Eskom	Works Instruction	Kusile Power Station Project

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Content

1. Introduction

1.1 Commissioning Process

1.1.1 This work instruction governs the commissioning process followed at the Kusile Power Station Project to ensure that the commissioning process and all its requirements are to the satisfaction of Eskom.

2. Supporting Clauses

2.1 Scope

The scope of this procedure details the Commissioning process to be followed at the Kusile Power Station Project through all the phases of construction completion, start-up, and safety clearance and commissioning.

2.1.1 The purpose of this work instruction is to identify the organisational responsibilities and activities necessary for Contractor's and the Kusile Execution Team (KET) for the completion of construction, plant checks and commissioning. It further provides a framework for communication links and interfaces within Eskom and between Contractors and Eskom. The objectives are as follows:

2.1.1.1 To Document the high-level process and the requirements for construction completion, plant checks, commissioning, take-over of plant from the contractors and hand-over to the Kusile Power Station Representative.

2.1.1.2 To ensure the effective implementation of the requirements of the OHS Act, construction regulations and Eskom Kusile Safety Standards (i.e. Plant Safety Regulations (PSR), Operational Regulations for High Voltage Systems (ORHVS) and Fossil Fuel Fire Regulations (FFFR).

2.1.1.3 To establish meaningful communication links and interfaces between Kusile Execution Team (KET), Contractors and Kusile Generation staff.

2.1.1.4 To ensure that commissioning contractual requirements are met in a timely and cost effective manner and that Eskom is not disadvantaged by having to bear liabilities, which are the responsibility of the Contractor.

2.1.1.5 To ensure that appropriate commissioning requirements are met through applicable management systems and practices to ensure that the Power Station receives an asset by the planned date that is capable of commercial operation and fit for purpose as outlined in the User Requirement Specification (URS) of the Kusile Power Station Project.

2.1.1.6 To stipulate roles & accountabilities of contractors, and the Kusile Execution Team.

2.1.2 Applicability

This work instruction is mandatory to all parties involved in the Kusile Power Station Project construction completion, plant checks, commissioning, take over and hand over of generating plant.

2.1.3 Effective date

Authorisation Date

2.2 Normative/Informative References

2.2.1 Normative

[1] FIDIC and NEC Contracts and Guide notes

[2] Construction Safety, Health and Environmental Management (32-136)

[3] Eskom Project Management Policy (240-42872690)

[4] Project Lifecycle Model (ESKAGABF9)

[5] Operating Regulations for High Voltage Systems (ESKPVAEY6)

[6] Eskom Generation: Plant Safety regulations (GGR 0992)

[7] Occupational Health and Safety Act, Act No. 85 of 1993

[8] The South African grid Code – Governance Code, Information Exchange Code, Network Code, Preamble and system Operation Code

[9] SANS 10142 Part 1 and Part 2

[10] Certification and performance monitoring of Generation reserves (240-110150430)

[11] Handover Process Work Instruction (240-129703805)

[12] Documentation Handover Specification (240-128515850)

[13] Fossil Fuel Firing Regulations (36-680)

[14] Kusile Defects Management Process Work Instruction (240-150475305)

[15] Process Control Manual for Commissioning (240-45461809)

[16] Kusile Engineering Change Management Procedure (240-132735850)

[17] Supplier Contract Quality Requirements Specification (QM-58)

2.2.2 Informative

NA

2.3 Definitions

2.3.1 Appointed Operator: A person appointed as per the Operating Regulations for High Voltage Systems (ESKPVAEY6) to do operating

2.3.2 Appointed Person: A person authorized as per the Generation Plant Safety Regulations (GGR 992) responsible for ensuring that isolations and de-isolations on the plant covered by a permit to work is effectively carried out in terms of the regulations

2.3.3 Authorized Person: A person appointed as per the Operating Regulations for High Voltage Systems (ESKPVAEY6)

2.3.4 Commissioning Representative: The person appointed by the Commissioning Manager who represents Commissioning

2.3.5 Client: The Generation Division is the Client, represented by the Client's Designated Representative.

2.3.6 Client's Representative: A person appointed to represent the Generation Division client's office

2.3.7 Certificate of Compliance: A certificate issued by an accredited person certifying that the installation complies with the relevant specification and standards. (E.g. electrical

installation or part of an electrical installation).

2.3.8 Commercial Operation Date: The date on which the system operator and the client deem and declare the plant ready for commercial operation.

2.3.9 Commissioning: Putting into service an item of plant which has been safety cleared and successfully tested in accordance with the requirements of the contract.

2.3.10 Commissioning Lock: A lock used to prevent unauthorized operating of safety cleared plant during the commissioning period or when commissioning is temporarily suspended by locking out the energy source to the relevant plant by the Commissioning Representative for that period

2.3.11 Commissioning Period: The period from the date a Safety Clearance certificate is issued until the date when final handover is certified

2.3.12 Commissioning Safety Lock: A lock used to lock the boundary points between safety cleared systems and non-safety cleared systems.

2.3.13 Cold Commissioning: All testing prior to applying energy, excluding all power supplies required for Cold Commissioning

2.3.14 Hot Commissioning: The process of putting into service an item of plant system or sub system, while it is still in the process of operational checkout and verification, after the cold Commissioning phase has being completed.

2.3.15 Commissioning Manager: The person appointed who is accountable for the overall commissioning of the plant.

Commissioning Start-Up Meeting: A representative body of persons who meet frequently to plan, schedule, co-ordinate and integrate construction completion, plant checks and commissioning activities that is chaired by the Commissioning Manager or his/her representative. **2.3.9 Commissioning Start-Up Meeting Committee:** A body of persons who meet as necessary, to schedule commissioning activities chaired by the Commissioning Manager

2.3.16 Commissioning Working Party (CWP): A body of persons who meet as assigned, to co- ordinate and implement appropriate commissioning activities required to establish the performance of machinery and equipment under its control. Also responsible for determining the adequacy of testing of plant for initial energizing and controls the issuing of the safety clearance certificate. The CWP can be assembled at any time when requested to by the Commissioning Manager to attend to problems that may arise requiring the dedicated attention of specialist persons.

2.3.17 Commissioning Working Party Chairman (CWPC): The person assigned by the Commissioning Manager to be responsible for the coordination of the commissioning of a defined item of plant.

2.3.18 Completion: A stage when all requirements and obligations for completion as detailed in each specific contract have been met.

2.3.19 Completion Certificate: A certificate confirming completion.

2.3.20 Completion Date: As defined in each specific contract.

2.3.21 Contract Date: The date when each specific contract came into existence.

2.3.22 Defect Certificate: The certificate that signifies the end of most of the obligations of the parties. Uncorrected defects listed in the defects certificate are dealt as per the procedure set out in clause 45 of the NEC explanatory notes.

2.3.23 Defect Correction Period: The time-period as defined in the contract data of a specific contract, within which the Contractor makes good of notified defects.

2.3.24 Defects Date: The date after the Defect Correction Period as defined in the contract data of a specific contract.

2.3.25 Employer: Eskom Holdings SOC Limited Reg. No. 2002/015527/06.

2.3.26 Gx Commissioning Manager: Person appointed by the Power Station Manager to verify the execution of all commissioning activities to ensure it is done in accordance with the Kusile URS. He also ensures that the Generation employees and contractors participate in all commissioning activities as required by this procedure. He monitors the commissioning activity progress and escalation any progress deviations to the KET Commissioning Manager and/or the Gx Engineering Manager. He furthermore provide and manage the Gx Commissioning staff

2.3.27 Gx Engineering manager: The person who is appointed by the Kusile Power Station Manager with the prime responsibility to ensure technical integrity of the Kusile project / part of the project activities. He is also responsible for accepting the outcome of the plant commissioning activities and the plant handover.

2.3.28 Installation Electrician: A qualified Electrician accredited in terms of SANS 10142 Part 1 certifying that an electrical installation complies with the relevant specifications and standards.

2.3.29 Master Installation Electrician: A qualified Electrician accredited in terms of SANS 10142 Part 1 certifying that an electrical installation inside a hazardous area complies with the relevant specifications and standards.

2.3.30 Resident/FIDIC Engineer/Project Manager (Contracts): The person appointed by the Employer to perform the duties of the Project Manager in terms of the NEC or FIDIC.

2.3.31 Supervisor / Contract Supervisor: The person appointed by the Employer to perform the duties of the Supervisor in terms of the NEC or FIDIC.

2.3.32 The Works: Those activities defined in each contract for which the Contractor is to provide equipment and/or services.

2.3.33 Documentation package; A complete set of documents intended for hand over to the Client.

2.3.34 FIDIC Engineer: The person appointed by the Employer to act as engineer for the purpose of the contract.

2.3.35 Engineers Representative: The person appointed from time to time by the engineer to act on the engineers behalf.

2.3.36 Test on Completion: Those tests specified in the contract or otherwise agreed by the engineer and the Contractor to be performed before the Works are taken over by the Employer.

2.3.37 Defects Liability Period: The period stated in the contract following taking-over, during which the contractor is responsible for making good defects and damage.

2.3.38 Taking Over Certificate: A certificate issued by the Project Manager/Fidic Engineer in pursuant of the Contract.

2.3.39 Works: The Permanent Works and Temporary Works, or either of them as appropriate.

2.3.40 Time for Completion: The time for completing the Works or a section.

2.3.41 Energising: The application of voltage to machinery by electrical connection from other energized power systems or putting into operation by mechanical means or charging of pipe work or ducts, or loading of foundations.

2.3.42 Engineering Manager / Engineer: The person who is appointed with the prime responsibility for the technical integrity of the project / part of the project.

2.3.43 Hand-over: The process of taking-over the responsibility for all, or part of the project, or its deliverables from the Contractor by GCD and transferring it to the Client. It is also the hand-over of the statutory accountability of the plant and equipment and includes all relevant documentation required to operate and maintain the plant as specified in Kusile Power Station Documentation Handover Specification (240-128515850). Typically, this takes place at the end of a project, or a major part thereof. Handing over should not be confused with the NEC requirements or FIDIC for taking over nor the completion and guarantees between the Project Manager and the Contractor. **Isolated:** Make plant safe to work on by effectively disconnecting it from all possible sources of

dangerous energy and/or harmful substances

2.3.44 Inspection: The process of measuring, examining, testing, gauging or otherwise comparing one or more attributes of a product to ensure compliance with the applicable requirements.

2.3.45 Operating Lock: A lock used by the Appointed Person/Appointed Operator to lock a Key Safe together with a Safety Lock for isolating purposes on Safety Cleared plant for which a permit to work is required

2.3.46 Partial/Provisional Handover: The process of taking-over part of the plant that has been commissioned and meets the requirements as stipulated in the start-up package but not fully optimized. The delivery Manager issues a provisional hand-over certificate for acceptance by the clients representative

2.3.47 Permit to Work: The permit issued in terms of Eskom Generation Plant Safety Regulations (GGR 0992), which allows work to be carried out on machinery for which a safety clearance certificate has been issued and become effective at safety clearance.

2.3.48 Plant Checks: Checking of the plant for construction completion e.g. erection check sheets, plant check sheets, commissioning check sheets, etc.

2.3.49 Plant Matrix: A document outlining how the plant is broken down into systems / subsystems and plant items for the purpose of plant checks, commissioning, provisional / final hand-over, etc. and the requirements to affect it.

2.3.50 Kusile Execution Team: The team of persons who is appointed with the prime responsibility for completing the project within the approved constraints of time, cost scope and quality.

2.3.51 General Manager: The person appointed with the prime responsibility for completing the project within the approved constraints of time, cost, scope and quality.

2.3.52 Access: The permission for the area, building or machinery to be used for the purpose of carrying out the work subject to the regulations pertaining to Plant Permits and Work Permits.

2.3.53 Pre-commissioning review: An Engineering activity which will provide assurance that the system is ready for commissioning by verifying that actual plant/asset configuration conforms to detail design, verify that the design documentation set is complete.

2.3.54 Quality: The combination of features and characteristics of a product, process or service that have an impact on its ability to satisfy stated or implied needs.

2.3.55 Quality Assurance: All those planned and systematic actions necessary to provide

adequate confidence that a product, process or service satisfies given quality requirements.

2.3.56 Quality Control: The operational techniques and activities that are used to satisfy quality requirements.

2.3.57 Quality Management System: The organizational structure, responsibilities, procedures, activities, capabilities and resources that together aim to ensure that products, processes or services satisfy stated or implied needs as stipulated in the requirements of ISO9004:2000.

2.3.58 Quality Representative: A person appointed with delegated responsibility and authority for control of the Quality Management System and quality within the Project Group.

2.3.59 Quality Surveillance: The continuous evaluation of the status of procedures, methods, conditions, products, processes and services and analysis of records in relation to stated references to ensure that applicable requirements are met.

2.3.60 Professionally Registered Person: A person registered with a relevant professional body, that is competent in the design and commissioning of equipment and plant

2.3.61 Safety Lock: A lock used for locking of isolations on Safety Cleared plant for which a permit to work is required. These keys shall be placed together on one Key Safe. The Key Safe shall also then also be locked by an Appointed Person/Appointed Operator with a Safety Lock of which the key is handed to the Responsible Person together with the work permit

2.3.62 Safety Clearance Certificate: A certificate as per for form 203-3268 issued by the Employer to the Contractor that is mutually agreed with the Clients and Contractor's Representatives that from the time and date stated the specified machinery, equipment or section of plant is under the Employer's control and can be energised. Further access to machinery, equipment or section of plant is only permissible through the Employer's plant / work permit system.

2.3.63 Statutory Accountability: The person that has statutory accountability for the safe operation and maintenance of the plant and equipment. This is usually the person appointed under OHS Act General Machinery Regulation 2.1.

2.3.64 Testing: Application of prescribed tests, loads or checks to ensure compliance with the applicable requirements.

2.3.65 Work Permit: Means a written declaration on the permit to work form, signed by the Appointed Person or Appointed Operator and issued to the Responsible Person in charge of the work, informing the latter that the plant to be worked on has been isolated as detailed/requested.

2.4 Abbreviations

Abbreviation	Explanation
AIA	Approved Inspection Authority
CAR	Corrective Action Request
CO	Commercial operation
COC	Certificate of Compliance
COD	Commercial Operation Date
CTC	Construction Turn-over Coordinator
CTO	Construction Turn-over
CWP	Commissioning Working party
CWPC	Commissioning Working Party Chairman
ECP	Engineering Change Proposal
FAT	Factory Acceptance Test
FCN	Field Change Notice
FFFR	Fossil Fuel Firing Regulations
FIDIC	Federation Internationale des Ingenieurs – Conseils (International Federation of Consulting Engineers)
GB	Generation Business
GBE	Generation Business Engineering
GCD	Group Capital Division
GD	Generation Division
IE	Installation Electrician
ITP	Inspection & Test Plan
KET	Kusile Execution Team
KKS	Kraftwerk Kennzeichen System
MIE	Master Installation Electrician
NEC	New Engineering Contract
NCR	Non Conformance Report
NDT	Non Destructive Testing
OEM	Original Equipment Manufacturer
OHS Act	Occupational Health and Safety Act number 85 of 1993, as amended
ORHVS	Eskom Operation Regulations for High Voltage Systems PCR: Pre commissioning Review
PCR	Pre-Commissioning Review
P&ID	Process and Instrumentation Diagram
PEM	Project Engineering Manager
PLCM	Project Life Cycle Model
PMP	Project Management Plan
PSR	Eskom Plant Safety Regulations
PTW	Permit to Work
QCP	Quality Control Plan

Abbreviation	Explanation
ROD	Record of Decision
URS	User Requirement Specification
QMP	Quality Management Plan
SANS	South African National Standard
SAT	Site Acceptance Test
SCC	Safety Clearance Certificate
ToR	Terms of Reference

2.5 Roles and Responsibilities

2.5.1 Contracts Manager

2.5.1.1 Ensures that the requirements for construction completion, plant checks, commissioning, take-over and hand-over are included in the PMP and project schedule.

2.5.1.2 Establish communication / interface links and meet on a regular basis with the Contractors, Construction Discipline Managers, Discipline Field Engineer, Commissioning Manager to discuss progress and issues regarding:

- Take-over
- Hand-over
- Conditions of the contract

2.5.1.3 Ensure that all terms and conditions of the contract are complied with.

2.5.2 Project Engineering Manager

2.5.2.1 Ensure the review and approval of quality assurance and quality control plans (QCP's) and identify hold and witness points.

2.5.2.2 Ensure that erection check and plant check sheets required for checking the plant as per the approved plant matrix are developed (use the erection and plant check manuals as input / guidance).

2.5.2.3 Ensure that quality control is done and that the QCP's are signed off after construction completion

2.5.2.4 Ensure that the terminal points are interfaced smoothly between contractors / other suppliers.

2.5.2.5 Participate in construction completion checks and sign off erection checks, plant checks and safety clearances, etc.

2.5.2.6 Facilitate the technical meetings and ensure that all plant problems and issues relating to

the technical integrity of the project are resolved e.g. scope changes, technical specifications, design, quality, exceptions, defects, configuration management, etc.

2.5.2.7 Attend the commissioning/start-up meeting and participate in the CWP.

2.5.2.8 Review control and operating philosophies for content, clarity and adequacy.

2.5.2.9 Review and approve the appropriate routine maintenance requirements as issued in accordance the Contractor's specifications.

2.5.2.10 Assist with plant commissioning and optimisation and verify that the plant performs as per the requirements set out in the technical specifications, plant designs and project URS.

2.5.2.11 Participate in the take-over, provisional completion hand-over / hand-over of plant as per plant matrix.

2.5.3 Delivery Manager / Oversight Manager

2.5.3.1 Accountable to organise, direct, lead and control the execution and the delivery of the scope of work as per URS, and to facilitate asset and documentation handover with all associated statutory accountability to the client (Gx) in order to accomplish the required outputs within the defined time, cost, quality and performance plan for the project outputs, in accordance with the project management plan

2.5.3.2 Guide, Support and provide Leadership to the Construction, Engineering, Commissioning, Quality Teams to facilitate problem solving and decision making for efficient delivery of Kusile Projects from initiation to closure (Commercial Hand Over) to the Client

2.5.4 Construction Manager/ Construction Supervisor

2.5.4.1 Ensures that the requirements for construction completion, plant checks, commissioning, take-over and hand-over are included in the PMP and project schedule.

2.5.4.2 Establish communication / interface links and meet on a regular basis with the Contractors, Construction Discipline Managers, Construction Supervisors, Quality representatives, Discipline Field Engineer, Commissioning Manager and Clients representatives for the purpose of discussing progress and issues regarding:

- Construction Completion
- Plant Checks Safety Assurance
- Quality Assurance
- Any other relevant issues within his Construction Management discipline.

2.5.4.3 Ensure that the plant is constructed as per the Authorised PMP and project schedule.

2.5.4.4 Develop in conjunction with the Contractors, Package Managers, Construction Supervisors,

Discipline Engineering Managers, Project Discipline Engineers, Commissioning Manager and Client's Representative a plant matrix that outlines how the plant will be checked for completion, commissioned, taken-over and handed-over as well as the requirements to affect it.

2.5.4.5 Ensure that the erection checks and plant checks are done by the Construction Supervisors and Project Discipline Engineers after the QCP's have been signed-off and the contractors have submitted the following forms:

- Application for Eskom's inspection of the work / part of the works
- Partial / final inspection certificate

2.5.4.6 Ensure that the defects found during Construction completion inspection, final inspection, the commissioning phase are corrected before hand-over to the Client. If not the Client needs to agree to the outstanding punch list items.

2.5.4.7 Ensures that defects identified during the Defects period is corrected and cleared to ensure optimal plant and component performance

2.5.4.8 Ensure that proper housekeeping and safety protocols are adhered to during construction activities and ensure that a Safety and House Keeping certificate is issued at construction completion.

2.5.5 Construction Turn-over Coordinator

2.5.5.1 Prior to the Contractors Declaration of Construction Completion the Construction Turn Over Coordinator works closely with the Construction Manager to monitor and confirm the last 5% of the contractors activities and to aid both parties with the necessary preparations before the commissioning of plant is initiated.

2.5.5.2 The Construction Turn-over Coordinator assess plant readiness by confirming and reviewing the signed-off Contractor's Application for Eskom's Inspection of the works / part of the works form and associated documentation such as:

- P&ID's
- Single line drawings
- Latest approved design
- Operating and control philosophy
- QCP's
- ITP's and construction completion check sheets
- Applicable alignment checks
- Cable numbers
- Cable insulation tests

- Motor dryness tests
- Torque checks
- Calibration certificates
- FAT & SAT
- Data book completion and
- AIA release certificates
- KKS Configuration & Labelling Inspections

2.5.5.3 Ensure that all related documentation and certificates are completed and filed in the CTO Pack;

- Contractors Application for inspection of the works
- Final Inspection Certificate
- KKS Configuration inspection and Certificate
- Construction Completion check list(dependant on the discipline)
- Construction Completion Certificates

2.5.5.4 Confirm Pre Commissioning Design Review readiness (PCR).

2.5.5.5 Confirm that all the construction completion requirements have been satisfied.

2.5.5.6 Track and drive CTO's that must be issued to Commissioning for Safety Clearance purposes

2.5.6 KET Commissioning Manager

2.5.6.1 Review control and operating philosophies for content, clarity and adequacy.

2.5.6.2 Plan the commissioning activities.

2.5.6.3 Develop a plant matrix referencing the various start-up packages required to commission the plant via a scoping method utilising P&ID's to ensure that no plant is overlooked for commissioning, the approach will be systems based with KKS referencing.

2.5.6.4 Develop a start-up / commissioning and hand-over schedule, update it on a regular basis and distribute it to the parties involved with commissioning activities and ensure it is integrated into the construction schedule. This will provide direction in which systems is required next and by when, it determines the project pace and requirements.

2.5.6.5 Provide the client with a schedule for safety clearances to ensure that the required resources are available for plant operations after safety clearance.

2.5.6.6 Ensure that a commissioning work instruction exists for each plant system / sub-system as deemed necessary, and distributed to all relevant parties for acceptance and approval.

2.5.6.7 Chair the commissioning/start-up meeting.

2.5.6.8 Coordinate start-up / commissioning activities between the Contractors, Construction managers, Construction supervisors, Project discipline engineering manager / engineers, and the Client representative and ensure that interfaces between all parties are defined.

2.5.6.9 Assign a CWPC who plans and co-ordinates all Safety Clearance inspections and commissioning activities for a defined item of plant.

2.5.6.10 Ensure that safety clearance certificates are completed, signed and distributed accordingly.

2.5.6.11 Ensure that appropriate operating instructions are issued in accordance with the contractor's specifications.

2.5.6.12 Ensure that routine maintenance is done in accordance with the OEM specifications after the plant has been has been commissioned prior to hand over.

2.5.6.13 Effect provisional hand-over inclusive of the hand-over documentation packages to the client's representative as per the plant matrix.

2.5.6.14 Ensure that plant performance tests are carried out in accordance with the documented plan with clearly set time periods and requirements.

2.5.6.15 Ensure that the required permits are issued to all personnel required to perform work (as per PSR and ORHVS) on the plant after the safety clearance certificate has been issued.

2.5.6.16 Ensure that the site tagging system (Caution Sanction for Test, Danger Do Not Operate and Caution System under Operation) is implemented, to ensure that safe work practices are evident and maintained.

2.5.6.17 Ensure co-ordination of and integration of all isolations on the plant in preparation for a permit to work or work permit.

2.5.6.18 Ensure that the plant is optimised after completion of electrical tests and unit synchronisation.

2.5.6.19 Ensure that plant performance complies with the design specifications.

2.5.6.20 Demonstrate to the client's representative that all optimisation criteria and capabilities have been met.

2.5.6.21 Co-ordinate and submit documentation of control demonstrations and unit capabilities for plant take-over and hand-over.

2.5.6.22 Identify those working areas, buildings, plant and machinery, etc. where construction

completion inspection, safety clearance, sectional completion hand-over, and take-over certificate, defects certificate and final certificate, as appropriate are to be issued.

2.5.6.23 Ensure that the plant commissioned is operated and maintained as per statutory requirements before hand-over.

2.5.6.24 Ensure that plant performance tests to be done after hand-over are arranged in consultation with the client's representative.

2.5.6.25 Assign Commissioning Working Party Chairman's (CWPC) and Commissioning Working Party's (CWP) as and when required.

2.5.6.26 Compile or obtain the commissioning procedures for the defined plant system / sub-system and plant item and ensure compliance to the URS, plant design, and operating / control philosophy when compiling the commissioning procedure.

2.5.6.27 Ensure that anticipated activities, within a six week rolling period, are recorded in the start-up meeting minutes, as well as what systems to be available for the next 4 to 6 weeks.

2.5.6.28 Take the Lead in following Activities for the given scope of their responsibility:

- Partial / final inspections
- Commissioning documentation requirements
- Plant Safety Clearance inspections
- Commissioning of plant
- Notification of defects
- Support Hand-over of plant after commissioning.

2.5.7 Gx Commissioning Manager

2.5.7.1 Appointed by the General Manager to oversee the execution of all Commissioning activities are done in accordance with the Kusile URS

2.5.7.2 Ensure that Generation employees and contractors participate in all Commissioning activities as required by this procedure, including the monitoring of commissioning activities and escalation of any progress deviations to the KET Commissioning Manager and/or the Gx Engineering Manager

2.5.8 KET Commissioning Technicians/Snr Advisors

Person from KET responsible for coordinating commissioning activities as assigned. Main tasks are to:

2.5.8.1 Assist with the review, updating and confirmation of test procedures

2.5.8.2 Review and update test report forms specific to the plant components, equipment and

systems

2.5.8.3 Coordination and supervision of all Commissioning activities

2.5.8.4 Identifying and reporting defects, deficiencies and non-conformities for correction and modification during safety clearance and start-up activities

2.5.8.5 Ensure that plant equipment is maintained or preserved (whether running or stationary) as per the OEM requirements and keep records thereof

2.5.8.6 Form part of the CWP

2.5.9 Gx Commissioning Technicians/Snr Advisors

2.5.9.1 Persons appointed by the Gx Commissioning Manager and responsible for overseeing all the activities of the KET Commissioning Technician/Snr Advisor

2.5.10 KET Lead Site Engineer

2.5.10.1 Participate in conjunction with other team members of all disciplines in order to assure the technical integrity of a fully functional and operational plant that meets the user requirements and Eskom Engineering expectations and requirements

2.5.10.2 Facilitate and ensure that the plant is built and commissioned in full alignment with the URS

2.5.10.3 Managing the technical integrity of the design and being accountable for the interfaces within their specific Engineering domain

2.5.10.4 Form part of the CWP

2.5.10.5 Review control and operating philosophies for content, clarity and adequacy

2.5.10.6 Assist with plant commissioning and optimisation and verify that the plant performs as per the requirement set out in the technical specifications, plant designs and project URS

2.5.10.7 Responsible for issuing RODs/Memos for plant that does not conform to URS

2.5.11 Client's Representative

2.5.11.1 Ensure that safety requirements identified under the responsibility in terms of safety requirements are met.

2.5.11.2 Participate in meetings, activities and decision making processes as agreed with the Construction manager/ Supervisor, Discipline Engineering managers, Commissioning manager for construction completion inspections, safety clearances, commissioning, take-over and final hand-over of the plant.

2.5.11.3 Ensure involvement of power station personnel during erection checks and final inspection of plant systems / sub-systems and plant items before safety clearance certificates are issued. Any plant operations by the Client, on plant that is not yet handed over to the client, will be under the supervision and instruction of the Contractor.

2.5.11.4 Obtain a fire clearance certificate to allow fuel onto site in preparation for commissioning.

2.5.11.5 To participate and advice in, but not be accountable for the activities and decision making process necessary for issuing take-over, Defects notifications, Performance and handover certificates.

2.5.11.6 Comply with commissioning instructions when carrying out any operating activities on plant and machinery during the commissioning period.

2.5.11.7 Notifies the Commissioning manager / Supervisor of any defects found on plant and machinery from the commencement of the commissioning period to the defects date.

2.5.11.8 Ensure that all defects are uploaded on SAP after handover.

2.5.11.9 Allow reasonable access to plant and machinery for contractor(s) to rectify defects after hand-over

2.5.11.10 Accept the works (with reasonable defects) as agreed per the plant matrix from the commissioning manager after verification that it is acceptable for use. Reasonable defects are those defects list that are categorized as not having an impact on the safety or the safe operation of the plant.

2.5.11.11 Co-ordinate the preparation of documentation for the application by the Power Station Manager for grid code compliance.

2.5.11.12 Ensure adherence to the National Control Procedure Generation Asset Integration Grid Code Compliance Process.

2.5.11.13 Obtain the Grid Code Compliance Certificate.

2.5.11.14 Ensure that all operating licences for the unit are in place.

2.5.11.15 Ensure that the operating and maintenance manuals are reviewed for content, clarity and adequacy.

2.5.11.16 Be part of the CWP.

2.5.11.17 Participate in Safety Clearance inspection and ensure that all defects are recorded before signing off.

2.5.11.18 Ensure that all hand-over files received on the project are properly indexed and filed for future use by the power station.

2.5.11.19 Ensure that arrangements are made to allow access for the contractor to do the plant performance tests if done after hand-over. Should this test be required on one of the units, it should be done on a unit that has been handed over to the client, but before handover of the final unit.

2.5.12 The Contractor

2.5.12.1 Supplies statutory required documents such as pressure tests, megger tests etc., as and when requested during system completion or sectional completion.

2.5.12.2 Provision should be made in the individual contracts to provide these documents when required.

2.5.12.3 The contractor shall ensure that his/her personnel attends start up meeting and participate in the planning and scheduling of all commissioning activities as per the contractual scope.

2.5.12.5 Submits the application for Eskom Inspection of Works as and when required to ensure that the plant/systems are constructed, build and available as per the accepted schedules and programs.

2.6 Process for Monitoring

NA

2.7 Related/Supporting Documents

240-124667653 – Contractor's Application for Eskom's Inspection of the Works / Part of the works

240-124860884 – Partial / Final Inspection Certificate

240-124861030 – KKS and Labelling Certificate

240-124861234 –Defect Notification / Clearance Form

240-124861396 – Construction Completion Certificate

240-124861660 – Safety Clearance Certificate

240-125005052 – Commissioning Certificate

240-124862622 – Safety / House Keeping Certificate

240-124862854 – Partial Hand-Over Certificate

240-124863218 – Hand-Over Certificate

240-126039686 – Plant Exception Certificate

3. Construction Completion, Plant Checks, Commissioning and Handover

3.1 Planning and Scheduling

3.1.1 In order to cover every aspect of commissioning the Commissioning Manager will develop a plant matrix referencing the various start-up packages required to commission the plant.

3.1.2 The Commissioning Manager will integrate the respective contractor commissioning schedules to develop the start-up / commissioning schedule and will ensure that it is integrated into the construction schedule. The ultimate goal is to define:

3.1.2.1 The general order and timing in which the start-up / commissioning activities will take place

3.1.2.2 The safety pre-requisites for implementing the commissioning procedures

3.1.2.3 The corresponding manpower, equipment, materials, supplies, and third party support required to support the start-up / commissioning effort

3.1.2.4 The manner in which the start-up / commissioning will be managed and executed

3.1.2.5 The hand-over milestone dates required for each start-up package and milestone dates for each start-up major event.

3.2 Construction Completion

3.2.1 Contractor Applies for Construction inspection of the works/part of the works (240-124667653).

3.2.2 CTC identify System for Turnover and supply forms for construction completion, notifies Configuration Management team and the Quality Data Pack team. These forms are generated by the Commissioning Documentation Centre and supplied to CTC.

3.3 Construction Inspection of the Work/Part of Works

3.3.1 Plant walk down is conducted by Contractor, Engineering, Configuration Management and Construction to verify:-

3.3.1.1 KKS Labelling of the plant

3.3.1.2 Plant configuration as per design

3.4 Construction Defects

3.4.1 Priority 1 and 2 defects

3.4.1.1 Defects are referred to the contractor by the Construction Manager for correction.

3.4.1.2 On correction of the defects the contractor re-applies for Inspection of the works/Part of works

3.4.2 Priority 3,4 and 5 defects

3.4.2.1 The Contracts Manager/Construction Manager reviews these defects for acceptance

3.5 Pre-Commissioning Review

3.5.1 Eskom Engineering carries out the Pre-Commissioning Review during construction, fabrication, installation of a system. The review is primarily to ensure compliance with the design baseline and to ensure the final installed system complies with the detailed design. It verifies the following:

3.5.1.1 Actual plant/asset configuration conforms to detail design

3.5.1.2 The design documentation set is complete. It provides assurance that the system is ready for commissioning by:

- Reviewing all interfacing services' availability for commissioning,
- Reviewing system commissioning procedures,
- Verifying plant codification labelling is as per design drawings and Works Information (inspection and walk-down)
- Verifying manuals (e.g. Operating and Maintenance manuals) are accepted, and available

3.5.2 The Contractor's Request for Inspection of Plant will trigger the requirement for a PCR to be conducted for that plant. At least 2 weeks' notice is required prior to the date of inspection, to allow the PCR to be done timeously. The following approved documentation must be made available by the Contractor (i.e. Approved for Construction drawings, Commissioning procedures, Data books etc.)

3.5.3 The successful verification that the final installed system complies with the detailed design, and all documents are in place, will permit entry into the next phase, Contractor Request for Inspection of Plant.

3.6 Contractor Request for Inspection of Plant

3.6.1 The Construction Manager / Construction Supervisor monitors the actual plant construction progress ITO the approved construction / commissioning schedule, the sign-off of the QCPs by the Contractor and the Project Discipline Engineer, the sign-off of the data books by the AIA, etc., and ensures that the Contractor timeously submits the application for inspection of the works / part of the works (240-124667653).

3.6.2 Once the plant is ready for construction completion certification, energising and commissioning, the Contractor submits a Contractor's application for Eskom's inspection of the works / part of the works as well as the applicable documents such as signed-off QCPs, AIA release certificates, P&IDs, etc.

3.6.3 The Construction Manager / Construction Supervisor ensures checking of the request for completion against contract requirements and the quality records to verify that there are no outstanding defects, CAR's on the contract works

3.6.4 The Construction Manager / Construction Supervisor and the Contractor ensures that the required drawings and description of the works to be inspected are available

3.6.5 Pre-inspection of the works is carried out by the Contractor, Construction Manager / Construction Supervisor and Project Discipline Engineer using the relevant plant check and erection check sheets and approved P&ID's and construction drawings. The plant is checked for completeness, safety and house-keeping aspects, plant coding and labelling, etc.

3.6.6 If the works conform to contractual requirements, the Construction Manager / Construction Supervisor and the sign off the Contractor's application for Eskom's inspection of the works / part of the works and complete the required plant check and erection check sheets.

3.6.7 If the works do not conform to contractual requirements, the Contractor's application for Eskom's inspection of the works / part of the works is returned to the Contractor with the required endorsements on the form. After rectification of the works, the contractor shall re-apply for an inspection.

3.6.8 The signed-off Contractor's application for Eskom's inspection of the works / part of the works form and associated documentation such as P&IDs / single line drawings and latest approved design; operating and control philosophy; QCPs and check sheets; applicable alignment checks, cable numbers, cable insulation tests, motor dryness tests, torque checks, calibration certificates, FAT & SAT, data book completion and AIA release certificates, etc. are then given to the Commissioning Manager who shall

ensure that the partial / final inspection, energizing and commissioning of the plant system / sub-system and plant items are scheduled at the start-up meeting.

3.7 Commissioning Start-up Meeting

3.7.1 All activities such as the partial / final inspections, safety clearances, permit requirements, pre-commissioning and commissioning activities, meetings, plant walk-downs / integrity checks etc. Are coordinated planned in the start-up meeting.

3.7.2 The minutes for the commissioning start-up meeting reflects all the activities as per the plant matrix

3.7.3 The minutes of the commissioning start-up meeting reflect four periods in time, i.e.:

3.7.3.1 Activities to be scheduled in the next six-week window.

3.7.3.2 Activities scheduled for the following period to the next start-up meeting

3.7.3.3 Activities in progress

3.7.3.4 Activities reported complete at the previous meeting

3.7.4 The Commissioning Manager or his delegate chairs all commissioning start-up meetings for which minutes will be taken and attendance recorded. Copies of the minutes are distributed as per the attendance and distribution list and a copy is stored in the project documentation management system for record purposes.

3.7.5 All the role players involved in commissioning activities shall attend or be represented at the start-up meeting.

3.8 Partial / Final Inspection of Plant

3.8.1 This inspection is planned at the start-up meeting and is coordinated by the appointed CWPC that arranges for a physical inspection of the plant with the Contractor, Construction Manager / Construction Supervisor, Project Discipline Engineer, Client's Representative, relevant commissioning personnel, etc. The CWPC will also receive the signed-off Contractor's application for Eskom's inspection of the works / part of the works form and associated documentation as supplied by the Construction Manager.

3.9 Commissioning Defects

3.9.1 Priority 1 and Priority 2 Defects

3.9.1.1 Defects are referred back to the contractor by the Contracts Manager for immediate correction. Commissioning will serve as a holding point, and all other subsequent

Commissioning related activities are halted until the defects have been corrected.

3.9.1.2 On correction of these defects the contractor re-applies for Partial/Final Inspection of Plant

3.9.2 Priority 3, 4 and 5 Defects

3.9.2.1 If more than 5 defects classified as either Priority 3, 4 and 5 are notified during the final inspection of plant, the inspection will be failed and the these defects must follow the same process applied for Priority 1 and 2 defects for rectification

3.9.2.2 Each defect accepted is noted by the Package Manager/Contractor on a Project Defect Notification form (240-124863468) supplied by Quality. The Defect Notification form is then submitted to the Quality Department for registration and recording on the Master Defect Register. Quality is the custodian of the Master Defect Register, and the management of all defects on the project is detailed in the Kusile Power Station Project Defects Management Process Work instruction (240-150475305).

3.9.3 For plant that has been accepted, the parties who conducted the inspection (240-124860884) complete a partial / final inspection certificate. This document signifies the plant is ready for planning of subsequent start-up and commissioning activities.

3.9.4 The inspection certificate, with its relevant information, forms the package required for safety clearance and commissioning.

3.9.5 The Construction Manager / Construction Supervisor distribute copies of the inspection certificate and ensure defects are cleared timeously.

3.10 Submission and Clearance of Commissioning Defects (Priority 3,4 and 5)

3.10.1 Each and every defects shall be captured on its own Project Defect Notification form (240-124863468) and registered at the Quality department with its own unique number. Each Defect Notification is recorded on the Outstanding Defects Master List by the Quality Department

3.10.2 Copies of the registered Defect Notifications are added to the CTO Pack for information and the originals copies are forwarded by Quality, to the Package Manager who distributes them to the relevant parties and the contractor for rectification.

3.10.3 The Package Manager will arrange with the relevant Contractor to clear the defects timeously

3.10.4 The relevant Contractor will notify the Package Manager once these defects have been cleared to arrange for an inspection.

3.10.5 The Package Manager will arrange with the Lead Discipline Engineer and the initiator

(CWPC) of the defects to inspect the plant and to verify that the defects were cleared for sign-off. The completed Defect Notification form is returned to Quality

3.10.6 Quality updates the Master Defects register and sends a copy of closed out defect to Commissioning Document Centre to be stored in the in the CTO Pack.

3.10.7 It may be necessary to allow some defects to be carried forward to the contractual certification stage provided they do not affect the safety and integrity of the plant and the personnel operating it.

3.10.8 This process is conducted independently of the safety clearance process unless the defect precludes the safety clearance from being issued.

3.10.9 Quality is the custodian of the Master Defect Register, and the management of all defects on the project is detailed in the Kusile Power Station Project Defects Management Process Work instruction (240-150475305)

3.11 Safety Clearance of Plant

3.11.1 The CWPC prepares the safety clearance certificate (240-124861660). Information for the safety clearance certificate is obtained from the partial / final inspection certificate

3.11.2 The CWPC, in consultation with the CWP (Contractor, Construction Manager / Construction Supervisor, Project Discipline Engineer, Client's Representative, relevant commissioning personnel, etc.) plans and schedules the safety clearance activities at the start-up meeting.

3.11.3 The CWP members carry out the safety clearance inspection as scheduled.

3.11.4 Rejected safety clearances follow a remedial path, as agreed with all parties, and the re- planning of the activity follows. A new date is scheduled at the start-up meeting.

3.11.5 On acceptance of the safety clearance the CWPC, Contractor, Construction Manager / Construction Supervisor, Project Discipline Engineer, and the Client's Representative sign the safety clearance certificate to declare the plant is safe and ready for commissioning.

3.11.6 The CWPC is responsible for the immediate (within 1 working day) distribution of the safety clearance certificate to the parties as listed on the certificate.

3.11.7 The safety clearance certificate now becomes part of the hand-over documentation package for the plant system / sub-system or plant item.

3.11.8 Once the safety clearance certificate has been issued, the plant falls under the Eskom Plant Safety Regulations, Fossil Fuel Fire Regulations and Operating Regulations for

High Voltage Systems, which governs any further work to be conducted on plant that has been safety cleared. The Commissioning Manager is still in control of the works and Commissioning activities from here onwards

3.12 Flushing of Systems during Construction prior to System Safety Clearance

3.12.1 When flushing, all plants needs to be safety cleared A Flushing procedure should be developed outlining the process and approved before commencing with the Electrical Energisation To and From Temporary Plant

3.13 Electrical Energisation To and From Temporary Plant

3.13.1 When permanent electrical equipment is used to energise a temporary cable and temporary equipment, a CoC and Safety Clearance Certification shall be conducted for the permanent equipment prior to energising such equipment.

3.13.2 When temporary electrical equipment and a temporary cable is used to energise permanent equipment, Safety Clearance Certification shall be conducted for the permanent equipment prior to energising thereof.

3.13.3 The circuit used on the permanent equipment to accommodate the temporary cable shall be considered temporary for the duration of the activity

3.13.4 A KET MIE/IE shall provide an inclusive COC for the plant to be energised, prior to the Safety Clearance Certification and Energization thereof.

3.13.5 Red Line drawings provided and approved by Engineering shall accompany the request of these above-mentioned Safety Clearances to indicate the temporary supplies and/or plant.

3.13.6 Permanent supplies and plant shall always be fitted with permanent KKS Labelling prior to Safety Clearance regardless of being fed from a temporary supply or not. For Prelim Safety Clearance Certification, temporary KKS Labelling is allowed and Certification shall be valid for the duration of the activity Temporary Supplies not required anymore shall be removed by the relevant Contractor and inform Commissioning and Engineering of this change and completion of the activity in which case the installation will be decommissioned

3.14 Commissioning

3.14.1 Following the issuance of the safety clearance certificate the plant now enters the pre-commissioning phase where it is ascertained that the plant item is ready to be placed in service.

3.14.2 Commissioning of the plant may now commence, using the required check sheets,

commissioning procedures, operating procedures and test result sheets. For electrical equipment these procedures etc. shall, as a minimum, comply with the requirements of SANS 10142 Part 1.

3.14.3 All plant and equipment that will be effected during commissioning activities will have to be identified and locked out with commissioning locks

3.14.4 The requirements of the OHS Act and applicable Regulations as well as Eskom's PSR, FFFR and ORHVS have to be implemented before energising.

3.14.5 All Commissioning activities are planned in the Start-up meeting and will be performed as outlined in the Commissioning Procedure for the relevant plant.

3.14.6 Compiling of the Commissioning procedure is the responsibility of the OEM/Contractor, with the exception of Electrical procedures, which are compiled by KET Commissioning Electrical Team. These procedures are subsequently reviewed and approved by Engineering. Any modifications that arise during the Commissioning period shall follow the FCN/ECP Process as detailed in the Kusile Engineering Change Management Procedure (240-132735850)

3.14.7 A safety / housekeeping inspection shall be conducted, and a safety and housekeeping certificate (240-124862622) shall be issued by the CWPC at every major milestone, prior to the commencement of milestone activities.

3.15 Optimisations of Plant

3.15.1 Once the various systems / sub-systems have been started up individually, the integrated plant is started up and tuned to optimise performance.

3.15.2 Optimisation on the different systems / sub-systems, making up the unit until proven to meet the requirements of the URS and plant design specifications. In this period, the Commissioning Manager will plan, schedule, execute and report on all activities as per the optimization plan. Assistance from the relevant stakeholders will be requested as and when required.

3.15.3 Capability and Load swing tests will be performed with the Client's Representative and documented to demonstrate that the unit meets the requirements specified in the URS, design specifications and grid code requirements.

3.15.4 A Commissioning Certificate (240-125005052), will be completed and issued by the Commissioning Manager on completion of all the commissioning activities.

3.16 Plant Exception Requests

3.16.1 Where plant does not conform to the URS and technical specifications, or running at restricted capacity, but deemed operable and maintainable, a plant exception process shall be initiated by Engineering in collaboration with the Client. On acceptance of such an exception, a Plant Exception Form (240-126039686) shall be issued, and a partial/final handover may occur

3.17 Partial/Provisional Handover

3.17.1 The plant or part of the plant will be placed in the control of the Client (Gx) with the effect that Generation will be responsible for the operation and maintenance of that plant;

3.17.2 The accountability of the asset will still remain with KET

3.17.3 The client will be informed at least 30 days prior to partial handover, to allow the client to prepare and allocate necessary resources for operating and maintaining the asset.

3.17.4 Any plant operation by the client, on plant that is not yet handed over to the client, will be under the supervision and instruction of KET and the contractor

3.18 Hand-over of Plant

3.18.1 When mutual agreement between GCD and Gx is obtained on specific plant systems that plant will be handed over to Gx on a systems approach.

3.18.2 When a unit or a system and all of its associated plant is optimised, capabilities demonstrated, the reliability run completed and grid code compliant, the Delivery Manager shall arrange for the hand- over of the plant to the Client (240-124863218). Such approvals affect the transfer of the asset and the control of the plant from the KET to the Client (e.g. General Manager). This also means transfer of statutory accountability.

3.18.3 Sections of plant (buildings, Mini-subs, roads, etc.) will be handed-over to KET Site Services to maintain and ensure that it is kept functional until final hand-over to Generation on project completion. It is KET's responsibility to maintain and keep maintenance records/history and the relevant Hand-over documentation package up to date

3.18.4 All hand-over documentation packages to be handed-over will be kept in the project documentation management system and Centre until the plant is handed over to the Client. The relevant hand-over documentation packages will be transferred to the Client's documentation Centre within six (6)) months after CO of the unit or final hand-over of the relevant plant except for the documents specified in Documentation

Handover Specification (240-128515850) which are required by the Client immediately.

3.18.5 The handing over of systems to the Client (Gx) will use the agreed upon systems breakdown which is detailed to subsystem level, therefore, a final handover certificate for a full system will be issued by the Delivery Manager, and supported by the Final Handover Review Report and all Partial/Final Handover Readiness check sheets that have been signed off for all subsystems making up the complete system. The detailed handover process is covered in the Handover Process Work Instruction (240-129703805)

3.19 Plant Performance Verification Tests

3.19.1 Where a contract calls for extended tests after hand-over to prove performance of the plant during operation, the Commissioning Manager shall ensure that these are carried out in accordance with the documented plan with clearly set time periods and requirements.

3.19.2 The detail of how and when these tests are to be carried out must be agreed with the Client's Representative and all affected parties (e.g. Contractor, Operations, Maintenance, etc.).

3.19.3 The Contractor shall prepare (where required) a risk assessment detailing all production and safety risks associated with the test to the client, this will assist the client to schedule with national control for the activity

3.19.4 The Delivery Manager shall ensure that the tests are properly scheduled and that all parties are fully aware of the schedule and their roles and responsibilities.

3.19.5 The Client's representative shall ensure that arrangements are made to allow access for the Contractor (i.e. plant permits, access permits, etc.)

3.20 Commercial Operation

The Client or the Client's Representative shall ensure adherence to the National Control Generation Asset Integration Grid Code Compliance Process Procedure (see requirements applicable to GD who is the license holder as stated in paragraph "5.5 Application for commercial operation").

3.21 Defects Period

3.21.1 The Client's Representative will ensure that all defects found during the defects period are distributed to the Contracts manager who will ensure that it is captured in the project defects notification form (240-124863468). It is important to differentiate between running maintenance (fair wear and tear) and equipment breakage.

3.21.2 The relevant Contracts Manager will forward the defects notification to the Contractor and a copy to Client's Representative for information.

3.21.3 The relevant Contracts Manager will arrange with the relevant Contractor to clear the defects identified.

3.21.4 The relevant Contractor will notify the relevant Contracts Manager once these defects have been cleared to arrange for an inspection and sign-off of defects

3.21.5 The relevant Contracts Manager will arrange a defects period expiry meeting to discuss the closeout of defects and other noted issues in view of issuing the performance/defects certificate.

3.22 Project Finalisations

The relevant Delivery Manager will schedule and facilitate the post project technical and operational reviews and document the lessons learnt in terms of construction completion, plant checks, commissioning, take-over and hand-over

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Avin Maharaj	General Manager: Kusile Project
Binesh Singh	Clients Representative
Justice Bore	General Manager (Generation)
Chris Barclay	Oversight Delivery Manager
Desigan Naicker	Middle Manager Delivery Unit 4 (Acting)
Vukile Dweba	Middle Manager Delivery Unit 6 (Acting)
Zolisa Mametja	Middle Manager Delivery Unit 5
Anville Rhode	Site Safety Manager
	GMR (2) 1
Markus Ueckermann	Middle Manager Operating
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Joseph Ngqendesha	Generation Client's Office
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Tebatjo Mapulane	Documents and Records Manager

5. Revisions

Current Change Note No.:		**N/A**	
Rev.	**Date** **YYYY/MM/DD**	**Author** (Name & Designation)	**Comment / Change** **Description**
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change of roles & Responsibilities for the Contracts Manager
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change of roles & Responsibilities for the Contraction Manager
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change of roles & Responsibilities between the Project Engineering Manager & Field Engineering Manager
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change in the Construction Completion form
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change in all attached forms. (They were given document numbers)
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change in the Defect Notification & Clearance form (These two forms are now combined on one document)
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Change in the Commissioning Work Flow Diagram
2	2013/03/27	Ray Whitley: Kusile Commissioning Manager	Contractual description added to explain requirements for each document.
3	2015/01/31	Christo Basson: Kusile Commissioning Manager	Major changes to roles & responsibilities
4	2016/11/14	Johan Botma : Kusile Commissioning	Minor and Major Flushing, Temporary supplies and Defect Management added.
1	2017/04/20	Johan Botma: Kusile Commissioning	Document Unique Identifier changed to 240-125815990 and revision changed to Rev: 1 to conform to new document management rules

2	2018/12/10	Sebongile Foku: Kusile Commissioning Manager	New Project Defect Management process added, annexures deleted, supporting documents updated, Handover work instruction referenced
3	2021/06/01	Sebongile Foku: Kusile Commissioning Manager	Updated Roles and Responsibilities, Updates to Commissioning Flow Diagram, Addition of new abbreviations, Addition of new definitions, Referenced Kusile Defect WI

6. Development Team

The following people were involved in the development of this document:

- Mof Bezuidenhout
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7. Acknowledgements

None

8. Annexures

Commissioning Process Flow Chart