



Tharisa Minerals Proprietary Limited
Capital Budget Estimate (CBE)

Project Name: Voyager System Upgrade : Control Philosophy Document
Vote number: TM262 -16003_22
Department: Voyager
Base Date: May-2026

Motivation:

We require to engage a competent third-party specialist to develop a comprehensive control philosophy for the Voyager plant through a reverse engineering process.

The Voyager Siemens control system components are currently approximately 80% obsolete, with many of the installed hardware components no longer manufactured or supported by Siemens. As a result, the Voyager control system, including the PLC, SCADA, network infrastructure, and associated software platforms, will require phased upgrading and modernization in the next financial year to ensure long-term reliability, maintainability, and supportability.

The development of a formal control philosophy forms a critical part of the upgrade preparation process, as the Voyager plant currently does not have a documented control philosophy for the existing PLC and SCADA systems. The proposed control philosophy will therefore be developed through a reverse engineering exercise of the current automation and control systems. Due to the absence of a documented control philosophy, system modifications and operational changes are often implemented without proper documentation updates, as there is no approved engineering baseline document available. This situation constitutes a violation of the Management of Change (MOC) procedure and presents significant operational, maintenance, governance, and compliance risks to the plant.

The lack of a documented control philosophy was also identified as a major finding during the recent Operational Technology (OT) audit. The audit highlighted the risks associated with undocumented control logic, interlocks, alarm philosophies, protection functions, and operational sequences, which may lead to inconsistent plant operation, increased troubleshooting time, prolonged downtime, reduced maintainability, and potential safety risks.

The proposed reverse engineering exercise will involve a detailed analysis of the existing PLC software, SCADA applications, field instrumentation, protection systems, operational sequences, control interlocks, and communication architecture to develop a complete "as-built" control philosophy document for the Voyager plant. This documentation will establish a formal engineering baseline for future modifications, improve troubleshooting capability, support training and standardization, ensure MOC compliance, and support the planned control system upgrade project.

Releasing the approved capital funds will enable the appointment of a suitably qualified third-party specialist with the required expertise and experience to execute this work effectively. This will ensure that the Voyager plant control systems are properly documented, standardized, and aligned with engineering governance, OT audit, and long-term modernization requirements. It is therefore recommended that the approved budget be released to proceed with this critical project.

Scope of Work:

1. Conduct a comprehensive reverse engineering assessment of the Voyager plant control systems
2. Review and analyse existing PLC software, SCADA applications, and control architecture
3. Identify and document all control philosophies, operational sequences, and process logic
4. Capture and document all plant interlocks, permissives, trips, alarms, and protection functions
5. Assess and document field instrumentation and control system interfaces
6. Review MCC, VSD, smart relay, and equipment control integration into the PLC and SCADA systems
7. Verify and document current process control strategies and operator functionalities
8. Develop complete "as-built" control philosophy documentation for the Voyager plant
9. Create supporting documentation for system operation, shutdown, startup, and emergency conditions
10. Ensure alignment of the developed control philosophy with Management of Change (MOC) requirements
11. Provide recommendations for standardisation, optimisation, and system improvement
12. Update and compile relevant engineering documentation and system descriptions
13. Conduct review sessions with operations, maintenance, and engineering personnel
14. Submit final control philosophy documentation and supporting reports

Cash Flow	F2026	F2027	F2028	F2029
October				
November				
December				
January				
February				
March				
April				
May				
June				
July				
August				
September	R506 375			
TOTAL	R 506 375	R -	R -	R -

Name

Signature

Date

Originator:

Wonder Munakandafaq

22-May-2026

Reviewer (Accountant):

Omphile Malwane

22-May-2026

Head of Department:

Yusuf Andrews

22-May-2026

Engineering Manager:

Reggie Magobelelo

27-May-2026

Finance Director

Kieron Johnstone

27-May-2026

Managing Director:

Vulela Makuni

28-May-2026

Group Chief Technical Officer:

Chief Financial Officer:

Chief Operating Officer:

Chief Executive Officer:

Board Approval Required:

Yes

No

Approved Date



Tharisa Minerals Proprietary Limited
Capital Budget Estimate

Project Name: Voyager System Upgrade : Control Philosophy Document
Vote number: TM262 -16003_22
Base Date: 01 May 2026

Start Date: 01-Oct-2025
End Date: 30-Sept-2026

Sub Head	Description	External Supply	External Erection	Internal Supply	Internal Erection	Escalation	Total (excl. Escalation)
W01	Mining	-	-	-	-	-	-
W02	Civils	-	-	-	-	-	-
W03	Structural	-	-	-	-	-	-
W04	Painting	-	-	-	-	-	-
W05	Mechanicals	-	-	-	-	-	-
W06	Platework	-	-	-	-	-	-
W07	Piping	-	-	-	-	-	-
W08	Electrical	-	-	-	-	-	-
W09	Instrumentation	506 375	-	-	-	-	506 375
W10	Consumables	-	-	-	-	-	-
W11	Administration	-	-	-	-	-	-
W12	Service Overheads	-	-	-	-	-	-
W13	Non Process Equipment	-	-	-	-	-	-
W70	Reimbursables	-	-	-	-	-	-
W72	Reimbursables Prof. Services	-	-	-	-	-	-
W78	Reimbursables Project Control	-	-	-	-	-	-
W85	Reimbursables to CBE	-	-	-	-	-	-
W90	Reimbursables Non Fee Items	-	-	-	-	-	-
Sub-Totals		R 506 375	R -	R -	R -	R -	R 506 375

68	Contingencies	%
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Total Escalation **0%** -

Total Cost (incl. Escalation) **R 506 375**

Total Contingency **0%** -

Budget FY2026: **R 2 031 085**

Total (incl. Contingency & Escalation) **R 506 375**

Revised Budget FY2025: **R -**



Tharisa Minerals Proprietary Limited
Capital Budget Estimate

Project Name:	Voyager System Upgrade : Control Philosophy Document
Vote number:	TM262 -16003_22
Department:	Voyager
Base Date:	May-2026
Sub Head:	W09 Instrumentation

Item No.	Description	Quantity		Unit	Rates		Orders				Totals
		External	Internal		Supply	Erection	External Supply	External Erection	Internal Supply	Internal Erection	
1	Voyager Revese Engineering(Digital Inputs)	274		EA	R325		R89 050	R0	R0	R0	R89 050
2	Voyager Revese Engineering(Analog Inputs)	381		EA	R325		R123 825	R0	R0	R0	R123 825
3	Voyager Revese Engineering(Simocodes)	223		EA	R650		R144 950	R0	R0	R0	R144 950
4	Voyager Revese Engineering(VSDs)	79		EA	R650		R51 350	R0	R0	R0	R51 350
5	Voyager Revese Engineering(Soft Starters)	17		EA	R650		R11 050	R0	R0	R0	R11 050
6	Voyager Revese Engineering(Sequences)	31		EA	R650		R20 150	R0	R0	R0	R20 150
7	Voyager Revese Engineering(Funtional Specification))	60		EA	R1 100		R66 000	R0	R0	R0	R66 000
Sub Totals							R 506 375	R -	R -	R -	
Total Unescalated											R 506 375
Orders Placed to Date											
Funds Transferred Out											
Sub-total											R 506 375
Funds Transferred In											
Available for Spending:											R 506 375

**Input cells highlighted in yellow

QUOTATION

NUMBER: RFQ0002909
REFERENCE: VOYAGER REVERSE
ENGINEERING AND
FUNCTIONAL
SPECIFICATION
DATE: 29/05/2026
DUE DATE: 30/06/2026
SALES REP:
OVERALL DISCOUNT %: 0.00%
PAGE: 1/2



CONTROL
NET
CONSULTING

PROCESS CONTROL ENGINEERS & CONSULTANTS

FROM
CONTROLNET CONSULTING (PTY) LTD

VAT NO: 4380257990

POSTAL ADDRESS: P.O Box 4572
Midrand
1685
PHYSICAL ADDRESS: Block E West, Ground Floor
Cnr 16th & New Road
Central Park
Randjespark, Midrand
1685

TO
THARISA MINERALS (PTY) LTD

CUSTOMER VAT NO: 4860238387

POSTAL ADDRESS: Marikana Mine
Portion 84 K/Kraal
Farm 342 JQ
Marikana
0284
PHYSICAL ADDRESS: Marikana Mine
Portion 84 K/Kraal
Farm 342 JQ
Marikana
0284

Description	Quantity	Excl. Price	Disc %	VAT %	Excl. Total	Incl. Total
001 - Digital Inputs	274.00	R 325.00	0.00%	15.00%	R 89,050.00	R 102,407.50
002 - Analog Inputs	381.00	R 325.00	0.00%	15.00%	R 123,825.00	R 142,398.75
003 - Simocodes	223.00	R 650.00	0.00%	15.00%	R 144,950.00	R 166,692.50
004 - VSDs	79.00	R 650.00	0.00%	15.00%	R 51,350.00	R 59,052.50
005 - Soft Starters	17.00	R 650.00	0.00%	15.00%	R 11,050.00	R 12,707.50

BANKING DETAILS :

Bank : Nedbank
Account Holder : Controlnet Consulting (Pty) Ltd
Account Number : 1001 685 628
Branch Code: 177942
Branch : Carlswald
Account Type : Cheque Account
Swift Code : NEDSZAJJ



Wonder Munakandafa (Jun 1, 2026 15:34:09 GMT+2)

01-Jun-2026

Total Discount: R 0.00
Total Exclusive: R 506,375.00
Total VAT: R 75,956.25
Sub Total: R 582,331.25

Grand Total: R 582,331.25

BALANCE DUE

R 582,331.25

Terms & Conditions

1. Validity: Quotes are valid for 30 days, unless otherwise stated in the main body of the quote.
2. Account Holder: Strictly 30 days nett from date of statement.
3. Non Account Holder: A 100% EFT payment is required on any orders placement.
4. Guarantee: We guarantee our work for a period of 12 Months against latent defects and/or faulty workmanship.
5. Scope of Supply: Limited to items and services explicitly outlined in this quote.

QUOTATION

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REFERENCE: VOYAGER REVERSE
ENGINEERING AND
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SPECIFICATION
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PHYSICAL ADDRESS: Block E West, Ground Floor
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1685

TO
THARISA MINERALS (PTY) LTD

CUSTOMER VAT NO: 4860238387

POSTAL ADDRESS: Marikana Mine
Portion 84 K/Kraal
Farm 342 JQ
Marikana
0284
PHYSICAL ADDRESS: Marikana Mine
Portion 84 K/Kraal
Farm 342 JQ
Marikana
0284

Description	Quantity	Excl. Price	Disc %	VAT %	Excl. Total	Incl. Total
006 - Sequences	31.00	R 650.00	0.00%	15.00%	R 20,150.00	R 23,172.50
007 - Write Functional Specification	60.00	R 1,100.00	0.00%	15.00%	R 66,000.00	R 75,900.00

Wonder Munakandafa (Jun 1, 2026 15:34:09 GMT+2)

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