plan is a conceptual document. The Mine Closure Guidelines provide a progressive process involving on-going review, development and continuous improvement throughout the life of a mine. Cameco has committed to review and update the conceptual plan attached to the ERMP prior to the commencement of construction.
89	Members of the Public, CCWA, ACF, FotE, WS, ANAWA	The submitter contends there must be a 100% mine closure bond placed on the company and the costs of liability for mine closure have been underestimated in the ERMP.	The Contaminated Sites Act 2003 and the Mining Rehabilitation Fund Act 2012 provide adequate protection for mine closure, in addition to the requirements and powers under the Mining Act 1978.
90	Members of the Public	The submitter is unclear on the costing methodology used in the mine closure plan.	The costings are based on an estimate of the volumes of material movements and earthmoving rates current at the time the report was prepared.
91	Members of the Public	The submitters note that the there is no mine closure plan.	A conceptual mine closure plan was attached to the ERMP as appendix D17.
92	Members of the Public	The submitter believes that the project should be considered a short term project under the WA mine closure guidelines.	Cameco disagrees with this submitter but notes that this will be a matter for the Department of Mines and Petroleum when determining the Mine Closure Plan. Cameco will continue to work closely with Agencies to ensure their requirements are met.

93	Members of the Public	The submitter notes that the proponent should make significant contributions to the mining rehabilitation fund and have strong mine closure conditions.	Cameco notes that the level of contributions is to be determined pursuant to the Mining Rehabilitation Fund Act 2012. Mine Closure is a legislative requirement under the Mining Act 1978.
94	Members of the Public	The submitter contends that the EPA should review the mine closure plan rather than DMP due to a conflict of interest.	Cameco is confident that either agency would review the closure plan competently and rigorously and does not have a view about which agency should review the mine closure plan.
95	DMP	The submitters notes that the conceptual mine closure plan has not been updated.	The conceptual plan was amended following comments received on the draft ERMP. Cameco has also committed to revise and submit an updated plan prior to the commencement of construction.

2. Human Health

2.1 Transport

	Submitter	Comment	Response to comment
96	Greens, PDC, Members of the Public	The submitters contend that the transport management plan does not have enough details.	The Management Plans provided as part of the ERMP document describes the proposed transport program. Some factors may require additional planning once operational plans are finalised. The TMP will be required to be approved by the relevant authorities prior to any transport of uranium. Cameco notes that the Environmental Protection Authority stated in report 1437 (21 May 2012): "*that the regulatory framework is comprehensive in regard to the transport of UOC and therefore considers it unnecessary to recommend conditions in regard to transport.* *Matters relating to monitoring as well as public availability of plans can be addressed under existing legislation*".

			Cameco also notes that the submission of the Radiological Council states: "*The Radiation Management Plan in Appendix D2 and Transport Radiation Management Plan in Appendix D3 are acceptable for the ERMP process. As these documents are further developed over time, it is expected that the proponent will submit them to the Radiological Council and/or Department of Mines and Petroleum as appropriate for approval*".
97	Greens, PDC	The submitters contend that the proposal has not provided enough details on dealing with emergency incidents, especially emergency response and decontamination infrastructure available, training and communication with local communities, fire and emergency services.	Refer to 96, above. Incident management and emergency response is addressed in section 5 of Appendix D3a and in Appendix D3b. Cameco will continue to engage with local communities, regulators and first responders as operational plans are further developed and Management Plans finalised.
98	Greens	The submitter contends that the proposal has not provided a full study of potential contamination and radiation exposure risk from transport accidents for each community along the proposed transport route.	The selected route is a safe and appropriate transport route, being a designated heavy haulage route (refer to the submission from the Department of Transport). Cameco engaged ANSTO to review the proposed transport operation and assess the risk to the public and the environment. Cameco recognises that accidents may occur and will do everything possible to minimise the probability of an accident, through such measures as the use of registered drivers, limiting the number of hours that drivers can operate and through the development of a transport management plan (TMP). However in the event of an accident, Cameco will have briefed all emergency service providers along the transport route and will have a 24 hour contact number with standby clean-up arrangements. Spillage in the event of an accident is unlikely as the material is sealed within steel drums, which are braced within a locked shipping container. In the

			event of a spillage, the primary action is to contain the spread of material, using tarpaulins and to clear the area and await further instruction from emergency response personnel who would be advised by Cameco radiation protection professionals.
99	FfP, CCWA, ACF, FotE, WS, ANAWA	The submitter is concerned that the proponent does not have a complete transport management plan and the risk assessment by ANSTO has used fewer transport events than stated in the ERMP.	Cameco agrees that the ANSTO risk assessment was based 2700 to 3600 tonnes per year, an equivalent of approximately 70 transport movements, while the ERMP is based on an estimated production rate of up to 4400 tonnes per annum. However, in relation to the risk assessment, while it may be the case that an increased frequency of transport movements would increase the risk of an incident, it does not increase the level of radiological risk to the public and the environment from any particular incident. Cameco understands that this submission is also directed to non-radiological risk, which the ANSTO transport risk assessment did not address. The non-radiological risks of transport (such as accident risk) will be addressed through the restricted access vehicle permitting by Main Roads WA and in the transport management plans that will be approved by the Department of Mines and Petroleum prior to the commencement of the project.
100	Members of the public, CCWA, ACF, FotE, WS, ANAWA, PfND(WA), Greens	The submitter believes there will be more transport accidents to trucks transporting uranium than stated in the ERMP and the company has not engaged enough with local communities on this issue.	There is no basis provided for this submission and it is therefore not possible to respond. Cameco notes that this submission was not raised by the Department of Transport, the Department of Mines and Petroleum or the Radiological Council. During the preparation of the ERMP, Cameco has met with most local government authorities along the transport route twice and has made commitments to work with the LGA's and local first responders when a commitment is made to develop the project. The ERMP also discusses the first responders program that Cameco delivers along the transport routes in Canada. Cameco commits to delivering a similar program in Australia.
101	Members of the	The submitter notes that the proponent should	Transport operators are required to comply with the Dangerous Goods

	Public	further develop its transport management plan for sulphuric acid spills.	Safety (Road and Rail Transport of Non-explosives) Regulations 2007. Cameco will be updating the draft Emergency Response Management Plan to address the actions to be taken in case of a sulphuric acid spill during transportation. This will require notification of and assistance to emergency services along the transport route.
102	DoT	The submitter notes that the proponent should take into account a number of factors when deciding on a transport route and transport by train is the preferred option over long distances.	Noted. Access to Western Australian ports is not available. Similarly there is limited access to road/rail transfer hubs. The availability of the various options will be reviewed prior to the commencement of the Project.

2.2 Site Assessment and Dose Assessment

	Submitter	Comment	Response to comment
103	Proforma 1, Members of the public, MAfPoW, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters are concerned that the ERMP does not adequately assess long term impacts from radiation update by bush tucker, identify key bush tucker species and has not identified management procedures to stop uptake of radionuclides by bush tucker.	In section 8.11.5.4 of the ERMP, Cameco conducted an assessment of the potential ingestion dose to a person from the consumption of bush foods affected by the operation. The basis of the assessment was the assumption that the operation had been depositing dust into the environment for 15 years and that the food was consumed at the project boundary. It was also assumed that the bush food would be consumed for 2 months per year. The ERMP at section 8.11.3 notes that Cameco did take into account land use and traditional food gathering as part of the dose assessment. The calculated estimated ingestion dose was 2.5uSv/y. Note that over the same two month period, it would be expected that the person would receive 300uSv/y from naturally occurring radiation. The potential dose from the ingestion of bush foods that have been affected by the operation is very low and therefore it is not necessary to conduct a higher level of investigation.
104	MAfPoW, CCWA, ACF, FotE, WS,	The submitter is concerned that the proponent has not accurately addressed the risks from ionising	Cameco has extensive knowledge and experience at radiological impact assessment for workers, the environment and for members of the public.

	ANAWA	radiation.	The company directly employs a number of senior qualified and respected radiation professionals to provide guidance and direction for the company on all aspects of radiation protection. For the ERMP, independent external consultants with appropriate expertise and experience were used to conduct the radiological assessment. Their work was peer reviewed and further reviewed by the internal company specialists. Cameco is satisfied that the radiological risks have been assessed in an appropriate manner. The details of the assessment have been provided in section 8.11 of the ERMP.
105	DoH	The submitter notes that it requires some matters addressed, such as a health impact assessment, which are not under jurisdiction of the ERMP. The submitter notes that the proponent needs to discuss these matters soon and they can addressed simultaneously with the assessment of the proposal by the EPA.	Noted. Cameco commits to meeting with the Department of Health to discuss their concerns and provide a timeline to address them.
106	CCWA, ACF, FotE, WS, ANAWA, Members of the public	The submitters have noted that the ERMP does not have a radiation management plan.	A Radiation Management Plan (RMP) was attached to the ERMP as Appendix D2. It is also worth noting that the operational RMP will be required to be approved by the Department of Mines and Petroleum and the Radiological Council prior to construction.
107	CCWA, ACF, FotE, WS, ANAWA, Members of the Public	The submitter believes the ERMP does not provide enough details, including baseline studies and would like to be involved with the review of the radiation management plan.	Section 8.11 of the ERMP provides details on the radiological assessment of the proposed operations, including a collation of the baseline studies that were conducted. Ongoing environmental radiation monitoring currently continues. A radiation management plan (RMP) will be approved prior to the commencement of construction and operations as required under the Mining Code (ARAPNSA 2005).

			Cameco notes the submission from the Radiological Council that: "*The ERMP was submitted to the 213th meeting of the Council in December 2013. As with my letter of 26 August 2013 on the draft ERMP, no objections have been raised on the content of the final ERMP.* *The Radiation Management Plan in Appendix D2 and the Transport Radiation Management Plan in Appendix D3 are acceptable for the ERMP process. As these documents are further developed over time, it is expected that the proponent will submit them to the Radiological Council and/or Department of Mines and Petroleum as appropriate for approval*".
108	RCWA	The submitter notes that the radiation management plan is acceptable for the ERMP process.	Noted. Cameco will continue to work with the Radiation Council to ensure their requirements are met as the Project develops.
109	Members of the public	The submitters are concerned regarding impacts on human health from groundwater contamination and dust.	The pit lake will form a terminal sink that will prevent seepage and pit lake water from entering the regional groundwater environment. Impact on groundwater from contamination is considered to be a very unlikely possibility as a result of the groundwater modelling assessments that been conducted. Refer also to 60, above. The natural groundwater is too saline for human consumption. Dust dispersion modelling reported in Section 8.10.5 of the ERMP show that the off-site impacts of TSP, PM_{10} and $PM_{2.5}$ concentrations are predicted to be below the ambient guidelines with exceedances of these guidelines predicted to be localised to the immediate vicinity of the Project area (Figure 8-21 to Figure 8-24). The Project is also expected to comply with the ambient air quality guidelines for TSP, PM_{10} and PM2.5 at the accommodation camp.
110	Members of the Public	The submitter believes that radiation monitoring should be conducted by an independent company.	Cameco does not agree with this proposition. Cameco is experienced in radiation management and monitoring. All monitoring results are likely to be required to be reported. Cameco welcomes the scrutiny of an audit of both processes and results, but does not agree with a proposal to have third

			parties undertake the routine monitoring of a Cameco site. Cameco undertakes regular internal and external independents audits of its radiation protection programs.

3. Inland Waters Environmental Quality

3.1 Surface Water Quality

	Submitter	Comment	Response to comment
111	Proforma 1, Members of the public, Greens	The submitters are concerned that the TMF, evaporation ponds and pit would fill during a major rainfall event such as a cyclone as rainfall events are becoming more extreme, and pollute the river system leading into the Karlamilyi National Park.	The possibility of the pit filling and overtopping has been assessed for different rainfall and flooding scenarios and the volume of water, duration and magnitude of the rainfall event required to fill and overtop the pit, has been modelled for scenarios that take into account levee failure, no levee and creek capture. Refer to section 8.3.5.1 of the ERMP and section 5.3 of Appendix D7. Only under conditions of complete levee failure and creek capture during a probably maximum flood (PMF) event, and creek capture during a 1:1,000 flood event, is it possible for the pit to fill with water and overtop. Both the PMF and creek capture are considered to be highly unlikely to occur, and even extreme cyclone events with a 1:1000 years likelihood of occurrence will not result in a volume of water sufficient to fill the pit, even in the event that the 6m high levee has been completely destroyed.
112	Greens	The submitter notes that the design of the TMF perhaps should be higher than 400mm over 72 hrs and the surface water management plan needs provisions regarding the release of water should overtopping of infrastructure and filling of the pit occur.	The pit levee will be built to contain the PMF + 1m in height. This height of levee will ensure that all extreme water events are contained. Even if all surface water management measures failed it would take an event greater than 1:1000 years to fill the pit with water, and an event of PMF magnitude for overtopping the pit to occur.
113	Members of the Public	The submitter is concerned regarding water contamination from dust and radiation.	Radiological impacts to water are considered in the ERMP at sections 8.11.5.2 and 8.11.5.5 for surface water and section 8.12.4.1 for groundwater.

			Water in the vicinity of the project can only be impacted in specific ways. In the case of surface water, the deposition of dusts from project emissions may lead to increases in radionuclide concentrations in the water. Similarly, uncontrolled release of water from areas containing radioactive material, may lead to a spread of radioactive material. The main mechanism for movement of radionuclides into groundwater is through solubilisation of the radionuclides and their subsequent seepage into groundwater. For surface water, Cameco has designed the project to ensure that water releases do not occur and that contaminants are contained on the project area. The airborne modelling has shown that impacts of emissions are localised around the project and since there is no natural free standing water is the region, it is expected that surface water radiological impacts would be non-existent. Cameco has also design the tailings facility to be seepage proof with an underdrainage and leak detection system. Therefore movement of soluble radionuclides from the tailings is expected to negligible. Cameco would conduct an ongoing environmental radiation monitoring program and regularly report results.

3.2 Groundwater Quality

	Submitter	Comment	Response to comment
114	Members of the public, PfND(WA), Greens	The submitter is concerned about seepage from the TMF and is unclear on how will leaks be detected from the TMF during operations.	The TMF is designed with a best practice liner and monitoring system. Surface water and groundwater quality from the TMF will be monitored throughout the life of the mine. The limits of the tailings cells are equipped with a double layer liner system with an intervening leak collection and recovery system to contain process

			solutions, enhance solution collection, and protect the groundwater regime. A Leak Collection and Removal System (LCRS) layer consisting of a layer of sand, gravel, geonet, or other permeable material with a flow capacity equivalent to a 300 mm thick layer with a saturated hydraulic conductivity of 10^{-2} cm/sec or greater is designed into the liner system. Any leakage through the primary liner will flow to the leak collection sump through the geonet or drain liner. The sump will be equipped with an automatic, fluid-level activated pump. The pump has been sized to remove fluids such that the head on the secondary liner is minimized. Within the TMF composite sumps, there is one 450 mm diameter access pipe for pump installation and instrumentation within the LCRS sump and two 600 mm diameter access pipes for pump installation and instrumentation within the overdrain sump. The instrumentation access pipes will be used for installation of water level monitoring equipment. Based on the design of the liner system, modelling has determined that seepage from the TMF during operation will be approximately 29L/sec. A program of monitoring will be designed to give advance warning of unexpected amounts of groundwater seepage so that proactive measures can be implemented. The program will include: • A network of monitoring wells located down-gradient of the TMF and Evaporation Pond. Perimeter wells will be located within 100 m of the facility to facilitate early warning of leakage. Monitoring wells would be recorded and sampled monthly. • The TMF embankments will be instrumented appropriately to allow monitoring of the dam performance (see Section 8.3). Future studies will include development of an Emergency Response Plan (ERP) and Operation Surveillance and Monitoring (OSM) plan for the TMF.

			• Routine facility inspections, by qualified people, of the TMF and Evaporation Pond will be instituted at the time of construction and will proceed quarterly with additional inspections in the event of a process upset or a major storm/surface water flow or seismic event. Inspections of the LCRS sump liquid level in the TMF and Evaporation Pond will be performed weekly. All inspections will take the form of a visual assessment of integrity along with a physical appraisal of pond design capacity. Inspection records will remain onsite for a period deemed necessary by the authorities. • Preliminary leakage alert levels have been established for each sump of the TMF and Evaporation pond LCRS. Contingency actions will be followed in the event of a leakage alert level exceedance or accidental facility discharge. Section 4.7.5 presents the calculated alert levels and contingency procedures. • Development of a facility surveillance program, to be carried out by mine personnel, with the intent of making ongoing observations relating to the conditions and performance of the tailings structure and associated facilities, upstream diversion structures, as well as tailings disposal and Evaporation Pond management operations, so that any changes to conditions or performance, or a hazardous condition can be identified and promptly addressed.
115	DER	The submitter requests that the proponent commit to undertake more groundwater monitoring given some bores have high pH values.	Groundwater monitoring for baseline establishment has been conducted since the previous owners possessed the site and will occur throughout the life of the mine. All groundwater quality parameters will be assessed to establish the baseline prior to operations commencement. Any unusual groundwater parameters will be included in the baseline and their occurrence fully described as they are present naturally. High pH values greater than 9 - 11 occur in wells that have been screened in the Proterozoic basement rock. As the samples have been taken during different periods of monitoring over the ownership of the site, and have been sent to different laboratories for testing it is concluded that these values are not in error. The cause for these unusually high pH values has not

			at this stage been established. Cameco will continue to monitor groundwater over the life of the project to increase the understanding of these high pH values.
116	WDLAC	The submitter believes that water quality monitoring at Punmu and Parnngurr should be undertaken independently.	Cameco has not undertaken any groundwater monitoring at Punmu and Parnngurr. These communities are located 113 kms north east and 80 kms south east respectively. Both communities rely on groundwater for their drinking water supply. At a regional scale, Parnngurr is upstream (in relation to groundwater flow) from Kintyre and utilises a local aquifer for its water supply. Similarly, Punmu is in a different groundwater region and the activities at Kintyre have no relevance to the water supply at Punmu. In summary, mining, the taking of groundwater or any contamination of groundwater at Kintyre, if that were to occur, will not impact on or have implications for the water supply at these communities. It is well known that the area around Parnngurr has been explored for uranium and low grade mineralisation has been discovered in the region. The levels of mineralisation is reflected in the groundwater, with historical groundwater monitoring at Parnngurr showing elevated levels of radionuclides occur naturally and are not related to the mineralisation or activities at Kintyre.
117	Members of the Public	The submitter is concerned that the use of a heap leach pad will result in pollution and the method should not be considered.	Cameco is not proposing to use heap leach operations to treat ore at Kintyre.
118	WDLAC	The submitter notes that contingencies for managing groundwater impacts from contamination should be clearly stated	The groundwater modelling completed by Cameco and reported in the ERMP are quite conclusive that the final pit void will act as a terminal sink, capturing groundwater within the drawdown zone of the open pit. Additional analysis carried out since the ERMP was released (see Attachment 1) demonstrate that variable-density groundwater flow from the pit lake is minimal and will not impact downgradient receptors. In the event that this work proves to be wrong, several contingency

			measures for managing groundwater impacts have been considered in the ERMP. These include monitoring bores on the periphery of the TMF to monitor change in water chemistry arising from seepage from the facility. Should seepage be noted, groundwater could be recovered by dewatering, and ongoing monitoring of the water quality of groundwater produced from the production borefield.

4. Terrestrial Fauna

4.1 Conservation Significant Fauna and National Park

	Submitter	Comment	Response to comment
119	Proforma 1, Members of the public, CCWA, ACF, FotE, WS, ANAWA	The submitters contend that there is a high level of risk to fauna, specifically the Greater Bilby, the Crest tailed Mulgara and the Marsupial Mole.	Refer to 35. The impacts of the Project on fauna are discussed in Section 8.6.5.1 of the ERMP. Some fauna may be affected by the Project through • habitat loss (e.g. from clearing); • habitat (population) fragmentation; • possible mortality (e.g. from roadkill; • disturbance (e.g. from noise, light and vibration); • changed fire regimes (from hot work activities or as a result of increased access by visitors to the area); and • interactions with other species (feral or overabundant native species). Management measures proposed to minimise the risk to fauna include: • Undertaking pre-clearance surveys to identify any significant fauna or fauna habitats. Cameco will seek advice from DPaW on appropriate measures if conservation significant fauna are present, which may include relocation of individual animals; • Preventing unauthorised off-road driving and restricting night driving; • Restricting vehicle speeds around the Project site and known

			sensitive fauna habitats; • Maintaining waste disposal areas around the site to a high standard to avoid attracting feral or other fauna; • Undertaking a risk assessment to determine if netting is required on the TMF and Evaporation pond to avoid birds alighting on the surface; • Inspecting the TMF and ponds daily for signs of fauna entry; • Installing fauna egress ramps in the process water and stormwater ponds to enable fauna to exit the ponds. The risk assessment (Appendix B) indicated that residual risk (after management measures have been implemented) to fauna was low. Within the selected road corridor, Cameco can select the alignment of the new access road to avoid sensitive fauna habitats and known locations of significant fauna such as Greater Bilby, Crest-tailed Mulgara and the Marsupial Mole.
120	CCWA, ACF, FotE, WS, ANAWA	The submitter believes the ERMP has focused on conservation significant fauna.	Cameco acknowledges that it has focussed on conservation significant fauna, since these are the species most at risk in the East Pilbara. Management measures for the protection of conservation significant species will also be protective of other fauna.
121	Members of the public, FfP, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters are concerned that baseline surveys are incomplete, the studies for fauna have focused almost exclusively outside the project area and some have not been provided in the ERMP.	This submission involves a misunderstanding of the ERMP. The Bamford Report 2007 survey involved a baseline fauna study that included major proposed development areas (refer to Appendix M). The Project area has been extensively surveyed with Level 2 biological surveys undertaken in accordance with EPA Position Statement No. 3. The exception is the development envelope for the proposed access road, which has had Level 1 biological surveys undertaken for much of the route. Detailed surveys of the proposed access road will be undertaken once the final alignment is selected. Fauna surveys have also investigated areas outside of the Project area to assess the potential impact of the Project in a regional context.

			Extensive fauna surveys, equivalent to a Level 2 survey in accordance with EPA Guidance Statement No. 56, were undertaken in the Project area and surrounding areas in the 1980s, 1990s. Fauna surveys undertaken by Cameco were targeted surveys based on known fauna habitats and significant fauna previously recorded in and around the Project area. The scopes of work for fauna surveys were discussed with DPaW prior to the studies being undertaken. All fauna survey reports undertaken for the Project area are presented in Appendix M of the ERMP, with the exception of annual inspection data of recorded locations of significant fauna. Cameco will undertake pre-clearance surveys for fauna prior to any ground disturbance activities (refer to 122, below).
122	CCWA, ACF, FotE, WS, ANAWA	The submitter believes that the fauna management plan is inadequate and death of any animal on the site should be reported to DPaW.	Cameco acknowledges that the Fauna Management Plan is conceptual and will be revised prior to construction when the detailed Project design will be available. Pre-clearance surveys will be undertaken prior to any ground disturbance activities and the management plan will be revised in consultation with DPaW should significant fauna or fauna habitats be located. Any fauna deaths resulting from interaction with the facilities will be reported to DER and DMP in the project's annual environmental report. Any death of significant fauna within the Project area or along the access road will be reported promptly to DPaW.
123	PDC	The submitter supports the proposal to work with DPaW and traditional owners to implement a landscape scale fire management program for conservation significant species and notes that the proponent should consider undertaking a monitoring program with the traditional owners during the mine operations.	Noted. Cameco is currently working with a group convened by rangelands WA (called the Throssell Group) to look at traditional burning methods. Martu people are represented on the group by KJ an environmental group that's works with and trains Martu on environmental management. Martu will be involved in implementing the burning practises and would also be involved in any monitoring program.
124	Proforma 1, FfP, CCWA, ACF, FotE, WS, ANAWA,	The submitters are concerned the mine will impact on the Karlamilyi National Park.	The Project development envelope is located approximately 3 km from the National Park and the mine and the WRL and TMF are not expected to be visible from the National Park (refer to

	PfND(WA), Greens		section 9.1.5.3 of the ERMP). No clearing for the Project will occur outside of the development envelope. The Project is also not expected to have a significant impact on conservation-listed flora or fauna in the Project area, or in the National Park. Pre-clearance surveys will be undertaken to ensure impacts to conservation significant species will be avoided where possible, with management measures developed in consultation with DPaW if impacts cannot be avoided. The Project is located in a separate surface water sub-catchment from the Rudall River, which runs through Karlamilyi National Park. Drainage within the Project area flows northwards away from the National Park, but does wind its way back to the Rudall River under extreme flood conditions. The Project will be operated as a zero-discharge site and there is not expected to be release of process waters outside of the Project area. There will be no impact upon Lake Dora or the Rudall River within the National Park, as a result of altered groundwater conditions in the Project area from Project mining activities. These surface water features are remote from the Project area and lie upon low permeability sedimentary rocks of Permian or Proterozoic age at the southern edge of the Canning Basin. The palaeovalley within the Project area discharges to these low permeability formations north of the Broadhurst Range, but flow will be obstructed by the presence of extensive aquitards and faulting. During mining operations, groundwater will be pumped from the borefield and pit area creating a sink for groundwater flow, reversing groundwater flow out of the palaeovalley and capturing groundwater emanating from the mine until aquifer water levels fully recover following cessation of pumping. Due to the distance and proposed management measures, dust from the Project is also not expected to impact the National Park.

			Any indirect impacts on the National Park such as improved road access and the resulting increased risk of fire and introduction of weeds to the park, are considered manageable. DPaW is the responsible authority for the management of Karlamilyi National Park. Cameco will work with DPaW to ensure that Project activities will not adversely affect the National Park. Cameco has and will continue to provide neighbourly assistance (such as erection of signage, grading of tracks, input into a landscape scale fire management programme) where appropriate.
125	DPaW	The submitter recommends that the proponent consult with DPaW prior to ground disturbing activities to identify suitable methodologies for pre clearing surveys and uses the results of pre clearing surveys to refine the disturbance footprint.	Agreed. Cameco will undertake pre-clearance surveys in consultation with DPaW prior to ground disturbing activities.
126	DPaW	The submitter notes that further information on the species of rock wallaby identified in fauna surveys should be provided.	Agreed. During fauna surveys undertaken by Cameco only scats and tracks of rock wallabies were found outside of, but near the Project area. There was insufficient evidence to determine which species of rock wallaby was present. Recent survey work undertaken by DPaW in the East Pilbara indicates the black-flanked rock wallaby (*P. lateralis lateralis*) which is listed under the EPBC Act as 'Vulnerable' and under the WC Act under Schedule 1 may occur within the region. Consultants on behalf of Cameco subsequently sought more information on where this species was found and in what habitat and then undertook further survey work (in April 2014) to assess the potential value of habitats present in the Project area for *P. lateralis lateralis*. From the survey it was concluded that, "Most of the impact area does not provide suitable habitat, and even those hills in and adjacent to the impact area are small, separate from the main areas of rocky environment and provide limited suitable habitat", Mike Bamford, May, 2104.

			A copy of the memo provided by Bamford is attached. See Attachment 11.
127	DPaW	The submitter recommends that management plans for Karlamilyi National Park are further developed and implemented in consultation DPaW.	DPaW is the responsible authority for the management of Karlamilyi National Park. Cameco will consult with DPaW on the review and update of management plans for environmental aspects that could affect the National Park (e.g. flora, fauna, weed management, fire management).

4.2 Non Human Biota

	Submitter	Comment	Response to comment
128	Members of the Public	The submitter is concerned that radioactive materials on the site will impact on fauna.	Cameco has conducted an assessment of the impacts of the proposed operations on fauna and flora using a recognised standard method (ARPANSA 2010) The assessment is known as a "non human biota" assessment, and the ERICA software is used to conduct this assessment. This was outlined in section 8.11.5.5 of the ERMP. The assessment showed no standard fauna species exceeded the recognised reference level. Reference: ARAPNSA 2010 (Environmental protection: Development of an Australian approach for assessing effects of ionising radiation on non - human species (Technical Report 154, 2010))
129	CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitter is concerned that there was no data on the uptake of radionuclides by animals in the area. The submitter believes the ERMP has not accounted for radiological impacts to fauna from dust and water.	The exposure and uptake of radionuclides into flora and fauna is important for two reasons. Firstly, there is the potential for radiological impacts to occur to particular species of flora or fauna and secondly because uptake may lead to accumulation and a potential increased dose for species consuming the particular flora and fauna. Cameco considered both of these aspects when conducting its radiological assessment of the proposed project. For the impacts to flora and fauna, an assessment was conducted using a recognised method (ARAPNSA 2010) and is known as a "non human biota" assessment. The ERICA software is used to conduct this assessment and this is outlined in section 8.11.5.5 of the ERMP. The assessment showed no

			standard fauna species exceeded the recognised reference level. It was noted that for flora, one species exceeded the reference level and this was "lichen and bryophytes" and this is discussed in further detail in section 8.11.5.5 of the ERMP. For the assessment of potential impacts to humans from the accumulation of radionuclides in plants and animals, an assessment is provided in section 8.11.5.5. Cameco has conducted a further assessment using uptake factors from more recent publications and determined that impacts would be minimal. This work is outlined as follows. In section 8.11.5.4 of the ERMP, Cameco calculated potential doses from the ingestion of bush food affected by the Kintyre operations and determined that this would be approximately 2.5uSv/y. This was based on using the concentration ratios found in the ERICA system because Cameco believed that this data represents the most up to date concentration factor information. Cameco has subsequently conducted an assessment using the factors from TSR472, and this gives an estimated dose of approximately 0.3uSv/y for the same base assumptions as the assessment provided in the ERMP. Details on this assessment are provided below. The assessment confirms that potential doses from consumption of bush tucker would be very low. <u>Consumption Assumptions</u> The following assumptions have been used for the bush tucker dose assessment (note that these assumptions are identical to the assumptions used in the ERMP (see section 8.11.5.4); - Change is soil radionuclide concentration due to dust deposition

from project,
- Calculated increase in radionuclide concentration due to deposition after 12 years of operation is 0.16Bq/kg (for each of the U238 series radionuclides),
- Area partially occupied (2 months of the year),
- 60kg of vegetable material consumed,
- 20kg of meat consumed.

Concentration ratios for temperate conditions were used due to lack of information on arid zone and tropical zones.

Vegetation;

- Leafy vegetables (assume 20kg consumed)
- Non leafy vegetables (assume 20kg consumed)
- Root crops (assume 20kg consumed)
- Individual vegetation parts were averaged to provide an overall factor
- Uptake media was "all".
- All vegetation assumed to be 80% water (therefore dry weight results adjusted)

Meat;

- Main meat consumed is beef (assume 20kg)
- Animals consume;
    - 200kg of soil each year
    - 3.2t of plants per year made up of;
        - 50% grasses
        - 50% other (leafy vegetables, non leafy vegetables, root vegetables)
-

<u>TSR472 Factors</u>

Concentration Factors

	F_v (Dry weight Bq/Dry Soil weight Bq)					
Radionuclide	**U238**	**U234**	**Th230**	**Ra226**	**Pb210**	**Po210**
Leafy Vegetables	0.02	0.02	0.0012	0.091	0.08	0.0074

Non leafy vegetables	0.034	0.034	0.00149	0.039	0.0119	0.00019
Root crops	0.0182	0.0182	0.00475	0.0705	0.039	0.0414
Grasses	0.017	0.017	0.042	0.13	0.31	0.31

Ingestion Dose Factors

ICRP 72 public ingestion dose coefficients for adults as follows;

	Effective dose coefficients for adults per unit intake					
	U238	**U234**	**Th230**	**Ra226**	**Pb210**	**Po210**
uSv/Bq	0.045	0.049	0.21	0.28	0.69	1.2

Summary of Doses

Radionuclide	**U238**	**U234**	**Th230**	**Ra226**	**Pb210**	**Po210**
Intake (Veg) Bq/y	0.046	0.045	0.005	0.128	0.084	0.031
Intake (Meat) Bq/y	0.069	0.069	0.001	0.055	0.109	0.059
Dose (Veg) uSv/y	0.002	0.002	0.001	0.036	0.058	0.038
Dose (Meat) uSv/y	0.003	0.003	0.000	0.015	0.075	0.072

The total ingestion dose is 0.3uSv/y.

References

TSR 472 - Handbook of parameter values for the prediction of radionuclide transfer in terrestrial and freshwater environments. – Vienna : International Atomic Energy Agency, 2010. (Technical reports series, ISSN 0074–1914 ; no. 472) STI/PUB/472 ISBN 978–92–0–113009–9

ICRP72 - Age-dependent Doses to the Members of the Public from Intake of Radionuclides - Part 5 Compilation of Ingestion and Inhalation Coefficients,

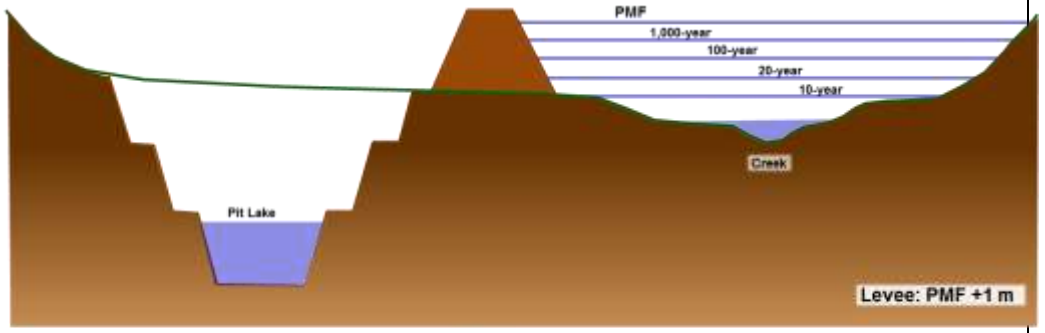
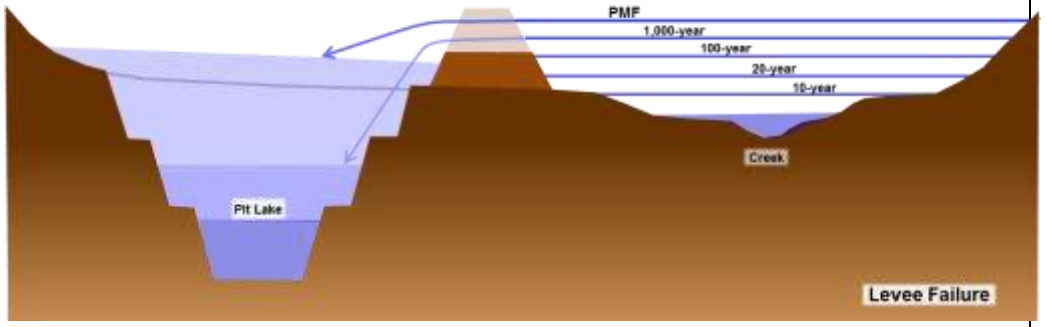
			ICRP Publication 72, Ann. ICRP 26 (1), 1995

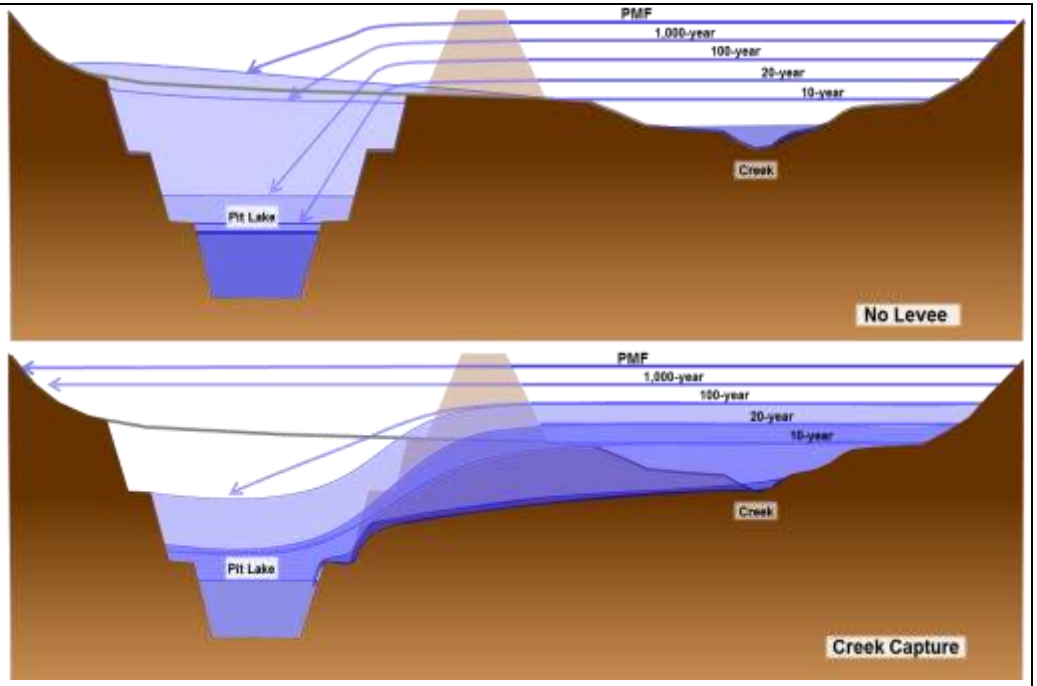
5. Hydrological Processes

5.1 Surface water

	Submitter	Comment	Response to comment
130	Greens	The submitter notes that it is possible that the pit would fill with water during a major rainfall event. The submitter contends that the surface water management plan lacks provisions regarding the release of water during these situations.	The possibility of pit filling and overtopping has been assessed for different rainfall and flooding scenarios and the volume of water, duration and magnitude of the rainfall event required to fill and overtop the pit, has been modelled for scenarios that take into account levee failure, no levee and creek capture. Refer to section 8.3.5.1 of the ERMP and section 5.3 of Appendix D7. Only under conditions of complete levee failure and creek capture during a probably maximum flood (PMF) event, and creek capture during a 1:1,000 flood event, is it possible for the pit to fill with water and overtop. Both the PMF and creek capture are considered to be highly unlikely to occur, and even extreme cyclone events with a 1:1000 years likelihood of occurrence will not result in a volume of water sufficient to fill the pit, even in the event that the 6m high levee has been completely destroyed.
131	Members of the Public, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters contend that local knowledge from local Indigenous People has not been used in the surface water studies and risk assessments.	Cameco disagrees with this submission. Discussion with Martu people has provided an understanding of the flow of Yandagooge Creek under flood conditions following extreme rainfall.
132	PfND(WA)	The submitter is concerned there have not been enough baseline surface water surveys.	Section 8.3.3 of the ERMP states: "*In July 2009 MWH Australia* Pty Ltd (MWH) completed an assessment of the existing surface water information, undertaking a gap analysis and provided recommendations on how surface water management should proceed for the Kintyre Project. This involved the review of documents detailing surface water monitoring conducted from 1988 to 1992 and a field visit by MHW in May 2009 to the Kintyre Project area".

			Section 8.3.3 of the ERMP goes on to identify gaps "*due to the ephemeral nature of surface water flows in the creeks in the area, and inaccessibility to the area (due to flooding) following significant rainfall events*". As noted in section 8.3.3 of the ERMP, Cameco will take further samples "*as opportunities present*", so as to further inform baseline levels.
133	DoW	The submitter notes that the flood study indicates flows from the West Branch of Yandagooge Creek are unlikely to be a risk to the mine. The submitter notes that flood risk will be managed by the flood protection embankment and surface water diversion drains.	Noted. The response to comment 135 below provides further information on the role and modelled performance of the flood protection embankment. Cameco will continue to liaise with the DoW over surface water protection measures and groundwater licencing matters.
134	Members of the Public	The submitter contends that the surface water flow needs further review regarding the potential for water to flow to Lake Dora.	There is evidence that under extreme flood events, Yandagooge Creek discharge will flow across country to enter Rudall River before discharging into Lake Dora.
135	Members of the public	The submitters comment that bunds should be designed to cope with severe flooding events.	The pit levee (bund wall) will be built to contain the probable maximum flood event. This will be achieved by designing the wall to PMF specifications plus an additional 1m in height. This is illustrated in the Figure below (titled Levee: PMF + 1m). Failure of the Levee would not cause flood events up to the 1,000-year ARI event are not likely to overtop the pit, even if the pit were to capture the entire creek. Under these scenarios, the pit would remain a terminal sink. This is illustrated in the Figure below (titled Levee Failure). The analyses indicate that, if routed into the pit, floodwater associated with the PMF event would overtop the pit and return to Yandagooge Creek. The technical memo discussing surface water management in more detail is attached as Attachment 8.

			 PMF 1,000-year 100-year 20-year 10-year Creek Pit Lake Levee: PMF +1 m  PMF 1,000-year 100-year 20-year 10-year Creek Pit Lake Levee Failure

			
136	Members of the Public	The submitter believes the EPA should impose a buffer of 300m on both sides of both branches of Yandagooge Creek. The submitter believes that the proponent should put a single span bridge across the south branch of Yandagooge creek. The submitter believes the proponent should rehabilitate the current creek crossing once the planned crossing is constructed.	The figure of 300m is arbitrary and has no basis. Field mapping has shown the flood high water mark for Yandagooge Creek varies between about 70 m and 120 m from the centre line of the creek and Cameco has designed the flood protection bund with a minimum of 200 m from the creek. Creek crossings will be rehabilitated when they are no longer required for the operation of the project.
137	WDLAC	The submitters believe that impacts to Rooney and Watrara creeks should be discussed in the ERMP.	Rooney and Watrara Creeks have not been discussed in great detail because they will not be affected by the Project. Rooney and Watrara Creeks fall within a separate and different sub-catchment of the Rudall River to the Project Area. Rooney and Watrara Creeks both flow south-east away from the site to Rudall River.

			The headwaters for the two creeks finish south of the catchment divide which roughly follows the boundary of the Karlamilyi National Park.

5.2 Groundwater and Water Supply

	Submitter	Comment	Response to comment
138	Greens	The submitter contends that the proponent does not know exactly where it will source its water from.	Cameco has undertaken considerable work to understand the hydrogeology of the Kintyre region. Cameco has undertaken pump tests of bores established in the open pit dewatering zone, completed extensive groundwater drilling and pump testing, including a long term pump test in aquifers proposed to be developed for a water supply, which is quite unusual for a Project at Pre-feasibility stage. This work has resulted in the identification of the main aquifer units, the location of these high yielding aquifers and has provided a good understanding of the capacity of the aquifer to meet the likely demand. In the ERMP, Cameco describes how the project water supply will be met including through dewatering and from a water supply borefield (refer to section 8.4.5.1 of the ERMP). While the ERMP does not provide the specific location of each borefield, the document does discuss how many bores will likely be established and the likely location within a region described as the proposed groundwater production area shown as a polygon in Figure 8-7 on page 144 of the ERMP.
139	Greens	The submitter contends that extraction of groundwater and dewatering will have a significant impact on local ecosystems.	Cameco disagrees. Studies considering the impacts of groundwater extraction on groundwater dependant vegetation discussed in Section 8.5.4.2 has determined that the impacts are minimal and acceptable. In relation to creek pools, the groundwater investigations discussed in

			Section 8.4.5.4 have demonstrated that extraction of groundwater will not impact the ephemeral creek pools.
140	DoW	The submitter notes that the designed water demand will be met through pit dewatering. The submitter notes that the water related issues at the site can be managed through standard assessment and licensing processes under the Rights in *Water and Irrigation Act 1914*.	Noted. Cameco understands the regulatory requirements for groundwater licencing and will seek appropriate licences for groundwater abstraction as the Project develops.
141	Members of the public	The submitters note that the high water use at the site will put stress on declining water resources.	There is no justification for this submission. Firstly the proposed water use is not high compared with other mining projects. Dewatering water will be used in preference to water from production bore fields and Cameco has outlined reuse measures to limit demand for new water. There is no evidence that water resources in the east Pilbara in the vicinity of the Project are under stress or declining. Water targeted by Cameco is not fit for human consumption and there is no competition from environmental use. Cameco notes that this opinion is not supported by the submission from the Department of Water.

6. Air Quality

	Submitter	Comment	Response to comment
142	DER	The submitter contends that the proponent should incorporate best estimates of ambient background dust particles and develop a dust management plan in accordance with DECs dust management guideline (2011).	Cameco reviewed the available ambient PM10 monitoring data when preparing the air quality assessment for the ERMP but at the time it was considered that there was insufficient data available to quantify the ambient background concentrations. The maximum measured 24-hour average PM10 concentration recorded up to the time of the air quality assessment was 39 µg/m3. The air dispersion modelling results indicate that the maximum 24-hour average PM10 concentrations as a result of the project were predicted to fall below 10 µg/m3 in close proximity to the project area.

			Therefore under these circumstances the cumulative impacts (i.e. existing background plus Kintyre) would be below 50 µg/m3. Cameco has developed a draft Dust Management Plan and this was presented as part of Appendix D that covers the key elements of the DEC's dust management guidance (2011). Cameco commits to finalising the Plan to the satisfaction of the DER as part of the Part V licencing processes. The Dust Management Plan would be reviewed on an ongoing basis and will be amended based upon the results of ambient monitoring data. In the event that the results of the dust monitoring program indicate significant exceedances of the dust concentration or dust deposition targets outlined in Table 5-3 of the plan, then the plan will be revised prior to the completion of a two year period. Given the importance of dust management in managing radiation dose, the Plan will be driven by occupational health and safety requirements to keep exposures as low as reasonably achievable.
143	Members of the public, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitter is concerned that the radiation impacts from dust have not been adequately addressed and the dust management plan does not contain enough details, especially for monitoring and dust storms.	This is incorrect. Cameco conducted an air quality impact assessment as outlined in section 8.10 of the ERMP and Appendix G. The outputs of this assessment were used in the radiological impact assessment in section 8.11.5.2 of the ERMP. Section 4.1 of Appendix G states that "*The average monthly wind speed is around 3.5 m/s. Peak wind speeds are generally experienced during the summer months and tend to correspond with winds from the southeast. The maximum 15-minute average wind speed reported for the monitoring periods was 18.5 m/s in February 1997*". The monitoring periods are described in section 4.1 of Appendix G as

			"*Meteorological monitoring programmes commenced in 1987 and continued until 1992 when the project was put into care and maintenance. Monitoring recommenced in 1996 with the advancement of a full feasibility study and ended in 1998 as the Project was once again placed under care and maintenance. While an on-site meteorological monitoring program was established in 2010, there have been a number of ongoing problems relating to the provision of a stable power supply that has impacted on data recovery*". Cameco does not expect significant dust impacts to occur as a result of the Project due to the Project's design focus on dust management. The air dispersion modelling considered the actual meteorological data for the modelled year and therefore includes periods of high winds that are typically associated with dust storms. When considering the potential radiological impacts, the air dispersion model results included the different radiological characteristics of the different emission sources. Monitoring of dust will continue to occur as part of the ongoing dust management plan, radiation management plan and radioactive waste management plan. In section 6.5 of the Radiation Management Plan, Appendix D2, Cameco outlines the proposed environmental radiation monitoring program. As part of this program, high volume dust sampling and passive dust sampling will be undertaken at various locations. A passive dust monitoring site would be installed close to the TMF to identify dust emissions. Operation of the TMF will ensure tailings retain sufficient moisture to minimise dust generation. Dust monitoring will be undertaken in accordance with the Dust Management Plan to assess the effectiveness of dust management measures. However, for proactive dust management on site, personnel will use meteorological forecasts and real-time visual observations to ensure dust generation is kept to a minimum.

144	Members of the public	The submitters are concerned that there are no dust monitoring stations proposed for the National park or closest communities.	The Karlamilyi National Park boundary is located approximately 2 km south of the Project Area at its closest point. The air dispersion modelling results indicate that the maximum predicted concentrations are predicted to occur in the immediate vicinity of the Project Area. Given the magnitude of the predicted concentrations away from the Project Area, ambient particulate monitoring within the National Park was not considered to be warranted as the potential impacts from the project would not be discernable from the existing ambient concentrations. The Telfer mine site and accommodation village are the nearest offsite receptors (60 km north), followed by the communities of Parnngurr, 80 km southeast of the Project, and Punmu, 113 km northeast of the Project. Given the large distances between the Project Area and these locations, and the air dispersion modelling results, the potential impacts from the Project are not expected to be discernable from the existing ambient conditions. Therefore, ambient air particulate monitoring in these remote locations is not required as a result of the project.
145	WDLAC	The submitter contends that air quality monitoring should be independently undertaken at Punmu and Parnngurr.	As per the response to 144, the remote locations of these communities relative to the Project Area means that ambient air quality impacts from the Project are not likely to be discernable. Therefore, ambient monitoring in these communities is not required as a result of the Project.

7. Heritage

	Submitter	Comment	Response to comment
146	CCWA, ACF, FotE, WS, ANAWA, PfND(WA), Greens	The submitters are concerned regarding the transparent and validity of the Martu Native Title agreement and the use of benchmark payments.	The Agreement reached between Cameco and Martu was the subject of over three years of negotiation. All discussions between Cameco and Martu people were held through the Western Desert Lands Aboriginal Corporation, the legal representative body of the Martu. WDLAC was supported by an experienced legal team well versed in native title negotiations and agreements. Cameco also attended many community

			meetings with WDLAC and their lawyers to address the communities and answer any questions. On conclusion of the Agreement it was vetted by the National Native Title Tribunal to ensure that it meet legal requirements.
147	CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters contend there was not enough engagement, the ERMP was released at the wrong time and not enough copies of the ERMP were made available to the Martu community.	Cameco, WDLAC and the Martu people have been engaged on the Project for over three years. During that time there were numerous community meetings, site visits, visits by independent consultants some engaged by WDLAC, some engaged by Cameco, who visited the communities to deliver education packages, uranium information packages, undertake social impact assessment and consult about heritage. Cameco supported WDLAC and Martu through the environmental approval process by providing site visits and funding the review by independent consultants to advise WDLAC and Martu. Copies of the document were made available to WDLAC. Cameco notes that the submission from WDLAC does not raise any concern regarding the level of consultation between the Martu and Cameco. Cameco also notes that the submission from the Department of Aboriginal Affairs (refer to 148, below) recognises the collaboration that has occurred between Cameco and the Martu.
148	DAA	The submitter notes that Cameco and the Martu have collaborated to set up a process for protection of cultural heritage during all stages of the project.	Cameco and Martu (with their heritage advisors and legal representatives) had numerous site inspections and meetings regarding cultural heritage protection. These meetings culminated in a document titled “Cultural Heritage Management Plan Rules”. This document captures the agreement made for the protection of each site and will form the basis for a Cultural Heritage Management Plan which is to be drafted by Cameco with WDLAC prior to the commencement of mining.

			The ILUA also establishes the requirement for a Relationships Committee. This committee will include representatives from Cameco and WDLAC/Martu and will meet to discuss all aspects of project development and implementation of the ILUA.
149	WDLAC	The submitter believes that Pinpi waterhole should have a site specific management plan.	The development of the Project is not expected to impact on Pinpi Pool. The document "Cultural Heritage Management Plan Rules" sets out a number of measures to protect Pinpi Pool, including a 300m buffer to exclude all non-ground disturbing activity. Other Rules regarding use and access to the site have been agreed with the Martu. These elements will be further developed in the final Cultural Heritage Management Plan. If at that time, WDLAC considers that the site warrants it is own management plan, Cameco will work with them to address their interests.
150	Members of the Public	The submitter comments that the proponent should ensure there is a 3 day cultural awareness training workshop.	Existing Agreements with WDLAC and Martu include requirements for cultural awareness training. The nature and duration of the training will be agreed between WDLAC and Cameco.
151	WDLAC	The submitter notes that species significant to Martu should be included in the radiation management plan.	Cameco's approach to non human biota radiological assessment using the ERICA model are discussed in our response to comment 41. The surrogate species used in the Australian context for the assessment are species of importance for both bush tucker and cultural reasons, including, the bush turkey, sand goanna and the bilby. Cameco would be happy to have further discussion with Martu about the potential impacts of the project on these and other species from both operational and radiation aspects, via the Relationships Committee, prior to the commencement of mining.
152	WDLAC	The submitter notes that a program incorporating traditional knowledge into operations, rehabilitation and post closure environmental management should be developed and included in final management plans.	Cameco agrees with the notion of incorporating traditional knowledge into management plans and will engage WDLAC and Martu via the Relationships Committee as the Management Plans are reviewed and finalised.

8. Subterranean Fauna

	Submitter	Comment	Response to comment
153	Proforma 1, Members of the public, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitter is concerned that there is a high risk to stygofauna on the site, especially in the drawdown cone.	Refer to the response to comment 52. The planned mining activity poses some potential, but uncertain conservation risks for the copepods *Nitocrella* sp. B04 (nr *obesa*), *Nitocrella* sp. B05, *Parastenocaris* sp. B07 and the syncarid *Atopobathynella* sp. (refer to Appendix N and sections 8.7.4.2 and 8.7.5.2 of the ERMP). Based on the ranges of related species, it is considered unlikely that three of these species (which were collected in low abundance) will be restricted to the zone of groundwater drawdown. The likely range of the more abundant *Nitocrella* sp. B04 (nr *obesa*) is unclear. However, it should be recognised that, depending on the aquifer in which the species occurs, groundwater drawdown will not necessarily adversely impact stygofauna. Cameco will implement the Subterranean Fauna Management Plan which will include: • monitoring of groundwater levels to confirm predicted drawdown levels; and • ongoing periodic sampling in existing bores.
154	Members of the Public	The submitter contends that radioactive materials from mining will impact on subterranean fauna species.	The area has naturally occurring radioactive material (NORM) present. Subterranean fauna species currently present are likely to be influenced by the presence of NORM, particularly if they occur in or near the ore body. The Project is not expected to significantly add to this influence as a result of mining or the presence of stockpiles, the WRL or TMF.

9. Flora and vegetation

	Submitter	Comment	Response to comment
155	Proforma 1, Members of the	The submitters are concerned there is a high risk to flora from the proposal.	Refer to the response to comment 53.

	public		Vegetation surveys undertaken for the Project area and access road indicated no threatened flora, or Threatened Ecological Communities (TECs) were present. One Priority 3 species (*Comesperma pallidum*, 1 plant) was recorded in the area of the pit but has not been recorded since the 2007 survey possible due to fire. Cameco will keep clearing to the minimum required for safe operation. It is proposed to clear a maximum of 510 ha within a 1981 ha development envelope for the active mining areas, and 280 ha within an 1180 ha development envelope for the access road and borrow pits.
156	CCWA, ACF, FotE, WS, ANAWA, Members of the public	The submitters contend that the baseline surveys are not sufficient and underestimate the impact for flora and vegetation	This submission involves a misunderstanding of the ERMP. Refer to section 8.5.3 and Table 8-8 of the ERMP. The Bennett 2010 survey involved a baseline flora survey of the entire Project Area (refer to Appendix L of the ERMP). Extensive flora and vegetation surveys of the Project area and surrounding areas were undertaken in the 1980s, 1990s and 2007. Cameco consulted with DPaW to design a flora and vegetation survey that would meet the additional requirements of a Level 2 survey under the EPA Guidance No. 51, and this survey was undertaken in 2010. Additional surveys were undertaken in 2011 (Bennett 2011a involving resurvey of selected quadrats within the Project Area and Bennett 2011b regarding the access road) and 2012 (involving targeted sampling over the project area), including targeted searches for Threatened and Priority Flora. Cameco has taken a conservative approach to estimating the area of clearing within the Project and along the access road, by using a development envelope, within which clearing is expected to occur.
157	CCWA, ACF, FotE, WS, ANAWA	The submitter contends that there has been no attempt to document radionuclide uptake in plants and no assessment of radiological impacts to plants	See the response to comments 128 and 129.

		from dust and water.	
158	CCWA, ACF, FotE, WS, ANAWA	The submitter notes that Table 8-8 lists a number of flora and vegetation studies from 1994 to 1997 but these were not included in the appendices or publicly available.	All flora and vegetation survey reports undertaken for the Project area are presented in Appendix L of the ERMP with the exception of the Hart, Simpson & Associates Pty Ltd (1994b and 1997) reports, which were reviewed in Bennett 2010 (section 6). A copy of reports prepared by Hart, Simpson & Associates Pty Ltd is attached as Attachments 9 and 10.
159	PDC	The submitter notes that a comprehensive study on vegetation indicates clearing will not impact on priority or threatened ecological communities and significant flora will be avoided where practical during construction of the access road or else consultation with DPaW will occur.	Noted. Cameco will be undertaking further surveys for priority flora prior to clearing for the access road.

10. Offsets

	Submitter	Comment	Response to comment
160	DPaW	The submitter recommends that the status of the proposed offset initiatives identified in the ERMP is discussed between the EPA and Cameco.	Noted. Cameco has met with the EPA and DPaW to discuss possible opportunities for offsets and will continue to discuss as required. At a subsequent meeting with the EPA on 15th May 2014, Cameco was advised that it was unlikely an offset would be applied to the Project. Regardless, Cameco will continue to work with DPaW on a number of projects of mutual interest and to provide good neighbourly support for activities being undertaken by DPaW in the region.

11. Items not related to a specific key environmental factor but of public interest

11.1 Tailings

	Submitter	Comment	Response to comment
161	Members of the	The submitter is concerned the appendix 'Tailings	There are a significant number of boreholes that have been drilled within

	Public	Management Design and Operation' needs to be updated and the assumption regarding the clay material in the report is not accurate.	the project area to understand the nature of the clay materials. There were a number of test pits and boreholes completed during the project development under the Rio Tinto ownership. Cameco has completed further drilling which assessed lithologies to a depth of up to approximately 30 metres. The assessed near surface lithology includes silty sand, silty clay, sandy clayey gravel, sandy silty clay and clayey silty sand. Assessment of this material confirmed that the material can be engineered to be suitable for the TMF construction and closure design.
162	Members of the public, FfP, CCWA, ACF, FotE, WS, ANAWA, PfND(WA)	The submitters are concerned that there is no tailings management plan with the ERMP.	Details of the TMF design, development, operation, closure and environmental management is provided in the Appendix E of the ERMP (second report). Tailings design and management is described in section 6.4.3 and 8.12 of the ERMP. A detailed TMF Operational Management Plan will be required to be approved by the Department of Mines and Petroleum as part of the Mining Proposal process (refer to section 6.4.3.1 of the ERMP).
163	Members of the public	The submitters need clarification on whether the TMF will be one or two celled.	The TMF proposed to be constructed at Kintyre will be one celled.
164	Members of the Public	The submitter is unclear at what depth the tailings will be buried.	The TMF is an above ground facility (refer to section 2.3 of Appendix E). The final cover system is designed to provide long-term radiation and wind and water erosion protection and to limit water infiltration into the tailings mass. The cover is designed to be effective for 1,000 years, to the extent reasonably achievable. Target limit for radon flux from the cover surface to <20 pCi/m2/s [0.74 Becquerel per square meter per second (Bq/m2/s)], or as required to meet applicable ALARA air quality limits. Infiltration of moisture and the release of contaminated liquid from the tailings will be limited to mitigate environmental effects to downstream receptors.

			The cover consists of three layers: • Erosion barrier – provides protection against erosion • Upper portion of cover – limits infiltration, provides a growth medium, provides the primary barrier to radon release from tailings • Regrading layer – provides immediate protection against windborne release of tailings after operations and prior to the placement of the upper cover, serves as a base layer for construction operations when placing the upper cover, and allows grading of the cover to promote surface drainage to the perimeter of the TMF cells. Erosional stability analysis was performed to determine a cover at closure that will not be prone to erode during extreme storm events. Based on the results of the erosional stability analysis the cover design is 3.1 m. This height is considered a minimum and may be higher in some areas depending on the final placement of non-mineralised waste. The regrading layer will consist of a 1 m (minimum) thickness of waste rock. This minimum thickness was set to provide a stable surface for construction of the upper cover. The upper cover will consist of 2 m (minimum) of native on-site fine-grained soils classified as silty sand, clayey silt, silty clay, and sandy silty gravel. On top of the upper cover will be an erosion barrier consisting of 100 mm (minimum) of crushed rock mulch for protection. More detailed information on the TMF cover is in Section 4.5.4.6 of ERMP Appendix E).

11.2 General

	Submitter	Comment	Response to Comment
165	DER	The submitter considers noise from the proposal will	Noted. Cameco will continue to work with DER to ensure their requirements

		comply with the noise regulations. The submitter notes that further matters will need to be addressed in future assessments under Part V of the EP Act.	are met.
166	Members of the Public	The submitter would like the proponent to provide further clarity regarding tenement L45/66.	The tenement L45/66 is a granted Miscellaneous Licence. The licence is used for the purposes of water supply. During the exploration program Cameco has constructed and operated a groundwater production bore and pump, pipeline and access track within the Licence area.
167	Members of the public, FfP, CCWA, ACF, FotE, WS, ANAWA, PfND(WA), Greens	The submitter notes that Cameco have stated that the project is currently not economic, the rationale for the project is not correct and the development of the project is not urgent.	Cameco believes the market conditions for uranium will improve in the future and is seeking approval for the Kintyre project on that basis.
168	Proforma 1, proforma 2, Members of the public, FfP, MAfPoW, CfFG, CCWA, ACF, FotE, WS, ANAWA, PfND(WA), Greens	The submitters contend that the Western Australian Government should assess the global implication of uranium mining on the whole nuclear life cycle, including greenhouse gas emissions, operation of nuclear power plants, disposal of nuclear waste and production of nuclear weapons.	The scope of assessment under the Environmental Protection Act 1986 and the Environment Protection and Biodiversity Act 1999 does not extend to extraterritorial operation in respect of downstream overseas activities.
169	CCWA, ACF, FotE, WS, ANAWA, Greens, Members of the Public	The submitters contend that the calculation of greenhouse gas emissions in the Kintyre Greenhouse Gas Emission by Tetratrech is not accurate.	The GHG calculations including diesel use, explosives and metallurgical emissions are in line with the NGER standards at the time of the assessment. The calculation of emissions addresses diesel use, explosives and metallurgical emissions in line with the NGER standards. Explosives has been removed from recent emission accounts, however diesel factors remain the same. Cameco notes that the Tetratech report used a lower transportation distance, which causes a non-significant underestimation.
170	CCWA, ACF, FotE,	The submitter was concerned that there would be	Once finalised and approved, management plans will be published on the

	WS, ANAWA	no opportunity for the public to comment on management plans during post approval assessments by DMP.	Kintyre website.
171	Proforma 1, proforma 2, CCWA, ACF, FotE, WS, ANAWA, PfND(WA), Greens, Members of the Public	The submitters have asked for a public enquiry on the proposal.	This issue was addressed in the environmental appeals on the level of assessment for this Project. The Minister for Environment determined in Appeal Nos. 85-88 of 2010 (12 November 2010) that a public inquiry was not warranted.
172	CCWA, ACF, FotE, WS, ANAWA	The submitter contends that the proponent has failed to note that some of the anticipated future nuclear reactors may not be constructed and demand for uranium will be lower than predicted in the ERMP.	The demand or price for the mined product at a particular point in time is not a relevant environmental consideration. As a globally significant producer of uranium, Cameco has made an estimation of the future of the uranium market based on our assessment of current supply and demand and the potential for future growth of the nuclear energy industry.
173	Members of the Public, CCWA, ACF, FotE, WS, ANAWA	The submitters contend that there are inconsistencies in the document and incomplete or conceptual management plans.	Cameco notes that there may be some inconsistency between the ERMP and supporting reports. This is due to the evolving process for environmental investigation and review. Cameco considers that those inconsistencies have been clarified in this response to submissions. Management plans will continue to be updated throughout the construction, operation and closure of the Project.
174	PfND(WA)	The submitter believes the project should be subject to approvals under the EPBC Act 1999	The Project is being assessed under both the WA Environmental Protection Act and the Federal EPBC Act. The assessment is being co-ordinated by the State EPA in accordance with the bilateral agreement with the State of WA.
175	CCWA, ACF, FotE, WS, ANAWA	The submitter is concerned that based on a report by Tsurikov, 2009, that there is no regulatory need to implement ARPANSA codes in WA and there were shortfalls in radiation management plans prior to 2008.	Cameco notes the report by Tsurikov and recognises that it refers to the comprehensive set of guidelines established in Western Australia known as the NORM guidelines. In formulating the radiological assessment for the ERMP and in developing the radiation management plan and radioactive waste management plan, Cameco has taken into consideration the requirements of both the Western Australian NORM guidelines and the ARPANSA codes of practice, both of which provide relevant and useful guidance for radiological protection in the mining and processing of

			radioactive materials.
176	Members of the Public, CCWA, ACF, FotE, WS, ANAWA	The submitter believes there are inconsistencies regarding the number of employees for the operation in the ERMP and appendices.	Noted. However, the final number of employees will not be a material impact on environmental considerations.
177	Members of the public, CCWA, ACF, FotE, WS, ANAWA, CfFG	The submitter is concerned regarding the proponents history of operations in other regions of the world.	Noted. Cameco strives to continuous improvement and sections 2.3.3, 2.3.4, 2.3.5 and 2.3.6 of the ERMP document some recent achievements.
178	Members of the Public	The submitter believes the uranium should be exported through Port Headland.	Presently, the port of Port Hedland is not available for the export of uranium ore concentrate as the State Government has advised potential uranium producers in Western Australia that Ports close to urban centres will not be approved for the export of uranium, effectively closing off the option of using Port Hedland as an export port.
179	PDC	The submitter notes that there would be merit in undertaking a social impact assessment for the project.	Section 9.1 of the ERMP presents the results of a series of studies and investigations conducted by Cameco to inform the Project's design and to establish reliable environmental and social baselines to enable the prediction of potential impacts and to assist in the identification of effective management and enhancement measures for the Project. A comprehensive consultation programme was undertaken to understand the social and health concerns of the community and was used to inform assessment of the recreational use factor.
180	Members of the Public	The submitter believes that studies taken when the area was a national park could be invalid.	There is no reason why the data collected in the studies and reports should be considered invalid, regardless, Cameco has not relied on the reports and has undertaken comprehensive studies to support the ERMP.
181	WDLAC	The submitter believes a management plan for health, safety, training, and stakeholder engagement should be developed.	Cameco agrees. At all operating sites, Cameco manages comprehensive policies, procedures and work instructions on health safety and training related issues. These would be developed for the Kintyre project. In relation to stakeholder engagement, in the Indigenous Land Use Agreement, signed by both Cameco and WDLAC, parties have agreed to the establishment of a Relationship Committee. This Committee will be the lead group for the development and management of stakeholders relations

			initiatives between Cameco and the Martu.
182	WDLAC	The submitter notes that a management plan for non radiation traffic should be developed	See responses to comments 96 through to 102.
183	WDLAC	The submitter notes some corrections to tables 8-40, 8-36 and 8-37.	Noted. Cameco will continue to work with WDLAC and Martu to ensure their interests are met.
184	PDC	The submitter seeks confirmation on the level of consultation/engagement the proponent has had with regionally based senior management of regionally based government agencies.	Cameco has met with a number of Pilbara based managers of key agencies, including, DPAW, PDC, Police and DoW.
185	PDC	The submitter requests that the proponent consider developing a comprehensive Communications Strategy that identifies all stakeholders, consultation time frames and level of consultation required over the stages of the project.	Cameco has a comprehensive Stakeholder Communications plan. This commenced during the development of the Scoping document and continued through the development and release of the ERMP. A summary of consultation is included in Appendix C of the ERMP. The communications plan includes the identification of stakeholders and a consultation plan for the various stages of approval and project development.
186	WDLAC	The submitter requests that the data presented in Table 8-29 should be recalculated using the more detailed information available from Walsh (2008) with respect to quantities of meat and vegetable gathered to present a more relevant picture of estimated intakes and dose rates from natural food resources.	The reference, Walsh, 2008, refers to the thesis written by Dr Fiona Walsh titled, To hunt and to hold: Martu Aboriginal people's uses and knowledge of their country, with implications for co-management in Karlamilyi (Rudall River) National Park and the Great Sandy Desert, Western Australia. The thesis includes data related to the hunting and gathering of bush foods including meat and plant matter. The study found that, over 3 months in 1990, Martu people hunted about 2230 kgs of animals on 138 trips from the three settlements (pg 170). These settlements had a combined population that averaged 66 adults plus children. The major species harvested during the study were Camel, Euro, Bustard and Feral Cats with camel meat contributing 1650 kgs of the total. If the total catch was consumed equally by the adults, over the period each adult would consume approximately 33.8 kgs.

			In Section 8.11.5.4, for the purposes of calculating the total radiation dose a transient visitor might receive from Cameco used a figure of 20 kgs of meat consumed during a three month period. While the amount of meat hunted recorded by Walsh is more than the weight of meat used in Cameco calculations, it does not have a significant impact on the radiation dose received from the ingestion of radionuclides from eating bush food. To achieve a radiation dose from the ingestion of food to the same level of that received from background radiation during the 3 month visit, more than 100 kgs of meat would have to be consumed.
187	WDLAC	The submitter recommends that a fund should be made available to landowners to assist with periodic inspection and review of the post mining landform and ensure necessary maintenance occurs following significant events (e.g. high rainfall, seismic events).	Section 26 of the ILUA establishes a role and function for a Relationship Committee. The role of and funding for the Committee would be appropriate to conduct periodic inspections during operation and post closure. Post closure remediation costs would be funded by Cameco separate to the ILUA.
188	WDLAC	The submitter requests that the Closure Plan should also consider how the potential socio-economic impacts that will occur once income from the mine ceases will be managed.	Cameco acknowledges the comment and agrees that this may be an important component of closure planning and commits to including consideration of the socio-economic impacts that might arise at the time of mine closure in the closure plan.