




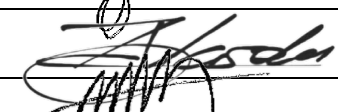


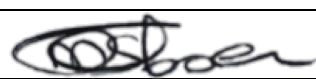
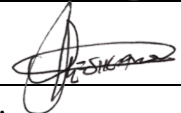
# MATLA POWER STATION

## SCOPE OF WORK

Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	October 2019		
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PLANT AREA: Ash handling system (Slurry plant)

TITLE: Design, supply, install, commissioning of various lighting and small power distribution panels, including de-commissioning and removal and scrapping of old lighting distribution panels at various areas of the slurry plant (06-02BLA 01GP001 and 06-03BLA01GF001 ) – External Contractor

REF: <b>MEE-06352</b>		Reference Rev No: 1	MULTIDISCIPLINARY: No	Plant Level: 2
COMPILED BY	Name: <b>S. Mvuyana</b> System Engineer	Signature:		Date: 03/08/2021
APPROVED	Name: <b>N. Maseko</b> Line Manager	Signature:		Date: 05/08/2021
APPROVED	Name: <b>L. Ngobese</b> Group Manager (Acting)	Signature:		Date: 05.08.2021
REVIEWED	Name: <b>D. Mkhonto</b> Quality Department	Signature:		Date: 2021/08/05
REVIEWED	Name: <b>S. Ramaboea / R. Mokobodi</b> Environmental Department	Signature:		Date: 05.08.2021
ACCEPTED	Name: <b>S. Lesikara</b> Outage Manager/ Maintenance Manager/ Project Coordinator	Signature:		Date: 05/08/2021
ACCEPTED	Name: <b>N/A</b> A/A	Signature: N/A		Date: N/A

**NB: Do not tamper with the template.**

### GENERAL

- Data books, reviews, reports and diagrams/drawings shall be submitted to Engineering after the completion of the work. Engineering to forward the data books to Quality Department (Document Control)
- All QCP's to be submitted to Engineering and Quality for approval prior to outage/project or maintenance work commencement.

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	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
1.1	Safety	<ul style="list-style-type: none"><li>All work is to be done in accordance with Matla plant procedures and safety regulations. (GGR 0992).</li><li>Matla power station induction must be done before any work commences.</li><li>Permit to work must be in place before any work commences.</li><li>Worker's register must be completed and daily risk assessment conducted before any work commences.</li></ul>	Eskom to witness.	Contractor
1.2	Environmental Management.	<ul style="list-style-type: none"><li>All activities listed in the National Environmental Act 107 of 1998, EIA Regulations as amended, must have environmental <b>AUTHORISATION</b> before commencement of work.</li><li>The contractor shall comply with all applicable legal and other requirements.</li><li>The polluter pays principle will be applied.</li><li>The contractor manager shall ensure compliance with Eskom Matla Environmental procedures to ensure the prevention of pollution (refer: OMOP 4090 and 4402).</li><li>The last payment will be processed based on the status of the last housekeeping check sheet (Annexure C: OMOP 4402) of designated area.</li><li>EMS file based on ISO14001 will be required.</li></ul>	Eskom to witness.	Contractor
1.3	Quality Management	<ul style="list-style-type: none"><li>The contractor/executioner of work will be responsible for drawing up all QCP documentation and this must be approved by engineering and authorised by the Quality Department before commencing with the work.</li><li>Contractors/executioner to adhere to QM 58 and OMOP4497 requirements</li></ul>	Hold point	Contractor

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		<ul style="list-style-type: none"><li>• Number of NCR issued can affect your next tendering process.</li><li>• The QCP shall be signed progressively by the Engineer/Supervisor, Eskom QC Inspector, Contractor QC Inspector and/or AIA.</li><li>• No procuring of outage items without the approval of scopes by quality</li><li>• All outage scopes creep and scopes addition should be approved by quality</li><li>• No contractor should be in the possession of scopes for execution without the scopes approved by quality</li><li>• The contractor is subjected to quality auditing at any point in time during execution of scope</li></ul>		
1.4	Inputs from other departments	This scope was compiled with EMD after various plant walks and discussions on a proposed plant reticulation and consultation of various other engineers.		
1.5	Commissioning reference	<p>Phasing is to be completed on each panel, the contractor shall supply commissioning documentation for each panel and sub-distribution panel.</p> <p>All panels shall be commissioned in line with all applicable Eskom procedures and as per the OHS Act, the contractor shall ensure that all applicable standards and safety measures are adhered to.</p>		EMD

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<b>2. Decommissioning and or Plant Isolation</b>				
2.1	Ensure that all relevant circuits are de-energized and isolated. All circuit must be isolated accordingly, all possible feeder breakers	All work shall be performed in accordance with the latest revision of PSR (36-681)	<b>OPS</b> and EMD	OPS
2.2	Where necessary ensure that supplies to cables are isolated and any other potential source.	All work shall be performed in accordance with the latest revision of PSR (36-681)	<b>OPS</b> and EMD to ensure that all necessary isolations, fuses, links etc. are removed.	OPS
2.3	Inspect all cables and circuits inside the relevant position and all other components to ensure no damage occurs while work is being carried out, ensure any loose cables and or components are stored and kept safe.	All work shall be performed in accordance with the latest revision of PSR (36-681). RPs to ensure plant is safe prior to permit acceptance.	<b>OPS</b> and EMD to ensure that all necessary isolations, fuses, links etc. are removed.	EMD

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### SECTION 3: Site/ Product preparation (Before and after)

3.1	The contractor shall identify together with the employer a suitable area where the new sub-distribution panels shall be located.	<ol style="list-style-type: none"><li>The contractor shall clean the identified area and removal all objects which may hinder the successful installation of the panels</li><li>The contractor shall install conduits for the lighting and small power conductors on each level,</li><li>The contractor shall ensure that the existing cables and new cables to be installed can reach the identified location of each new sub-distribution panel,</li><li>In as far as practically possible the contractor shall install the new conductors for lighting and plugs, the contractor shall install new IP65 plugs and lights compliant with Eskom specification 240-55714363 and shall have the new installation cold commissioned and ready before the old supply cable for the sub-distribution panel is disconnected and installed onto the new sub-distribution panel.</li></ol>	W: An Eskom representative shall work together with the contractor to witness the installation	Contractor
3.2	The contractor shall install new conduit within each area to house the various conductors for lighting and for the domestic plugs	<ol style="list-style-type: none"><li>The contractor shall ensure that all conduit installed is galvanised and fully compliant with 240-56227443</li><li>The contractor shall ensure that conduit installed is earthed accordingly as per 0.54/393</li><li>All conduits must be mounted in a manner that is safe and does not obstruct plant operations,</li><li>The contractor shall ensure that all glands and entry terminations on lights and or plugs does not damage or compromise the ingress protection of the component.</li></ol>	W: An Eskom representative shall work together with the contractor to witness the installation	Contractor
3.3	The contractor shall install new lighting which is compliant with Eskom specification 240-55714363	<ol style="list-style-type: none"><li>The contractor shall ensure that all lights provided and fully compliant with applicable SANS requirements and 240-55714363.</li></ol>	H: Contractor to supply all type test certification	Contractor

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			and drawings before any installation on plant	
3.4	Practical safety	<ul style="list-style-type: none"><li>a. The contractor shall ensure that all plant access requirements are fulfilled on a daily basis (e.g. LAR, etc.) before any work commences,</li><li>b. The contractor shall ensure daily risk assessments are completed and approved before any work commences.</li></ul>	H: Permit holder shall ensure all safety requirements are adhered to.	Contractor
3.5	Decommissioning, removal and scrapping of old panels, conduits and various conductors	<ul style="list-style-type: none"><li>a. After the plant lighting and plug are fed from the new sub-distribution panels, the old panels shall be decommissioned after the main power cables are moved to the new panels,</li><li>b. The old main distribution and sub-distribution panels shall be removed from the plant along with the conduits for the cables on the plant,</li><li>c. The contractor shall ensure that the removal of all old cables, conduits, cables, distribution panels, etc. are removed in a safe manner that does not compromise the plant.</li><li>d. The contractor shall move all material to a area identified by the employer and the contractor shall ensure that the</li></ul>	W: An Eskom representative shall work together with the contractor to witness the removal.	Contractor

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<b>4. Work to be performed</b>				
4.1	Main lighting and shall power distribution panels (LCP) x 2	<ul style="list-style-type: none"><li>a. Design, supply and install 2 lighting distribution panels which are floor mounted, the panels must have a double door configuration</li><li>b. Each panel shall be IP65 minimum and shall be lockable,</li><li>c. The panels shall have two incomers with suitable sizing to receive x2 PVC-SWA-70mm<sup>2</sup>–PVC cables on the incomer and shall have a automatic change over switch,</li><li>d. All of the feeder circuits within the panel shall have a fused isolators which are adequately sized for each feeder,</li><li>e. The x2 incomers along with all feeders on the main distribution panel shall have LED indication lights (Green, Yellow and Red) to indicate the status of the feeder or incomer (Green- Healthy &amp; ready, Yellow-Fault, Red-Live)</li><li>f. All circuits in the panel shall be IEC type 2 coordinated as per IEC 60947</li><li>g. Panel specifications shall be as follows;<ul style="list-style-type: none"><li>i. V = 400V (3Φ)</li><li>ii. I<sub>N</sub> = 300A</li><li>iii. I<sub>F-3Φ</sub> = 25kA, 3 seconds</li><li>iv. Type 2 coordination,</li><li>v. Number of circuits per panel 6 x 15kW</li><li>vi. Fused isolators on each feeder</li></ul></li></ul>	<p>H: Panels shall be approved by the employer prior to manufacturing and shall have all the required drawings (GA's and detailed) before manufacturing</p> <p>H: Contractor shall submit an appropriate design for review by the employer before the panels are constructed.</p>	Contractor

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		<ul style="list-style-type: none"><li>vii. Colour shall be electric orange, B32 (SANS 1091) powder coating</li><li>viii. Panel shall be floor mounted and fully compliant with SANS 61439</li><li>h. Panel shall have an earthing stud welded onto the door and the side for earthing purposes,</li><li>i. Panels shall be constructed with material: 3CR12 stainless steel</li><li>j. Glands plant shall be adequately sized to allow cables of up to 70mm<sup>2</sup> and also 16mm<sup>2</sup></li><li>k. The door shall also be earthed via a conductor of minimum size 2.5mm<sup>2</sup></li><li>l. Each of the panels shall have drawings for all of the circuits within the panel,</li><li>m. All conductors and material used shall be SABS approved with all of the relevant documentation provided prior to acceptance</li><li>n. The panels shall be compliant with SANS 1973 and 240-56227516,</li><li>o. Panel construction shall prevent access with live busbars and the panel shall as a minimum be form 3B.</li><li>p. All components shall be compliant with all the requirements of SANS 60947</li><li>q. The contractor shall ensure the panel is located close to the existing panel in order to minimize cables having to be joined to place the panel in its new position. ,</li></ul>		
4.2	Cable from the main distribution panels to the field sub-distribution panels	<ul style="list-style-type: none"><li>a. The contractor shall provide a minimum of 6 cable runs of 400m to the new sub-distribution panels which were not part of the original site installation,</li></ul>		

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		<ul style="list-style-type: none"><li>b. These cable runs shall be mounted on adequately sized cable racks which shall be earthed in accordance with 240-56356396 and 0.54/393</li><li>c. The contractor shall install a cable with following specifications:<ul style="list-style-type: none"><li>i. V = 600V/1000V</li><li>ii. PVC-SWA-PVC</li><li>iii. Size = 16mm<sup>2</sup>, 4 cores</li><li>iv. Low halogen content</li><li>v. BVX4HCV</li><li>vi. Fused isolators on each feeder</li></ul></li><li>d. The contractor is to ensure where necessary conduits are used for the cable runs to the sub-distribution panels,</li><li>e. The contractor shall ensure that the cable armouring is connected correctly</li></ul>		
4.3	Sub-distribution lighting and shall power distribution panels (LCP) x 12 and 1 spare	<ul style="list-style-type: none"><li>a. Design, supply and install 13 lighting distribution panels which are surface mounted, the panels must have a double door configuration</li><li>b. Each panel shall be IP65 minimum and shall be lockable,</li><li>c. The panels shall have two incomers with suitable sizing to receive x2 PVC-SWA-16mm<sup>2</sup>–PVC cables on the in-comer,</li><li>d. All of the feeder circuits within the panel shall have a fused isolators which are adequately sized for each feeder,</li><li>e. All circuits in the panel shall be IEC type 2 coordinated as per IEC 60947</li><li>f. Panel specifications shall be as follows;<ul style="list-style-type: none"><li>ix. V = 400V (3Φ+N)</li></ul></li></ul>	<p>H: Panels shall be approved by the employer prior to manufacturing and shall have all the required drawings (GA's and detailed) before manufacturing</p> <p>H: Contractor shall submit an</p>	Contractor

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		<ul style="list-style-type: none"><li>x. <math>I_N = 60A</math></li><li>xi. <math>I_{F-3\phi} = 20kA</math>, 1 seconds</li><li>xii. Type 2 coordination,</li><li>xiii. Various lighting single phase MCBs which are C-curve graded (minimum of 12 MCBs) with minimum breaking capacity of 15kA sized based on attached drawings</li><li>xiv. Various three phase MCBs which are C-curve graded (minimum of 3 MCBs) with minimum breaking capacity of 15kA sized based on attached drawings</li><li>xv. Various plug single phase MCBs which are C-curve graded (minimum of 4 MCBs) with minimum breaking capacity of 15kA sized based on attached drawings</li><li>xvi. Colour shall be electric orange, B32 (SANS 1091) powder coating</li><li>xvii. Panel shall be surface mounted and fully compliant with SANS 61439</li><li>xviii. Ensure a 30mA earth leakage is installed</li><li>g. Panel shall have an earthing stud welded onto the door and the side for earthing purposes,</li><li>h. Panels shall be constructed with material: 3CR12 stainless steel</li><li>i. Glands plant shall be adequately sized to allow cables of up to 16mm<sup>2</sup> and also 16mm<sup>2</sup></li><li>j. The door shall also be earthed via a conductor of minimum size 2.5mm<sup>2</sup></li></ul>	appropriate design for review by the employer before the panels are constructed.	
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		<ul style="list-style-type: none"><li>k. Each of the panels shall have drawings for all of the circuits within the panel,</li><li>l. All conductors and material used shall be SABS approved with all of the relevant documentation provided prior to acceptance</li><li>m. The panels shall be compliant with SANS 1973 and 240-56227516,</li><li>n. Panel construction shall prevent access with live busbars and the panel shall as a minimum be form 3B.</li><li>o. All components shall be compliant with all the requirements of SANS 60947</li><li>p. The contractor shall ensure the panel is located close to the existing panel in order to minimize cables having to be joined to place the panel in its new position.</li><li>q. All cables to various lighting circuits shall be 2.5mm<sup>2</sup> size and shall be in placed in sufficiently sized conduits which shall be earthed in accordance with 0.54/393 and 240-56356396</li><li>r. All cables to various plugs circuits shall be 4mm<sup>2</sup> size and shall be in placed in sufficiently sized conduits which shall be earthed in accordance with 0.54/393 and 240-56356396</li></ul>		
4.4	Cables to various plant components and protection grading	<ul style="list-style-type: none"><li>a. The contractor is to ensure that all cables are sized adequately with at least 2.5mm<sup>2</sup> for each lighting circuit and 4.0mm<sup>2</sup> for plug circuits</li><li>b. The contractor shall perform protection grading of the installation, and ensure proper grading of the installation, the contractor shall submit grading curves</li></ul>	H: Contractor shall submit relevant documentation of	Contractor

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		<p>c. The contractor shall ensure that all equipment used is compliant with the relevant SANS requirements, the contractor shall provide all equipment datasheets for review and approval before installation,</p> <p>d. The contractor shall also re-use any conduits or plant equipment which is deemed to be in a serviceable condition and this has been agreed to with the employer.</p>	<p>all conductors to be used.</p> <p>Installation shall be witnessed by Eskom representative.</p>	
4.5	Lights and plugs	<p>a. The contractor shall supply lights which are LED type and are IP68 rated as a minimum with the following specifications:</p> <ul style="list-style-type: none"><li>i. CCT – 2700k to 3200k for the boiler and coal plant, for turbine areas and other areas these may be 2700K to 4000K. No other CCT range is accepted,</li><li>ii. CRI – 80-90</li><li>iii. Surge protection fitted,</li><li>iv. Driver circuit fitted,</li><li>v. Must have earth connection point</li><li>vi. SABS/ SANS accredited</li><li>vii. Light must have a warranty</li><li>viii. Driver and surge arrestor must be replaceable</li></ul> <p>b. The plugs to be installed shall have the following specifications:</p> <ul style="list-style-type: none"><li>i. Plugs – 15A,</li><li>ii. IP68</li><li>iii. Single phase,</li></ul>	<p>H: Contractor shall submit relevant documentation of all equipment and components to be installed for confirming compliance o applicable SANS and Eskom standards.</p> <p>Installation shall be witnessed by Eskom representative.</p>	Contractor

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		c. The contractor shall ensure that scopes are compliant with the relevant SANS and Eskom specifications.		
4.6	Terminal strip junction boxes for lighting distribution panels x 13	<p>a. Design, supply and install 13 lighting distribution panels which are surface mounted,</p> <p>b. Each panel shall be IP65 minimum and shall be fastened via a screws,</p> <p>c. The panels shall allow for bottom entry into the distribution panel for conduits from the sub-distribution panels</p> <p>d. The contractor shall install terminals which are spring loaded and adequately sized for 2.5mm<sup>2</sup> conductor sizes</p> <p>e. All terminals shall be SANS and Eskom compliant as per drawings</p> <p>f. Panel specifications shall be as follows:</p> <ul style="list-style-type: none"><li>i. Panels shall be constructed with material: 3CR12 stainless steel</li><li>ii. Glands plate shall be adequately sized to allow conduits to enter the terminal boxes without limitations</li><li>iii. Panels sizes shall be at least:600mmx600mmx100mm</li><li>iv. Colour shall be electric orange, B32 (SANS 1091) powder coating</li><li>v. Panel shall be floor mounted and fully compliant with SANS 61439</li></ul> <p>g. Contractor is to ensure that bonding is attached onto each terminal strip junction box,</p> <p>h. The contractor shall install terminal strips each levels requirement and ensure a minimum spare terminal</p>	<p>H: Contractor shall submit relevant documentation of all conductors to be used.</p> <p>Installation shall be witnessed by Eskom representative.</p>	Contractor

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		strip number of 20% is added onto each junction box.		
4.7	Earthing and bonding of all equipment	<ul style="list-style-type: none"><li>a. All earthing shall be done using an aluminium flat with a minimum area of 300mm<sup>2</sup> (copper) or an alternative material with suitable copper effective area equal to 150mm<sup>2</sup> for each distribution panel</li><li>b. Each distribution panel shall have an earth connection in line 0.54/393 ,</li><li>c. Bonding of the doors shall be achieved with the use of earthing insulated cable which has a minimum area of 2.5mm<sup>2</sup>.</li><li>d. No copper shall be allowed for earthing due to high theft , other alternative materials with the same effective area may be used,</li><li>e. All earthing and bonding shall be tested to have a maximum resistance value of 10mΩ or less,</li><li>f. The contractor shall perform continuity testing of all installation equipment to ensure it is safe</li></ul>	H: All earthing, bonding and continuity testing shall be witnessed and shall have a signed off test results	Contractor
4.8	Cable terminations of power cabling	<ul style="list-style-type: none"><li>a. All of the connection points which have compression/ cone washers shall be appropriately sized,</li><li>b. All of bolts, washers and cones needs to be torqued at the correct values for the bolt used</li><li>c. Grease will also need to be applied to all contact points to ensure good conductivity</li><li>d. All cable connections and terminations shall be in line with SANS 876.</li><li>e. The contractor shall ensure that all cables have the correct lugs and these shall be fully compliant with SANS and Eskom specifications.</li></ul>	W: All terminations shall be witnessed by the employer.	Contractor
4.9	Testing and Commissioning	<ul style="list-style-type: none"><li>a. Each plant component shall have the relevant testing performed on it where applicable, all cables shall</li></ul>	W: All testing shall be witnessed by	Contractor

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		<p>have continuity testing and insulation resistance testing.</p> <ul style="list-style-type: none"><li>b. Perform IR and conductor resistance testing on all cables and ensure continuity between the gland plate and cable gland,</li><li>c. Perform continuity testing of the earthing and bonding of the new installation and ensure all resistance values are below <math>\leq 10\text{m}\Omega</math>,</li><li>d. Contractor is to supply a detailed commissioning program for each of the panels,</li><li>e. Contractor shall provide detailed drawings and FAT and SAT plans which for the main distribution and sub-distribution panels prior to manufacturing,</li><li>f. Contractor shall perform all testing as deemed necessary by the employer in agreement with the employer and a detailed testing schedule shall be submitted.</li><li>g. The contractor shall provide the employer with detailed commissioning plans and programs for the plant in its entirety which shall be approved.</li><li>h. Contractor shall issue a certificate of compliance (CoC) which is signed by a registered electrician or master electrician for all installations which shall be worked on by the contractor for each panel.</li><li>i. The contractor shall together with the signed CoC a safety certificate for each panel installed and commissioned on the plant.</li></ul>	<p>the employer and acceptance for pass or fail shall be from the employer.</p>	
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### SECTION 5: DOCUMENTATION AND HANDOVER

5.1	Contractor shall handover all QCPs	a. Contractor shall ensure all QCPs are signed and updated for submission to the client at each phase of the project b. Contractor shall provide detailed technical write up of the findings that may have required additional work during execution.	<b>H:</b> Engineering shall receive this information prior to job deemed complete.	Contractor
5.2	Documentation handover and commissioning reports	a. Contractor shall provide all of the necessary test reports and type test documents before installation of any equipment, b.	<b>H:</b> Contractor shall provide all of test documentation before final acceptance of the line	Contractor
5.3	AKZ and or KKS labelling of the plant	a. All electrical components installed by the contractor shall have AKZ and or KKS codes fitted on: <ul style="list-style-type: none"><li>▪ Cables,</li><li>▪ All panels,</li><li>▪ Lighting installation distribution board,</li><li>▪ Lighting fixtures,</li><li>▪ Earthing and cable trays,</li></ul> b. The contractor shall use Matla applicable AKZ labels which shall be approved prior to being applied on the plant. (Contractor to provide component list to employer and employer to generate codes which contractor shall use for tag generation and installation)	<b>H:</b> All installations shall have an appropriate AKZ/ KKS and employer to verify prior to installation on plant.	Contractor
5.4	Drawing updates	a. The contractor shall generate drawings for all panels supplied b. The contractor shall also update drawings of the plant installations which may be modified or worked on by the contractor	<b>H:</b> The updated drawings shall only be considered final and accepted once it has been reviewed by	Contractor

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		c. Updating of the drawings shall be as per 240-128353314 and 36-946 (contractor to request where this is not issued with the scope). d. The updated drawings shall only be considered final and accepted once it has been reviewed by configurations management and Engineering e. Contractor shall issue drawings in Microstation V8	configurations management and Engineering	
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### SECTION 6: RE-COMMISSIONING

6.1	All circuits which were placed out of service for maintenance shall be cold commissioned and have the relevant safety clearance documentation signed off before livening.	a. All workers shall need to have signed out of the workers register, b. The responsible permit holder shall satisfy himself that there are no people still working on the line prior to energization as per PSR (36-681).	<b>OPS and EMD</b> to be present.	Contractor and EMD
6.2	Equipment used for earthing and isolation.	a. Operating shall ensure that all relevant equipment used for earthing and isolating is removed as per PSR (36-681) requirements and accounted for prior to energization of the plant. b. The contractor and the permit holder shall ensure good house keeping of the area.	<b>OPS and EMD</b> to ensure all permits are cleared and the plant is in a service	Contractor and EMD
6.3	Visual inspection and thermography of scans of the plant once commissioned	a. Perform a visual inspection on all components to ensure plant is fully serviceable, b. Perform thermography to ensure there are no hot connections on any of the commissioned panels on the plant.	<b>H: EMD and Engineering</b> to ensure all permits are cleared and defects are corrected the plant is in a service	Contractor and EMD

The Appointed Person (AP) and Responsible person (RP)n shall perform commissioning of all supplies associated with the new installation.

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(SOW OF WORK VARIATION WILL BE ISSUED ONLY IF REFURBISHMENT OR REPLACEMENT COMPONENTS EXCEED BUDGET. OTHERWISE CUTTING INSTRUCTION WILL BE USED TO COMMUNICATE WHICH COMPONENTS MUST BE REPLACED OR REFURBISHED)

SUBSYSTEM		BILL OF MATERIALS					
No	REPLACE/ REFURBISH	COMPONENT DESCRIPTION	COMPONENT / MATERIAL SPECIFICATION	OPERATING PARAMETERS	PART / NUMBER	STOCK NUMBER	DESIGN QUANTITY
1	Replace	Main distribution panel	See section 4				2
2	Replace	Sub-distribution panel	See section 4				13
	Replace	Terminal junction box panel	See section 4				13
	Replace	Earthing	150mm <sup>2</sup> effective copper area – alternative material				150m
	Replace	Lights	See section 4 and drawings for final light count				300
	Replace	Plugs	See section 4 and drawings for final plug count				75
	Replace	Terminals	220 x 13 junction boxes				
	Replace	Conductors for lights	2.5mm <sup>2</sup> PVC at 220V				1000m
	Replace	Conductors for plugs	4mm <sup>2</sup> PVC at 220V				500m
	Replace	MCBs					
	Issue	Certificate of compliance and safety clearance certificate	For all panels , lighting and plugs installations				30

The contractor shall perform a detailed design and issue this to the employer with a final component/ bill of materials for approval.

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SCOPE COMPILATION REFERENCES				
SOURCE & Ref No.	Yes	No	N/A	Comments
Previous outage service reports		X		None
Return to service data packages		X		None
Maintenance Strategy with Rev number		X		
SAP defects (attach list as appendix)	X			Defects to be repaired on the plant based on walk down with GM.
GHRMS (STEP) reports (Generation Heat Rate Management System)			X	None
Online Condition Monitoring			X	None
Pre-outage performance test results			X	None
Post outage performance test results			X	None
GPSS/ Plant Performance data on UCLF incurred			X	None
OMS / IIRMS recommendations (Audits Reports)			X	None
Risk controls (IRM system)			X	None
Previous audits and reviews (e.g. ERAP)			X	None
Engineering Change Requests (Projects)			X	None
LOPP strategy reports			X	None
URS			X	None
Philosophy (Outage)			X	None
Condition Monitoring Report			X	
VA/PHD Viewer trends			X	None
Corrective Actions			X	None
CARAB reports			X	None
Statutory Requirements			X	None
Grid code requirements			X	None
Waivers and Exemptions			X	None

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Calibration requirements			X	None
Previous Outage SOW variations			X	None
Post Mortems Actions from previous outages			X	None
Pre-Outage plant walks			X	None
Risk based inspection (RBI) report			X	None
Simulation, TOIs, OON, SI			X	None

Comments

None.

Compiled by: S Mvuyana

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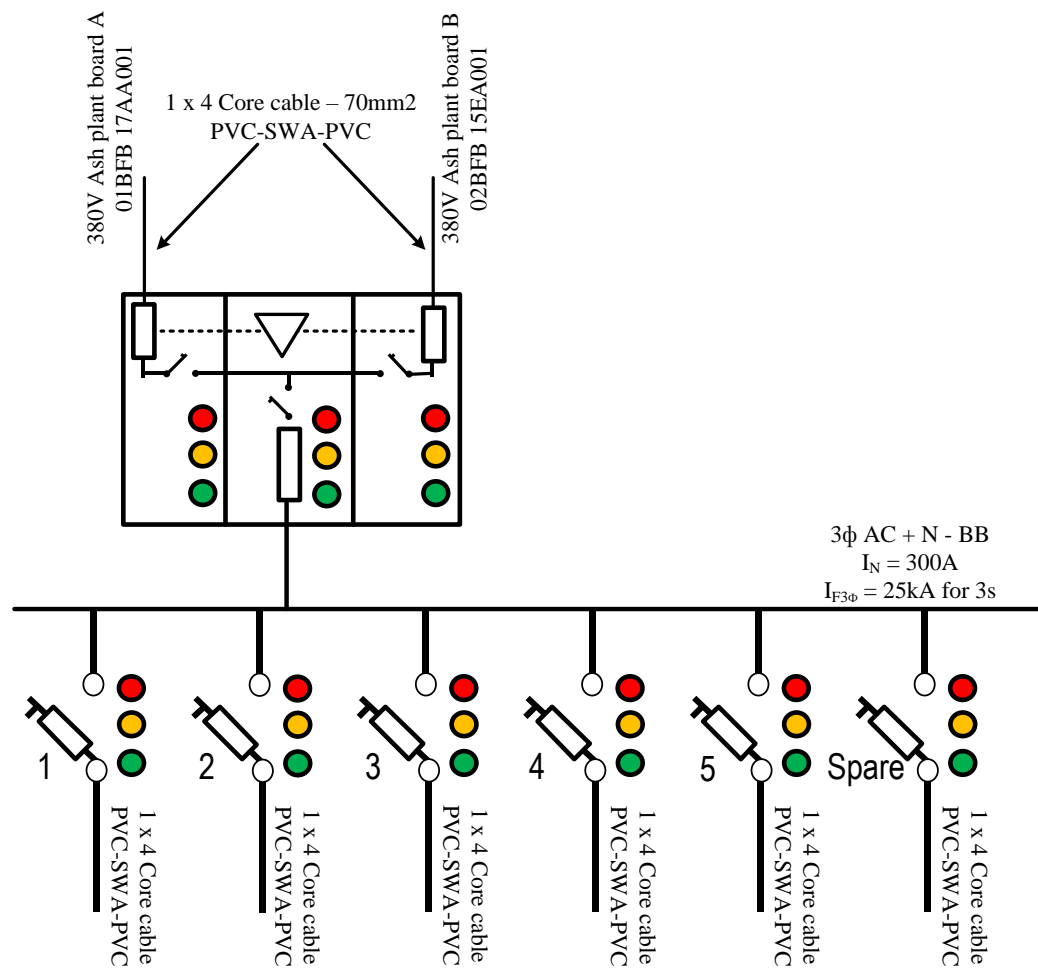


Figure 1: Simplified schematic of main distribution panel showing main incomer and the automatic change over switch.

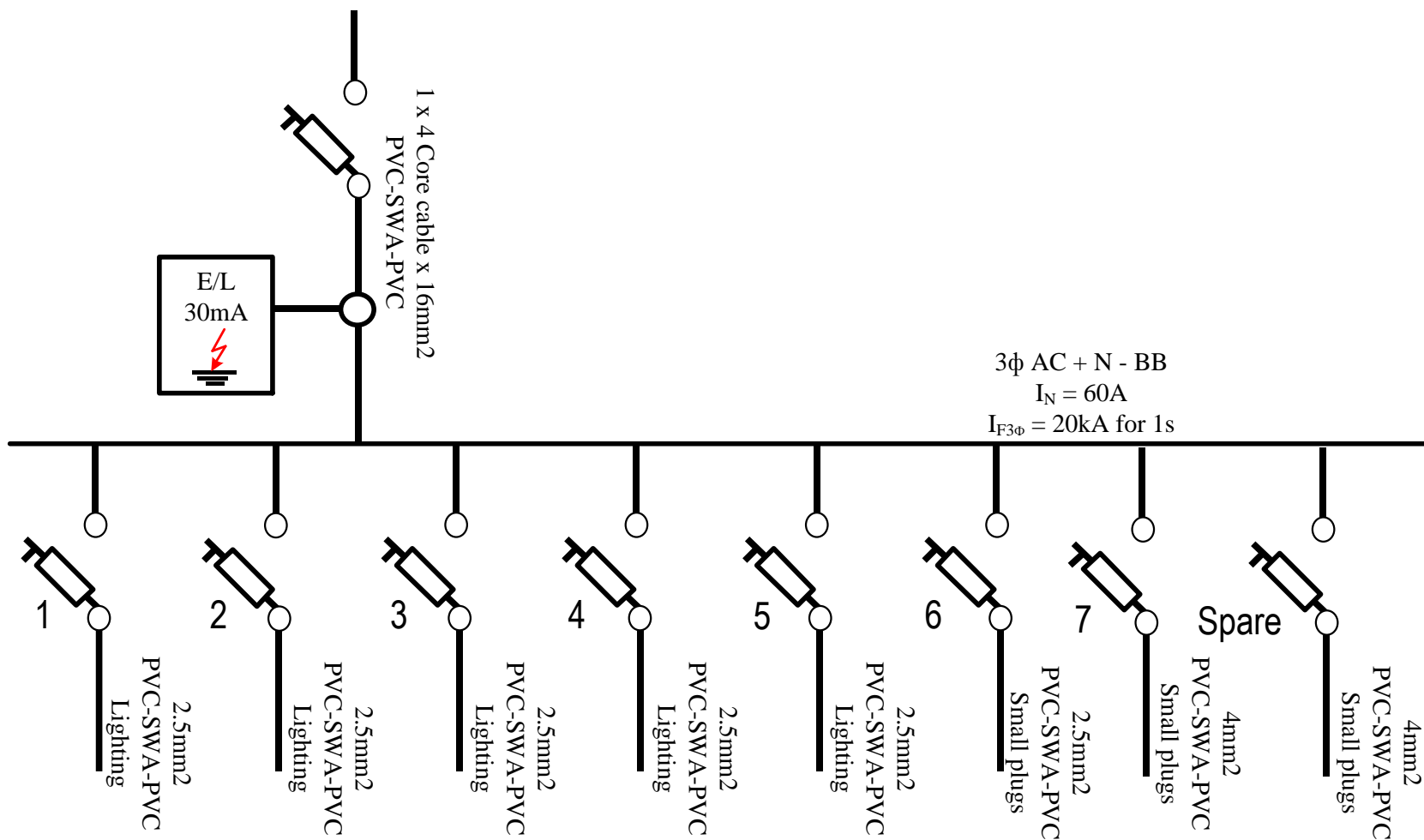


Figure 2: Simplified schematic of sub-distribution panel showing incomer and earth leakage and various feeders,

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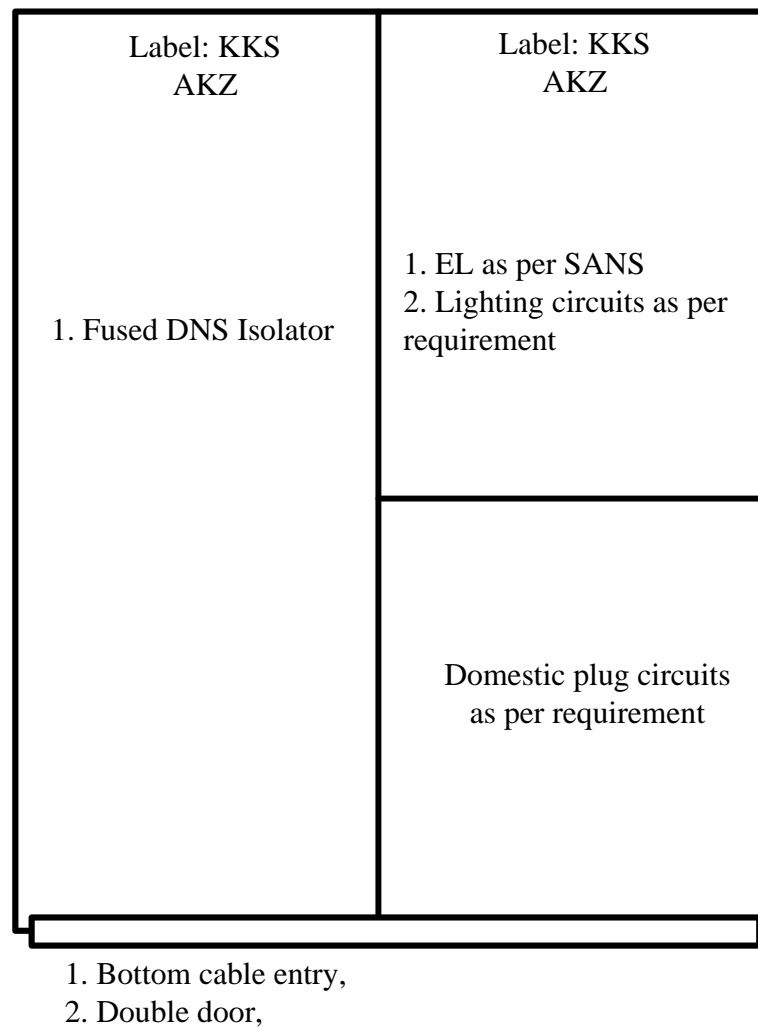


Figure 3: Simplified schematic of sub-distribution panel layout

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