

Page 1 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

	<b>PROJECT EXECUTION RELEASE APPROVAL UP TO R5 M</b>	<b>MINI ERA REVISION 2</b>  <b>28 April 2020</b>
---	--	--

**PROJECT TITLE:** Replacement of Oil-Filled RMU Switchgear

**OBJECTIVE OF THE PROJECT:** The project is needed to address the issues pertaining to: safety, obsolescence, environmental conformance and production. The project must be implemented as a recommendation after the fatality in 2020

<b>BA NAME:</b>	Hendrina Power Station	<b>CLIENT/OWNER:</b>	Anari Van Greuning
<b>BA CODE:</b>	3220	<b>ENGINEER:</b>	Zanele Dumane
<b>OWNER COST CENTRE:</b>	327302	<b>PROJECT MANAGER:</b>	Robert Makgakga
		<b>PREPARED BY:</b>	Zanele Dumane

	<b>CAPITAL</b>	<b>R&amp;E</b>
<b>PROJECT CLASS</b>	X	

<b>PROJECT DELEGATION</b>	<b>YES</b>	<b>NO</b>
<b>PROJECT INCLUDED IN CURRENT BUDGET</b>		X
<b>IF NOT, WAS PRE-APPROVAL OBTAINED FROM HIGHEST RELEVANT COMMITTEE</b>	X	

<b>REASON FOR VARIANCE FROM TECHPLAN/BUD:</b>
The project will be included on GOIC upon ERA approval.

<b>BRIEF MOTIVATION FOR THE PROJECT</b>
<p>The project is needed to address the issues pertaining to:</p> <ul style="list-style-type: none"> <li>• Safety: The RMU flashover incident that occurred at Hendrina PS on the 06th of June 2020 which unfortunately resulted in a fatality further confirmed the questionable safety of these switchgears.</li> <li>• Obsolescence: The currently installed RMU switchgear is obsolete from the market hence the spares and technical support is no longer available.</li> <li>• Environmental conformance: Prolonged RMU failures could lead to ash sump/dam spillages.</li> <li>• Production. These RMUs are not reliable hence they pose high risk to production.</li> </ul>

<b>SCOPE</b>
<p>The scope of the project is replacement of all 4 oil filled RMU switchgear at Hendrina power station. This comprises of:</p> <ul style="list-style-type: none"> <li>• Design and manufacturing</li> <li>• Delivery of the RMU to site</li> <li>• Site establishment</li> </ul>

Page 2 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

- Earth works
- Construction
- Cable works/ electrical installations
- Testing and Commissioning
- Training
- Documentation

**Risks:**

(Could be technical, financial, project-related or other)

- The project is not included on GOIC.
- Time Constraint Risk (with expectations to have completion date by 30/12/2021), which has been assessed as not viable.
- Commercial process risks impacting on the execution of the project, due to shortage of procurement staff.

**ALTERNATIVES CONSIDERED:**

**Base Case – Status quo**

**Description:**

Maintaining the status quo would mean accepting the plant with unsafe and unreliable equipment that could result in fatality of personnel again and a continuous threat to production

**Assumptions:**

- Technical:

These RMU switchgears are obsolete with no technical support and have proven to be unsafe and unreliable based on previous incidents i.e. Occupational Health and Safety Investigation Report Template\_Hendrina Fatality\_06 June 2020 (240-77046688).

- Economic:

The Opex (Maintenance costs) per annum is R350 000 (i.e., cable replacement, oil replacement and required human resources), however due to the unavailability of spares and technical support it is impossible to determine the additional costs required to maintain the status quo.

**Reason for rejecting:**

- Safety: Injury to personnel / fatality.
- Environmental contraventions: Oil spillage(s), dams/ash sumps overflow, high emission.
- Production loss.

**Option 2**

**Description:**

The intended technology is widely used at Eskom Gx, Tx, Dx and benchmarking has been done against Kriel power station which has already implemented successfully this technology in their plant.

Existing RMU (G.E.C ALSTHOM)	Proposed RMU
Oil insulated (Undesirable)	AIS (Air insulated)
Not IAC	IAC
No technical support/spares	Technical support and spares available
Maintenance intensive	Maintenance free
No cable testing facility	Cable testing facility available

The SAP material numbers from the 240-56030406 – Specification for ring main units for systems with nominal voltages from 3.3KV to 33 KV document for the RMU switchgear to be used at Hendrina power station are:

- 0170212 for the RMU switchgear and
- 0185546 for the RMU plinth.

Page 3 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

**Assumptions:**

Economic assumptions

Description	Total cost (R)
<b>1. Civil Works</b>	
1.1 Preliminary & General	142 667.08
1.2 Construction of Plinths	426 866.65
<b>2. Electrical Works</b>	
2.1 Cabling	472 000.00
2.2 Ring Main Units	616 800.00
2.3 Preliminary & General	640 840.00
<b>Total (Excl. VAT)</b>	<b>2 299 173.73</b>
<b>3. Cost estimate for engineering Effort</b>	<b>1 214 700.00</b>
<b>4. Project Management</b>	<b>250 000.00</b>
<b>5. Risk allowance (5%)</b>	<b>188 193.69</b>
<b>Total ERA amount (Excl. VAT)</b>	<b>3 952 067.42</b>
These figures were determined prior to the final economic evaluation of the project.	

**Option 3**

Description:

Assumptions:

Reason for rejecting:

**Option 4**

Description:

Assumptions:

Reason for rejecting:

**Option 5**

Description:

Assumptions:

Reason for rejecting:

Page 4 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

Project Costing Sheet R'M	Incurred to Date	'20/21	'21/22	'22/23	'23/24	'24/25	Future Expenditure	Total
<b>CONTRACT COSTS</b>								
Basic: Local - Rand	-	-	-	2.30	-	-	-	2.30
Basic : Foreign - Rands	-	-	-	-	-	-	-	-
Escalation: Local	-	-	-	0.03	-	-	-	0.03
Escalation: Foreign	-	-	-	-	-	-	-	-
Other (specify)	-	-	-	-	-	-	-	-
<b>TOTAL CONTRACT COSTS</b>	-	-	-	<b>2.33</b>	-	-	-	<b>2.33</b>
<b>RESOURCES COSTS</b>								
Project management fee								
External	-	-	-	-	-	-	-	-
Internal	-	-	-	0.73	-	-	-	0.73
- In BA	-	-	-	0.73	-	-	-	0.73
- Out BA	-	-	-	-	-	-	-	-
Engineering fee								
External	-	-	-	-	-	-	-	-
Internal	-	-	-	0.73	-	-	-	0.73
- In BA	-	-	-	0.73	-	-	-	0.73
- Out BA	-	-	-	-	-	-	-	-
Other								
External	-	-	-	-	-	-	-	-
Internal	-	-	-	-	-	-	-	-
- In BA	-	-	-	-	-	-	-	-
- Out BA	-	-	-	-	-	-	-	-
Resources: Escalation	-	-	-	-	-	-	-	-
<b>TOTAL RESOURCES COSTS</b>	-	-	-	<b>1.46</b>	-	-	-	<b>1.46</b>
<b>INTEREST</b>								
Forward Premium	-	-	-	-	-	-	-	-
Interest During Construction	-	-	-	-	-	-	-	-
<b>TOTAL INTEREST</b>	-	-	-	-	-	-	-	-
Risk Allowance	-	-	-	0.19	-	-	-	0.19
<b>TOTAL COST OF ERA</b>	-	-	-	<b>3.99</b>	-	-	-	<b>3.99</b>
<b>CRA COSTS</b>	-	-	-	-	-	-	-	-
<b>DRA COSTS</b>	-	-	-	-	-	-	-	-
<b>TOTAL PROJECT COSTS</b>	-	-	-	<b>3.99</b>	-	-	-	<b>3.99</b>
<b>GIM Input</b>	-	-	-	<b>3.95</b>	-	-	-	<b>3.95</b>

Page 5 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

**RESULTS:**

Life Cycle Cost results - for sustainment projects (with reference to Master) 2021 R'M

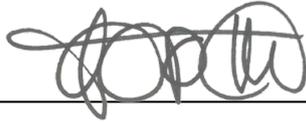
	Base Case:	Preferred	Rejected Alternatives		
	Status quo	Option	3	4	5
OPTIONS	1	2			
Present value life-cycle cost	-154,24	-2,84	-	-	-
- Availability (PCLF & UCLF)***	-213,59	-	-	-	-
- Opex	-0,63	-0,33	-	-	-
- Capex	-	-3,44	-	-	-
- Tax	59,98	0,93	-	-	-
Ranking					

Commentary on results:

\*Note that ERA is proved at highest relevant authority

Page 6 of 6	
REV:	0
PROJECT REF: NO	C.GHE0843
DRA VALUE:	N/A
ERA VALUE:	R3.99M
BUDGET/ TECH PLAN VALUE	R'0M
GOIC APPROVED VALUE	R3.95M

(a) I have satisfied myself with all aspects of this concept and herewith recommend this proposal



2022-05-18

Project Manager

Date

(a) I have satisfied myself with the technical aspects of this concept and herewith \*approve /recommend this proposal



2022-05-23

BA Engineering Manager

Date

(a) I have satisfied myself with the financial aspects of this concept and herewith \*approve /recommend this proposal



23/05/222

BA Finance Manager

Date

Note : ERA has subsequently being approved on latest GOIC listing

(d) The proposal has been approved for execution by the BA Investment Committee.



2022-05-23

Chairman (BA Investment Committee)

Date

Approval (Minutes of meeting dated 28 February 2022 attached)



## Meeting minutes

Template Identifier

240-54076329

Rev

7

Effective Date

November 2019

Next review date

October 2022

Generation

### Meeting Name: Hendrina Investment Committee (HIC)

Date:	Time:	Venue:	Meeting No.:
28 February 2022	13h00 – 15h00	Microsoft Teams	1/2022

### Attendance Register

Name	Responsibility	Initials	Mark attendance or non-attendance using Present (P), Apologies (A), Absent (X)													
			J	F	M	A	M	J	J	A	S	O	N	D		
Thabo Mapaila (Chairperson)	Technical	T		P												
Phumlani Ndwandwe (Alt Chairperson)	Technical	P		A												
Justice Ramagoma	Environmental	J		P												
Derek Johnson	Technical	D		A												
Mosa Mafokoane	Finance	M		P												
Ogorogile Ngwenya	Technical	O		P												
Anari van Greuning	TPC	A		A												
Pieter Viljoen	Commercial	P		P												
Mluleki Sishi	Commercial	M		A												
Musa Mzimba	Finance	M		P												
Tsundzukani Shivambu	Finance	T		P												

Disclosure classification: **Controlled Disclosure**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

	<b>Meeting minutes</b>	<b>Template Identifier</b>	<b>240-54076329</b>	<b>Rev</b>	<b>7</b>
		<b>Effective Date</b>	<b>November 2019</b>		
		<b>Next review date</b>	<b>October 2022</b>		
		<b>Generation</b>			

Aluwani Mutsilanwana	<b>Technical</b>	A		A											
Ntombifuthi Khumalo	<b>Commercial</b>	N		A											

Item	Subject	Decision & Action items	Responsibility	Target date
1.	<b>Opening:</b> 1.1 Welcome 1.2 Apologies and quorum	The Chairperson opened the meeting and welcome all present.  A quorum of members was present, the Chairperson declared the meeting duly constituted.	<b>Chairperson</b>	
2.	<b>Safety and Emergency Evacuation Procedure and Covid-19</b>	Everyone present was familiar with the evacuation procedure	<b>All</b>	
3.	<b>Adoption of agenda &amp; Declaration of interest</b>	No conflict of interests were declared	<b>All</b>	
4.	<b>Verification of minutes of previous meeting/s</b>	The minutes of the previous meeting was approved	<b>All</b>	

**Disclosure classification: Controlled Disclosure**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

Item	Subject	Decision & Action items	Responsibility	Target date
5.	Action items from previous minutes	None		
6.	Matters for approval			
6.1	Project Presented	<p><b>Project title</b></p> <p>C.GHE0845 - Installation of an Oil Skimmer at the 7 Year Dam</p> <p>C.GHE0843 - Replacement of Oil-Filled RMU Switchgear</p> <p>N.GHE0541 - Demolish Asbestos Old PTM Offices</p>	<p><b>Presenter</b></p> <p>Sifiso Ndlovu</p> <p>Robert Makgakga</p> <p>Robert Makgakga</p>	N/A
6.2	Project Release Approval			

Disclosure classification: **Controlled Disclosure**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

Item	Subject	Decision & Action items	Responsibility	Target date
6.2.1	C.GHE0845 - Installation of an Oil Skimmer at the 7 Year Dam– Rev 0 (R1.24 M)	<p><b>Remarks</b></p> <ul style="list-style-type: none"> <li>The team was requested to work on their motivation for the project, which includes the financial benefits for executing the project and impact on station KPI.</li> </ul> <p><b>Feedback:</b></p> <ul style="list-style-type: none"> <li>The station has not been in environmentally compliant for a number of years and the expectation from Generation division is that all stations must improve their KPIs to meet the divisional KPI.</li> <li>The committee requested the team to capture the point presented on the PowerPoint slide about regarding meeting the station’s environmental KPI on the ERA document.</li> <li>The team must reference the environmental standard the station needs to comply to as part of the motivation for the project.</li> <li>The team must correct capital expenditure to operational</li> </ul>		N/A

**Disclosure classification: [Controlled Disclosure](#)**

Template Identifier	240-54076329	Rev	7
Effective Date	November 2019		
Next review date	October 2022		
Generation			

Item	Subject	Decision & Action items	Responsibility	Target date
		<p>expenditure on slide 4.</p> <ul style="list-style-type: none"> <li>Project was supported with above recommended changes.</li> </ul> <p>The Execution Release Approval (ERA) was approved</p>		
6.2.2	C.GHE0843 - Replacement of Oil-Filled RMU Switchgear – Rev 0 (R3.99 M)	<p><b>Remarks</b></p> <ul style="list-style-type: none"> <li>The resubmission is due to 90 days lapse because of delays in getting the minutes approved and GOIC sitting that was moved to January 2022.</li> <li>The shortage of staff in Procurement department remains a risk for the execution of the project.</li> <li>The team must align their engineering and project management costs on page 3 and 4.</li> <li>The tax on the preferred option should be verified on the Lifecycle costing result on page 5 of the ERA document.</li> <li>The team must complete the ERA table on the header and not</li> </ul>		N/A

**Disclosure classification: Controlled Disclosure**

	<b>Meeting minutes</b>	<b>Template Identifier</b>	<b>240-54076329</b>	<b>Rev</b>	<b>7</b>
		<b>Effective Date</b>	<b>November 2019</b>		
		<b>Next review date</b>	<b>October 2022</b>		
		<b>Generation</b>			

Item	Subject	Decision & Action items	Responsibility	Target date
		leave blank spaces, rather put not applicable.  <ul style="list-style-type: none"> <li>The ERA is supported with condition that the ERA value does not change after verifying the lifecycle costing results and with the other recommended changes.</li> </ul> The Execution Release Approval (ERA) was approved		
6.2.3	N.GHE0541 - Demolish Asbestos Old PTM Offices – Rev 0 (R1.58 M)	<b>Remarks</b> <ul style="list-style-type: none"> <li>The committee requested for the cash flow phasing to be moved to 2023 financial year.</li> <li>The committee picked up that the resource costs looks duplicated and may have increased ERA value to R1.58 M</li> <li>The committee recommended to the team to go back and relook at their figures including getting confirmation from the QS if the figures are still valid.</li> <li>The team must rephrase unknown health risk on the problem</li> </ul>		N/A

**Disclosure classification: Controlled Disclosure**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

Item	Subject	Decision & Action items	Responsibility	Target date
		<p>statement.</p> <ul style="list-style-type: none"> <li>The estimated maintenance cost was received from the environmental department.</li> <li>On the rejected option, the statement about non-compliance to section 19 of the water act must be corrected with the correct act/ standard. The team can liaise with Justice Ramagoma for the correct referencing.</li> <li>Project was not supported with above recommended changes.</li> </ul> <p>The Execution Release Approval (ERA) was not approved</p>		
7.	<b>Matters for information</b>	<ul style="list-style-type: none"> <li>There was a change in membership of the quorum, as Tsundzukani Shivambu had to leave the meeting earlier.</li> </ul>		
8.	<b>Matters for support/ recommended to higher structures</b>	None		

**Disclosure classification: [Controlled Disclosure](#)**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.



Meeting minutes

Template Identifier	240-54076329	Rev	7
Effective Date	November 2019		
Next review date	October 2022		
Generation			

Item	Subject	Decision & Action items	Responsibility	Target date
9.	General	None		
10.	<b>Closure</b> <b>Next meeting</b> The next meeting will be at 13h00 on 14 March 2022 in MS Teams	The chairperson adjourned the meeting		

Signed as a correct record:

Chairman

2022-05-12

Date

Disclosure classification: **Controlled Disclosure**

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.