Risk Assessment

In order to understand the nature and level of risks associated with the two technology alternatives, Eskom undertook a risk assessment in April 2019.

The risk assessment process included the identification, analysis and evaluation of risks associated with the three battery types. Eskom identified a number of risks which, in the event of their occurrence, could potentially result in environmental impacts. The risks and related ratings have informed the impact assessment and are discussed in more detail in Section 6.

By comparing the consequence of the risk with the likelihood of the risk occurring in a risk matrix, Eskom were able to evaluate the risk to determine whether the level of risk is acceptable or tolerable.

The criteria used by Eskom to determine risk consequence is presented in Table 8-1 below. Note that the consequence criteria considered a number of potential outcomes (including financial sustainability, legal compliance, etc.); however, for the purposes of this report, SRK has summarised those criteria with potential environmental consequences only.

Table 8-1: Environmental consequence criteria

Category	Criteria
6	Irreversible, long-term environmental harm
5	Prolonged environmental harm
4	Measurable environmental harm, medium-term recovery
3	Immaterial effect on the environment, medium-term recovery
2	Short-term transient environmental harm
1	Minor environmental harm

Source: Eskom, 2019

The criteria used to determine the likelihood of the risk occurring is presented in Table 8-2 below.

Table 8-2: Likelihood criteria

Category	Criteria
E	• Could occur within “days to weeks”, or • Impact is imminent, or • ≥ 90% probability
D	• Could occur within “weeks to months”, or • Balance of probability will occur, or • ≥ 70% and < 90% probability
C	• Could occur within “months to years”, or • May occur shortly but a distinct probability it won’t, or • ≥ 20% and < 70% probability
B	• Could occur in “years to decades”, or • May occur but not anticipated, or • ≥ 5% and < 20% probability
A	• More than a “100-year event” • Exceptionally unlikely, even in the long-termfuture • < 5% probability

Source: Eskom, 2019

The overall risk was determined by considering *Consequence* and *Likelihood* using the risk matrix in Table 8-3 below.

Table 8-3: Risk matrix

Consequences						
	6	I	I	I	I	I
	5	II	II	II	I	I
	4	III	III	II	I	I
	3	IV	III	II	II	I
	2	IV	IV	III	II	II
	1	IV	IV	III	III	III
		A	B	C	D	E
		Likelihood				

Source: Eskom, 2019

The risk ratings are based on the level of treatment required to address the incident (should the risk be realised) (refer to Table 8-4).

Table 8-4: Risk rating

Priority	Risk Rating	Treatment
I	Very High	Short term. Normally within 1 month.
II	High	Medium term. Normally within 3 months.
III	Medium	Normally within 1 year.
IV	Low	Ongoing control as part of a management system.

SHEET 2
FLOW BATTERY TECHNOLOGY

This is applicable to activities happening in South Africa

No.	Risk Status	Risk Title	Risk Description (something occurs……)	Cause	Impact (leading to……)	Existing controls (controlled by…….)	RCE per control	Control Owner	Task on Controls	Task on control Due Date	Task on control Percentage complete	Task on control owner	Cons. rating	Likelihood rating	Risk Rating
1		**PreCom: Road Transportation**	1. Accident whilst being transported	1. Accident caused by driver or 3rd party. 2. Poor road conditions.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Transport company accredited to transport dangerous goods on public roads. 2. Proper securing of cargo.	Mostly Effective	Contractor	1. Check that transportation company is accredited. 2. Ensure that cargo is checked.			1. Eskom 2. Contractor / Transportation company	3	C	II
2		**PreCom: Storage**	1. Accident whilst being stored on site / warehouse.	1. Not adhering to storage instructions.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Store according to OEM instructions. 2. Storing in line with Environmental Management Programme. 3. Electrolyte and active materials are encapsulated by protective covering.	Mostly Effective	Contractor	Ensure compliance with OEM instructions and EMP.				2	B	IV
3		**PreCom: Handling**	1. Accident whilst being handled (off-loaded or installed) on site / warehouse.	1. Not adhering to handling instructions. 2. Not taking care whilst handling equipment.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Handle according to OEM instructions. 2. Handling in line with Environmental Management Programme. 3. Use of correct equipment for off-loading by accredited operators. 4. Installation by accredited staff. 5. Electrolyte and active materials are encapsulated by protective covering.	Mostly Effective	Contractor	Ensure compliance with OEM instructions and EMP.				2	C	III
4		**PreCom: Storage**	1. Accident whilst being stored on site / warehouse.	1. Not adhering to storage instructions.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Store according to OEM instructions. 2. Storing in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with OEM instructions and EMP.				3	B	III
5		**PreCom: Handling**	1. Accident whilst being handled (off-loaded or installed) on site / warehouse.	1. Not adhering to handling instructions. 2. Not taking care whilst handling equipment.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Handle according to OEM instructions. 2. Handling in line with Environmental Management Programme. 3. Use of correct equipment for off-loading by accredited operators. 4. Installation by accredited staff.	Mostly Effective	Contractor	Ensure compliance with OEM instructions and EMP.				3	C	II
6		**Construction: Land Clearing**	1. Actual vegetation clearing for the placement the plant and access roads.	Required for construction activities and placement of plant.	1. Destruction of indigenous and protected vegetation. 2. Temporary land clearing for construction material / equipment. 3. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.				2	E	II
7		**Construction: Non-potable Water Usage**	1. Non-compliance to Water Use License or not permitted.	Not adhering to EMP requirements.	1. Legal contravention 2. Financial penalties	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.				3	A	IV
8		**Construction: Potable Water Usage**	1. Abuse of potable water supplies.	Not adhering to EMP requirements.	1. Legal contravention 2. Financial penalties	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.				3	A	IV
9		**Construction: Waste Generation**	1. Waste generation due to construction activities. 2. Different waste types will be generated.	Construction activities.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna. 4. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme and Waste Management Plan.	Mostly Effective	Contractor	Ensure compliance with EMP and WMP.				4	C	II
10		**O&M: Equipment replacements**	Augmentation of plant will lead to waste generation of electronics and dangerous substances that need to recycled or disposed of.	1. Augmentation of plant to meet operational performance requirements. 2. Equipment / component failures.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna.	1. Activities in line with Waste Management Controls in the Environmental Management Programme.	Mostly Effective	Contractor & Eskom	Ensure compliance with EMP.				2	E	II
11		**O&M: Short circuit**	Short circuit condition in the plant.	1. Failing of insulation. 2. Failure during switching.	1. Safety and fire risk 2. Explosion could lead to spread of debris over a large area. 3. Emission of toxic gasses. 4. Equipment damage 5. Interruption of customer power supply.	1. Short circuit detection and protection devices. 2. Fire detection and suppression systems installed	Mostly Effective	Contractor	Ensure that protective devices and safety systems are working as expected.				2	B	IV
16	Active	**Spillage of the electrolyte liquid**	Spillage of the electrolyte which is composed of highly acidic (or alkaline) material causes health and enviromental effects.	1.Mishandling and personnel fault. 2.Improper decommisioning and disposal of the membranes/stacks.	1.Health risk 2.Equipment damage 3.Interruption of customer power supply 4.Environmental pollution - soil pollution	1.An effective handling and instructions manual are aquired from the manufacturer and is directly followed, monitored and efficiently managed. 2.During decommissioning, users can dispose of the membranes using the same processes used to handle highly corrosive substances.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the Vanadium redux flow battery	2021	none	none	3	D	II
17	Active	**Fouling Membrane**	Membrane foul, wherein the vanadium ions become irreversibly trapped in the membrane and increase resistive losses in the cell, ultimately failing in its functioning.	1.The higher voltage and highly oxidative V5+ electrolyte puts more chemical stress on the materials used in the cell electrodes, membranes, and fluid handling components.	1.Leading to battery repairs 2.Interruption of customer power supply 3.High financial cost for the membrane	Low cost membranes are being developed to enable cheaper replacements.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the Vanadium redux flow battery	2021	none	none	1	C	III
18	Active	**Failure of the Vanadium Redox Flow Battery system**	Failure of the Vanadium Redox Flow Battery system which is due to its low reliability leading to an interuption of the power supply.	1.Low reliability of the system and equipment such as (eg. pumps and power electronics) which have little to no experience with failure modes and effects in the substation environment.	1.Equipment damage/battery damage 2.Interruption of customer power supply 3.High financial cost for the replacement of every equipment that could possibly fail.	Extended field experience will be required to validate the reliability of the newer system designs.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the Vanadium redux flow battery	2021	none	none	2	C	III
19	Active	**Battery capacity loss and electrolyte imbalance**	Battery capacity loss and electrolyte imbalance and parasitic side reactions as a result of poor design of the Fe-Cr Redox Flow Batteries.	1.Inefficient and inadequate designs of the Fe-Cr Redox flow batteries (Redox Flow Batteries).	1.Equipment damage/battery damage 2.Interruption of customer power supply	Current developers of Fe-Cr Redox Flow Batteries appear to have addressed the side reaction and implemented effective rebalancing sub-systems with minimal system efficiency loss.	Mostly Effective	Peter Langley and Ryan Gilbert	none	none	none	none	1	B	IV
20	Active	**Self-discharge of the battery**	Self-discharge of the cells due to bromine crossover to the anode side from the cathode side of the battery leads to lowering of the battery life span.	1.Crossover of bromine from cathode to anode in the cell.	1.Equipment damage/battery damage 2.Interruption of customer power supply	Stopping electrolyte circulation during stand periods, limiting the degree of crossover to bromine that is in the cell when circulation ceases.	Mostly Effective	Peter Langley and Ryan Gilbert	none	none	none	none	1	C	III
21	Active	**Spillage of the electrolytes within the battery**	Enviormental and health effects as a result of a spill of the battery contents, electrolytes, etc.	1.Toxic spillage of the contents of the battery could result in a detremental effect on the environment and people in the region of the spill. 2.Improper decommisioning and disposal of the chemical composition leading to a spillage of the chemicals, causing harm to the environment and the health of the users.	1.Health risk 2.Equipment damage 3.Interruption of customer power supply 4.Environmental pollution	1.Proper handling and monitoring systems are employed as a preventative measure. 2.Proper recovery of Zinc should be effectively conducted when the unit is decomisioned .	Mostly Effective	Peter Langley and Ryan Gilbert	none	none	none	none	2	B	IV
22		**EoL: Decommissioning**	Incorrect / illegal disposal of components or electrolyte.	Not adhering to the EMP and WMP.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna. 4. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme and Waste Management Plan.	Mostly Effective	Contractor					4	C	II

Contamination of surrounding environment	Electrolyte spillage leading to environmental contamination.	Incorrect handling, accident, system failure	Financial loss due to penalties, fines, cleanup costs or COUE	1. Primary and secondary containment on plant to prevent contamination of surrounding environment. 2. Tertiary containment in foundation - bund walls. 3. Applicable accreditation of staff to contain any spillages. 4. Contractor to have waste clean-up agreement with accredited service providers.

Risk Rating comment	Risk Owners	Potential Exposure	Risk Treatment tasks	Risk Treatment task Owner	Percentage Completion	Due date	Risk Treatment Plan Feedback	Target Risk Rating	Target Risk Rating Due Date	Risk Movement Comments	Type of technology
			1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept							
			1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept							
			1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept							
			1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept							
			1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept							
Measurable enviromental harm-medium term recovery. High potential for complaints from stakeholders and community. Enviromental detectives issued by authorities.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2. Procurement document should state that the manufacturer had/has managed the risk.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Vanadium redox flow battery
Net position between revenue and expenditure. Between R1m and R10m. Insignificant and no apparent disruption.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2.Procurement document should state that the manufacturer had/has managed the risk. 3.New and cheaper technologies should be provided as alternatives from the manufacturer when they are made availible.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Vanadium redox flow battery
Event that site management can readily manage internally. No press reporting or external interest. Disciplinary action may be taken.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2.Procurement document should state that the manufacturer had/has managed the risk. 3.Procurement document should have a test and result status.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Vanadium redox flow battery
Entirely an internal issue. Attention is confined to site.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2.Procurement document should state that the manufacturer had/has managed the risk. 3.Procurement document should have a test and result status.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Iron-chromium flow battery
Entirely an internal issue. Attention is confined to site.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2.Procurement document should state that the manufacturer had/has managed the risk. 3.Procurement document should have a test and result status.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Zinc-bromine flow battery
Short-term transient enviromental or community impact and some clean up cost.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2.Procurement document should state that the manufacturer had/has managed the risk. 3.Procurement document should have a decomision mandate.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement					Zinc-bromine flow battery

SHEET 3
SOLID STATE BATTERY TECHNOLOGIES

This is applicable to activities happening in South Africa

PreCom: Means all activities before Commissioning, e.g. Shipping, Transportation, Installation, Construction, Testing

No.	Risk Status	Risk Title	Risk Description (something occurs……)	Cause	Impact (leading to……)	Existing controls (controlled by……)	RCE per control	Control Owner	Task on Controls	Task on control Due Date
1		**PreCom: Road Transportation**	1. Accident whilst being transported	1. Accident caused by driver or 3rd party. 2. Poor road conditions.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Transport company accredited to transport dangerous goods on public roads. 2. Proper securing of cargo. 3. Route planning and necessary approvals and permits.	Mostly Effective	Contractor	1. Check that transportation company is accredited. 2. Ensure that cargo is checked. 3. Method statement for handling and transportation of dangerous goods and substances. To be submitted to Eskom.	
2		**PreCom & O&M: Storage**	1. Accident whilst being stored on site / warehouse.	1. Not adhering to storage instructions.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Store according to OEM instructions. 2. Storing in line with Environmental Management Programme. 3. Electrolyte and active materials are encapsulated by protective covering.	Mostly Effective	Contractor		
3		**PreCom & O&M: Handling**	1. Accident whilst being handled (off-loaded or installed) on site / warehouse.	1. Not adhering to handling instructions. 2. Not taking care whilst handling equipment.	1. Spillage of electrolyte / dangerous substances. 2. Contamination of environment / soil / flora.	1. Handle according to OEM instructions. 2. Handling in line with Environmental Management Programme. 3. Use of correct equipment for off-loading by accredited operators. 4. Installation by accredited staff. 5. Electrolyte and active materials are encapsulated by protective covering.	Mostly Effective	Contractor	Ensure compliance with OEM instructions and EMP.	
6		**Construction: Land Clearing**	1. Actual vegetation clearing for the placement the plant and access roads.	Required for construction activities and placement of plant.	1. Destruction of indigenous and protected vegetation. 2. Temporary land clearing for construction material / equipment. 3. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.	
7		**Construction: Non-potable Water Usage**	1. Non-compliance to Water Use License or not permitted.	Not adhering to EMP requirements.	1. Legal contravention 2. Financial penalties	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.	
8		**Construction: Potable Water Usage**	1. Abuse of potable water supplies.	Not adhering to EMP requirements.	1. Legal contravention 2. Financial penalties	1. Activities in line with Environmental Management Programme.	Mostly Effective	Contractor	Ensure compliance with EMP.	
9		**Construction: Waste Generation**	1. Waste generation due to construction activities. 2. Different waste types will be generated.	Construction activities.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna. 4. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme and Waste Management Plan.	Mostly Effective	Contractor	Ensure compliance with EMP and WMP.	
10		**O&M: Equipment replacements**	Augmentation of plant will lead to waste generation of electronics and dangerous substances that need to recycled or disposed of.	1. Augmentation of plant to meet operational performance requirements. 2. Equipment / component failures.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna.	1. Activities in line with Waste Management Controls in the Environmental Management Programme.	Mostly Effective	Contractor & Eskom	Ensure compliance with EMP.	
11		**O&M: Short circuit**	Short circuit condition in the plant.	1. Failing of insulation. 2. Failure during switching.	1. Safety and fire risk 2. Explosion could lead to spread of debris over a large area. 3. Emission of toxic gasses. 4. Equipment damage 5. Interruption of customer power supply.	1. Short circuit detection and protection devices. 2. Fire detection and suppression systems installed	Mostly Effective	Contractor	Ensure that protective devices and safety systems are working as expected.	
		O&M: Battery overcharging	1. Overcharging caused by battery management system design defficiency/failure leading to battery fire.	1. Poor manufacturing and design	1. Safety and fire risk 2. Explosion could lead to spread of debris over a large area. 3. Emission of toxic gasses. 4. Equipment damage 5. Interruption of customer power supply.	1.Procurement management systems are in place to allow us to specify user requirements and control measures. 2.Suppliers have existing control management systems with a facility to send alarms in any case of emergency faults.				
12	Active			2. Inadequate charging control systems 3. Incorrect settings applied.		3. Battery Management Systems employed to ensure proper charging and effective cooling of systems. 4. Cell level temperature monitoring. 5. Cell level protective devices which disconnect faulty cells / modules. 6. Fire detection and suppression systems installed.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the lithium-ion battery	2020
13	Active	**O&M: Overheating cell and thermal run away**	1. Excessive charging and discharging, high current, or imbalances between cells can cause overheating in a cell and result in thermal runaway as neighboring cells also overheat, which essentially leads to a system failure.	1.Improper and inefficient monitoring and sensoring equipement or tools that control the input and outputs for these large systems. 2. Cooling system not operating effectively to keep cells within safe operating temperature range. 3. Malfunctioning of protective devices. 4. Internal short-circuit.	1. Safety and fire risk 2. Explosion could lead to spread of debris over a large area. 3. Emission of toxic gasses. 4. Equipment damage 5. Interruption of customer power supply.	1.Procurement management systems are in place to allow us to specify user requirements and control measures. 2.Suppliers have existing control management systems with a facility to send alarms in any case of emergency faults. 3. Battery Management Systems employed to ensure proper charging and effective cooling of systems. 4. Cell level temperature monitoring. 5. Cell level protective devices which disconnect faulty cells / modules. 6. Fire detection and suppression systems installed.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the lithium-ion battery	2020
14	Active	**O&M: High temperature combustion of the cell**	Extreme high temperatures lead to leaks, smoke, gas venting, and/or combustion of the cell pack.	1.Improper and inefficient temperature control 2. Malfunctioning of monitoring and sensing equipment or tools are designed for these large systems.	1. Safety and fire risk 2. Explosion could lead to spread of debris over a large area. 3. Emission of toxic gasses. 4. Equipment damage 5. Interruption of customer power supply.	1. Improved monitoring and sensoring systems have been introduced which are inherently safer than the previously employed systems. 2. Secondary containment. 3. Tertiary containment control - civil up to 110%.	Mostly Effective	Peter Langley and Ryan Gilbert	research conducted on the lithium-ion battery	2020
22		**EoL: Decommissioning**	Incorrect / illegal disposal of components or electrolyte.	Not adhering to the EMP and WMP.	1. Incorrect / Illegal handling and disposal of different types of waste. 2. Spillage of electrolyte / dangerous substances. 3. Contamination of environment / soil / flora or injury to fauna. 4. Impact on surrounding communities.	1. Activities in line with Environmental Management Programme and Waste Management Plan. 2. Review of EMP and WMP for Decommissioning.	Mostly Effective	Contractor		

Fire department

Task on control Percentage complete	Task on control owner	Cons. rating	Likelihood rating	Risk Rating	Risk Rating comment	Risk Owners	Potential Exposure	Risk Treatment tasks	Risk Treatment task Owner	Percentage Completion	Due date
	1. Eskom 2. Contractor / Transportation company	3	C	II							
		2	B	IV				1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept		
		2	C	III				1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept		
		2	E	II				1. Environmental officer on site. 2. Eskom will conduct frequent site visits and audits.	Contractor and Environmental Dept		
		3	A	IV							
		3	A	IV							
		4	C	II							
		2	E	II							
		2	B	IV							
none	none	3	C	II	Serious event that can be readily managed but management effort is still required to minimise impact locally. Adverse local media reporting. Disciplinary likely.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2. Procurement document should state that the manufacturer had/has managed the risk. 3. Technical specification requires that international best practices are implemented and test certificates / reports be presented to proof compliance with safety requirements. 4. First responders to be trained and suiatbly equiped to deal with emergencies (fires, etc.) of battery energy storage systems.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement
none	none	1	C	III	Entirely an internal issue. Attention is confined to site.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2. Procurement document should state that the manufacturer had/has managed the risk. 3.Manufacturers should make all the products testing and results availible to all customers for full awareness on the specific risk procedure.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement
none	none	4	C	II	Section 24 injury: Multiple Sect. 24 injured, Irreversible disablement or impalement due to serious incident.	Gabi Mkhantswa		1.Specification on procurement request that suppliers must be ISO 9001:2015. 2. Procurement document should state that the manufacturer had/has managed the risk. 3.Manufacturers should make all the products testing and results availible to all customers for full awareness on the specific risk procedure.	Peter Langley and Ryan Gilbert	0%	Alligned with project procurement
		4	C	II							

Risk Treatment Plan Feedback	Target Risk Rating	Target Risk Rating Due Date	Risk Movement Comments	Type of technology
				Lithium ion solid state
				Lithium ion solid state
				Lithium ion solid state