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C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

The belt protection system at Kusile Power Station is implemented for safety of personnel and equipment. Each of the BMH plant 74 conveyors contains a belt protection system. To ensure reliable performance of the belt protection system, adequate protection devices must be installed. The Kusile power station belt protection system does not have tear, rip and alignment sensors at the head end of the most conveyors. As a result, the belt tear, belt rip, or belt alignment at the head end of the conveyor does not get detected until it reaches the tail end of the conveyor. This failure of early detection will result in significant damage to the conveyor belt.

1.2 Employer's objectives and purpose of the works

1.2.1 Scope

1.2.1.1 Purpose

The objective of the works information is to provide a scope of work for installing and commissioning additional tear, rip, and alignment detectors at the Kusile Power Station BMH plant.

The *Works* must include but not be limited to:

- a) Develop a detailed design of the additional belt protection devices for all conveyors for approval by Eskom personnel.
- b) Install the belt protection devices on existing belt protection loops.
- c) Commission the belt protection system for each conveyor.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
Abbreviation	Explanation
C&I	Control and Instrumentation
Gx	Generation
HMI	Human Machine Interface
ISO	International Organisation for Standardisation
OEM	Original Equipment Manufacturer
OTS	Operating Technical Specification
PLC	Programmable Logic Controller
QMS	Quality Management System

2 Management and start up.

2.1 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Project Kick-off Meeting	3 days Contract Award	Kusile Power Station	Employer, Contractor and Others
Execution Progress Meeting	Weekly	Kusile Power Station	Employer, Contractor and Others
Risk register and compensation events	Weekly	Kusile Power Station	Employer, Contractor
Overall contract progress and feedback	Monthly	Kusile Power Station	<i>Employer, Contractor</i> _____

Meetings of a specialist nature may be convened as specified elsewhere in this *Works Information* or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *works*. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

2.2 Documentation control

All contractual communication between the Employer and the Contractor shall be in the form of properly compiled letters or forms attached to e-mails and not as a message in the e-mail itself. All formal communication is via the *Project Manager*.

2.3 Health and safety risk management

The *Contractor* complies with the Occupational Health and Safety Act Number 85 of 1993 and its regulations, *Employer's* SHEQ Policy, Standards, Procedures, Guidelines, Specifications and Regulations. The *Contractor* ensures safety awareness at all times through continuous training.

The *Contractor* must at all times be responsible for the supervision of his employees, agents and sub-*Contractors*, and takes full responsibility and accountability in ensuring that they are competent, compliant and aware of the legal requirements and other applicable requirements, and executes the works accordingly.

The *Contractor* ensures that all statutory appointments, and appointments required by any *Employer's* Policy, standard and Procedure, are recorded in writing and that all its appointees and/or agents fully understand their responsibilities and are trained and competent to execute their duties.

The *Employer's Project Manager*, or any person appointed by the *Employer's Project Manager*, may at any stage during the term of the contract:
Conduct health and safety audits by a competent person regarding all aspects of compliance with the SHEQ requirements, at any off-Site place of work, or the Site establishment of the *Contractor*.

Refuse any employee, sub-*Contractor* or agent of the *Contractor* access to the premises if such person has been found to commit an unsafe act or if any work is found not to be compliant or authorized.

Issue the *Contractor* with a STOP WORK ORDER should the *Employer's Project Manager* become aware of any unsafe working procedure or condition, or any non-compliance.

The *Contractor* immediately reports all incidents as well as any threat to safety and health of which the *Contractor* becomes aware at the Site, to the *Employer's Project Manager*.

The *Contractor* agrees that the *Employer* is relieved of any and all of its responsibilities and liabilities in terms of the Occupational Health and Safety Act no 85 of 1993 in respect of any acts or omissions of the *Contractor*, and the *Contractor's* employees, agents or sub-*Contractors*, to the extent permitted by the Occupational Health and Safety Act no 85 of 1993.

The *Contractor* provides a health and safety plan based on the *Employer's* Safety, Health and Environmental Specification.

All persons entering the Site must undergo the *Employer's* safety induction course.

The designer of the *Works* is mandated to comply with section 6 of the construction regulation 2014.

2.3.1 Safety of Worker

The *Contractor* is to ensure the safety of all persons working on the Site.

Any hot work, including welding, will be applied for in accordance with the permit to work system.

No hot work will be allowed on Site unless a hot work permit is granted in writing.

Precautions must be taken to prevent any objects, welding or grinding sparks from falling beyond the immediate working area.

Ear protection and all required PPE must be provided to all personnel by the *Contractor*.

The *Contractor* completes activity risk based assessments and provides the assessments to the *Project Manager* for acceptance before activities take place.

2.3.2 Fire Protection

The *Contractor* must ensure that his employees are trained in the use of firefighting apparatus.

The *Contractor* must take precautions to prevent any occurrence of fires or explosions while carrying out any work near flammable gas and liquid systems. Any tampering with the *Employer's* fire equipment is strictly forbidden. All exit doors, fire escape routes, walkways, stairways, stair landings and access to electrical distribution boards must be kept free of obstruction, and must not be used for work or storage at any time. Firefighting equipment must remain accessible at all times.

In case of a fire, the *Contractor* must immediately report the location and extent of the fire to the Electrical Operating Desk using the station's Emergency Number. The *Contractor* must take the necessary action to safeguard the area to prevent injury and spreading of the fire.

2.3.3 First aid

The *Contractor* provides First Aid services (level 2) to his employees and sub-*Contractors*. In the case of severe or serious injury, to his employees and sub-*Contractors* the *Employer's* Medical Centre and facilities will be made available and accessible to such persons.

2.3.4 Housekeeping

It is the *Contractors* responsibility to ensure that the Site is cleaned daily. All electrical cables and hoses are routed so as not to cross unprotected over floors and walkways. All equipment is packed neatly without interference to access. All excess scaffolding material is removed from Site after the scaffolding has been erected. The *Contractor* is responsible for the removal of any scrap material to the designated scrap area on a daily basis.

2.3.5 Barricading

Access to danger zones is restricted using handrail type guards at least 1.2 meters high and able to block access to the danger zone. Red tape is not allowed. Symbolic safety signs depicting 'Danger', name of *Contractor*, Responsible Supervisor, Contact details of supervisor and 'No entry' are attached to the guards. This includes access during the taking of X-rays.

2.3.6 Radiographic Examinations

When radiographic tests are carried out in the plant by *Others*, the danger area is evacuated with the exception only of authorized radiographic workers, and thereafter barricaded. To ensure that employees and contract staff working in *Employer's* premises are not exposed to more radiation than is reasonable level, the *Contractor* complies with the Kusile Power Station procedure 'Requirements and Rules for Radiation Protection and Safety of Radiation Sources'.

2.3.7 Permit to Work System

The *Contractor* allocates personnel to be trained and authorised as Responsible Persons according to *Employer's* Plant Safety Regulations (36-681). The *Contractor* ensures that adequate number of appointed Responsible Persons and Authorised Supervisors prior to the outage date or commencement of work at the station. The *Contractor* ensures that Responsible Persons and Authorised Supervisors are available on Site at all times during the execution of the Work.
If the *Contractor* breaches this obligation, the *Employer's Project Manager* withholds monthly payments until the *Contractor* complies with this obligation.

2.4 Environmental constraints and management

- a) The contractor and or supplier shall have a documented and implemented environmental management system e.g. environmental policy, operational procedures relating to their activities, Environmental Aspects and Impacts Register.
- b) The contractor and or supplier shall prepare an environmental management plan relating to their activities that will be carried out. The environmental management plan shall be based on, amongst others, Eskom Kusile Power Station's OEMP and any other applicable environmental legislation. The environmental management plan must include all the aspects and impacts relating to the activity and address the principle of continual improvement.
- c) The contractor and or supplier employees shall attend induction on environmental management prior to commencement of work at Kusile Power Station.
- d) The contractor and or supplier shall comply with all Eskom Kusile Power Station environmental requirements such as policies, standards and procedures.
- e) The contractor shall appoint trained and competent personnel in writing, who will have the responsibilities of implementing all environmental requirements on a specific contract.
- f) Non-conformance and All spills/emergency incidents shall be reported to Eskom Contract Manager and Environmental Officer(s) immediately on occurrence, such reports must include but not limited to the following information:
 - The date and time of the incident
 - The cause of the non-conformance/incident;
 - The proposed actions to correct and prevent recurrence.
- g) Eskom Kusile Power Station shall issue non-conformances where there are deviations from Eskom Kusile Power Station Procedures and any other environmental requirements, and the Contractor or Supplier shall be responsible to provide an action plan and close out of such non-conformances timeously.
- h) Environmental Incident Investigations shall be done jointly where responsible managers and the environmental team from Eskom and the Eskom subsidiary or contractor are present.
- i) Environmental Incident investigation shall be done in accordance to Eskom Environmental Incident Management Procedure (240-133087117).

j) The contractor or supplier shall be responsible to ensure duty of care during execution of work at Kusile Power Station and shall be liable for the costs for the costs of remedying pollution, *environmental degradation and consequent adverse health effects as indicated on the NEMA principles below:*

National Environmental Management Act 107 of 1998 (NEMA) principles:

- Duty of care and remediation of environmental damage

Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorized by law or cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment.

- Polluter Pays Principle

The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.

- k) The *Contractor* and or supplier shall allocate funds for the implementation of environmental requirements.
- l) All contractors shall abide to Eskom Zero Liquid Effluent Discharge through the process of reuse and recycling.
- m) All waste generated during the execution of the scope of work shall be managed in accordance with Kusile Power Station Waste Management Work Instruction (240-105776552) and in compliance with applicable environmental legislation and bylaws.
- n) All contractors should be aware of Eskom SHEQ Policy.
- o) All contractors must take into account environmental consideration when carrying out Risk Assessments.
- p) All equipment used on site must be in good working condition and no fuel and/or oil leaks on any plant will be tolerated.

Records to be kept onsite For Environmental Management

The following minimum records shall be kept on sites:

- a) Contractor site specific Environmental Management Plan and Environmental aspect and impact register. Environmental aspect must be identified, and how they should be mitigated and also be communicated to employees. Proof of communication must be available
- b) Environmental Incident registers and investigation reports.
Incident must be reported immediately or within 24 hours of occurrence, investigation must take place within 7 days and concluded with 30 days, lesson learned must be shared with employees. Record of environmental incidents must be made available.
- c) Non-conformance register.
When non-conformances are closed, they should be investigated and close-out within the agreed timeframes.
- d) Complaints register. Where complaints are raised they should be reported to Kusile Environmental management Department, be investigated and closed out.
- e) Waste disposal register
- f) Hazardous Substances registers and SDS where applicable.
Where hazardous substances are used, a register should be maintained and all SDS should be available and communicated to employees.
- g) Records of audit reports and audit findings close-out, where applicable.
- h) Records of audit and how findings where closed should be maintained.
- i) Records of environmental inspections conducted.

Monthly environmental inspection should be conducted and records of inspections should be maintained.

j) Licences for Landfill sites/Waste Treatment plant for all waste streams generated and disposed by the contractor.

k) Registration certificate for a waste service provider appointed by the contractor

l) Safe disposal certificates or weighbridge certificates for all waste disposed.

Tender Submission Documentation

The following documentation shall be submitted with all tender submissions:

- a) Environmental Policy
- b) Aspect and impact register or an environmental management plan (relevant to the scope of work)
- c) Environmental Management System Certificate (if certified) if not, an environmental management system manual or procedures
- d) Waste Management Plan
- e) Proof of training of persons performing activities that could have significant impact on the environment.

2.5 Quality assurance requirements

2.5.1 Quality Management

The quality requirements are as per ISO 9001:2008 and *Employer* Quality Standard, QM 58. This quality management philosophy is developed from the basis that manufacturers produce quality products, supervisor oversees the process, checks quality but liability for quality remains with the *Contractor*. The *Contractor* submits a QMS as a returnable schedule and uses it for all phases of the Project. The QMS complies with the requirements of ISO 9001:2008 standard. The *Contractor* provides evidence of a fully implemented QMS as and when requested by the *Project manager*.

The *Project Manager* may at his sole discretion carry out an audit on the *Contractor*, the *Contractor's* suppliers and Sub-*Contractors*

Quality control plans will be produced by the *Contractor* or manufacturer which will indicate the level of product quality control to be applied. The CQP must be aligned to, and reference ISO 10005:2005 QMS, guidelines for quality plans and in compliance with the guideline in 240-105658000. The CQP will make reference to the *Contractor's* QMS Procedures to be used in this Contract. This plan will be reviewed by the *Project Manager*. The project team monitors that these plans are being implemented and that it is yielding the expected results through process and product verifications.

High quality standards are also assured by conforming to the following:

- a) The use of sound design and engineering principles,
- b) The design process uses a good performance and functional specification,
- c) It is ensured that the installation conforms to the Works Information.
- d) Design Review Procedure is followed
- e) Engineering Change Procedure
- f) QA/QC on project (manufacturing, installation)

The *Contractor* submits the following documents within ten (10) working days of the Contract Date to the *Project Manager* for review and acceptance prior to the commencement of work:

- a) The *Contractor's* QMS compliance with the requirements of ISO 9001:2008
- b) *Contractor's* quality manual
- c) *Contractor's* quality procedures
- d) *Contractor's* quality forms and work instructions

e) *Contractor's* quality system documents referenced in this Works Information

The *Contractor* supplies the *Project Manager* with a QCP or ITP for review and acceptance.

The *Contractor* supplies the *Project Manager* with a detailed contractor organogram showing the quality personnel to be used in the Contract. The *Contractor* provides CVs of the quality management employees who will be responsible for quality.

The *Contractor's* Quality Management employee's responsibilities include but are not limited to the following:

- a) Implementation of the QMS
- b) Administration of QA/QC systems
- c) Verification of approval status of Sub-*Contractor's* QCP and procedures
- d) On-and -offsite inspections
- e) Co-ordination, inspection and verification of the *Employer's* intervention points
- f) Review of *Contractor* testing and inspection documents (procedures, test results)
- Reporting on quality performance

The requirement to submit these documents does not constitute a compensation event.

2.5.2 Quality Responsibility

- a) The *Contractor* is accountable for the quality of the output and liable for any failures.
- b) The *Contractor* is responsible for defining the level of intervention of QA/QC or inspections. These are in line with the *Employers* requirements.
- c) The *Contractor* is responsible for defining the level of intervention of QA/QC or inspections to be imposed on his Sub-*Contractor's*, suppliers and sub-suppliers and must ensure that these are in line with the *Employer's* requirements.
- d) The intervention requirements take into consideration the criticality of the Plant and Material.
- e) The intervention points include all witness, hold, verification and review points required by the *Employer*. The *Contractor's* failure to allow the intervention points will constitute a non-conformance.

2.5.3 Non Conformances and Defects

Where NCR's and Defect notifications are issued, the *Contractor* acknowledges receipt within 48 hours and proposes corrective and preventive actions to the *Project Manager* as per the contract response period. The corrective and preventive actions will include the implementation and completion dates. Progress on all NCR's and Defect notifications issued to the *Contractor* must be reported to the *Project Manager* on monthly basis.

The *Contractor's* Quality Manager keeps a register of all NCR's and Defect notifications issued. Deviations from the Contract are treated as a non-conformance. Records of NCRs and Defect notifications are kept and form part of the data book records.

During the contract execution phase, the *Contractor* will be monitored by the *Project Manager* for performance on quality related aspects. The monitoring will be in the form of audits and assessments.

2.6 Programming constraints

2.6.1 Inclusions in the programme

General

The *Contractor* submits a Resource Loaded Detailed Level 4 single integrated programme. The *Contractor* shall clearly identify and interface points between the different *Contractor*, *Employer* and Others.

- **Discipline Speciality Program (Level 4)**

This is the execution Schedule, also called a Project Working Level Schedule. Level 4 is the detailed working level schedule, where each schedule is an expansion of part of a Level 3 schedule, and is established within the integrated project schedule. This is the key working level CPM schedule displaying the activities to be accomplished by the project workforce and is required for every project.

The discipline speciality programme developed and maintained by the *Contractor* is generated for tracking and control of various activities and deliverables for all phases of the contract.

This programme typically represents day-to-day tasks which are work unit based and become summarised in the Level 3 activities. Resource information for manpower and Equipment and reflected in the resource histograms is to be provided by the *Contractor*.

2.6.2 Computerised Planning And Reporting

The programme shall be submitted in MS Project format for ease of transfer and presentation.

2.6.3 Project Calendar

The project calendar includes working days (Monday to Friday) and excludes non-working days which are weekends (Saturday to Sundays) and Public Holidays. If and when the *Contractor* deems any period in a calendar year as a non-working days, e.g. pay weekends, etc. such shall be declared up front and agreed with the *Project Manager* in the first programme for acceptance by the *Project manager*. Failure to declare these days shall render any later declaration as null and void and the *Contractor* shall provide the services to comply with the accepted first programme.

2.6.4 Additional Programme Requirements

The *Contractor* shall use the Critical Path Method (CPM) technique for programme and planning and shall submit the programme basis document to the *Project Manager*. The programme basis document describes the programme and planning methodology, format, project execution philosophy, resource assumptions, qualifications and any other items that may have a substantive impact on the programme.

The programme layout takes into account the Key Dates provided in the Contract and the Work Breakdown Structure (WBS). The following levels of programme are to be used for this project for dynamic integrated project control:

- Management level programme (Level 1)
- Project level programme (Level 2)
- Control level programme (Level 3)
- Discipline speciality programme (Level 4)

2.6.5 Submission Of Revised Programmes And Progress Reporting

The *Contractor* submits one electronic copy in MS Project (MPP) format, of each revised programme and progress report to the *Project Manager* for acceptance. The *Contractor* submits revised programme bi-weekly or as instructed by the *Project Manager*.

2.6.6 Weekly Status Reports

A weekly status report is submitted by the *Contractor* to the *Project Manager*. This report is less formal than the monthly report and is used as a tool for the day-to-day management of the project. Contents of a weekly report will include the following items:

- The updated Primavera programme or MS Project
- Programme summary narrative
- Progress and performance summaries
- Sectional Completion and Key Milestone status

2.6.7 Monthly Progress Report

The contents of the report may vary from month to month depending upon the phase of the project and/or the items of management focus. However, the basic framework of the report consists of the following:

- Executive summary (narrative identifying major movement within the reporting period).
- Revised Programme indicating, actual progress of work against last Accepted Programme.
- A one-month look ahead work window.
- Activities completed, activities in progress during current reporting period and Critical Path activities report
- Key issues and risks of concern and mitigation actions.
- Cost and Cash flow and Cost curve 'S-curve'.
- Early warning and Compensation Event Register
- Report selecting all of the activities of the *Employer* and Others - (computer generated).
- Resource Schedule Histogram.
- Forecast Rate of payment schedule updated with actual progress.
- Statement and report on works ahead and behind progress.
- Resource Procurement Plan.

2.7 Contractor's management, supervision and key people

Contractor to submit an Organogram for the company indicating all roles and responsibilities relevant to the implementation of the work stated in this document. The *Contractor* is required to make all appointments as per the technical, Quality and Health and Safety and Environmental requirements. The *Contractor* shall provide all SHEQ and compliance documentation which include but not limited to the following:

SHEQ policy
SHE Plan
Environmental Plan
Environmental Policy
Risk Management Plan
Baseline Risk assessment
All accreditation and qualifications
Technical and professional organizations affiliations.
SHEQ appointments
SHEQ accreditations

2.8 Invoicing and payment

Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate.

The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Service Manager*;
- The contract number and title;
- *Contractor's* VAT registration number;
- The *Employer's* VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- The invoice is to be submitted to invoiceseskomlocal@eskom.co.za once confirmed with the payment certificate.

2.9 Contract change management

Contract change management shall be done as per the NEC ECC compensation event process

2.10 Training workshops and technology transfer

There are no training requirements for this project.

3 Engineering and the *Contractor's* design

3.1 *Employer's* design

3.1.1 Description

The current design of Kusile Power Plant constitutes of various BMH conveyors which do not have head end tear, rip, and alignment detectors. The Kusile Power Station belt protection system is based on the Electrotron Pty Ltd head end control unit system. The additional devices are to be installed on an existing belt protection system loop. All installed devices shall be Electrotron Pty Ltd protection devices for installation standardization and ease of integration with the currently installed belt protection system. The DCS updates for the belt protection system is to be implemented by Gx personnel. Red line P&ID drawings of all conveyors requiring additional detectors are listed in the Annexure of this document.

The Kusile belt protection system installation Base includes the following conveyors as listed in the Annexure of this document:

- a) Stockyard coal conveyors
- b) Terrace coal conveyors
- c) Terrace ash conveyors
- d) Gypsum conveyors
- e) Emergency ash conveyors
- f) Limestone conveyors

Eskom requires that the considered supplier shall as a minimum, provide the following:

- a) The Contractor shall provide proof of competence for installation and commissioning of belt protection systems.
- b) The Contractor shall have experience of installing and commissioning the eletrotron belt protection system at at-least two Eskom sites.
- c) Provide proof of the knowledge of the mine health and safety regulations.
- d) Access proprietary software upgrade the tear detectors firmware to trip with one arm in or out, or both arms in or out.
- e) The Contractor shall have access to the currently installed belt protection drawings for Kusile conveyors, as we do not yet have access to all belt protection system drawings

3.1.2 Capacity

The tear detectors shall be able to detect tear in and tear out with both arms and one arm. The rip detectors shall be able to detect a belt rip on the carry side of the conveyor belt. The belt misalignment detectors shall be able to detect conveyor misalignment at the head-end and after every chute feeding point. The scope includes the upgrade of the currently installed tear detectors firmware to enable the tear detectors to trip with one arm or both arm for belt tear-in or tear-out.

3.1.3 Control Instrumentation

- a) All electrical equipment shall be ex-rated to Zone 21
- b) The equipment shall be installed on an existing belt protection loop of each conveyor
- c) The equipment shall be sufficiently protected against lightning induced currents
- d) The equipment shall have ingress protection of at least IP67
- e) Each of the equipment installed shall be assigned a unique identity (KKS)

3.1.4 Materials

All materials shall be selected according to the Eskom bulk material handling specification; Eskom specification (474-12186).

3.1.5 External and Internal Coating

The colour shall be Caterpillar Yellow or other accepted by the Engineer.

3.1.6 Documentation

The *Contractor* shall provide updated belt protection loops drawings for all bulk material handling Conveyors based on existing belt protection system loop drawings.

3.1.7 Assumptions and Evidence

- a) No additional belt protection loop cable is required, if required should be of a short length.
- b) KKS of the additional devices to be installed will be based on existing KKS plan for the plant installation base.
- c) The distributed control system (DCS) configuration updates shall be implemented by Kusile Power Station Generation C&I Engineering personnel.
- d) The commissioning of the new belt protection loops shall be executed with an integration test with the DCS status.
- e) Installation will be done without requiring unit shutdown or load reduction.
- f) The current design does not provide adequate belt protection resulting in longer belt tears that would have been had there been tear detectors at the head end.
- g) Supplier can supply, install, and commission the required system within specified time frame.
- h) The project would take less than 10 months to complete.

3.1.8 Station Risk

To manage the risk of conveyor unavailability during the installation, The installation and commissioning of the equipment shall be limited to one conveyor at a time and provision must be made to bypass the new equipment and hand over the conveyor to operating in cases of emergency should the conveyor be needed.

3.1.9 Safety, Health, and Environmental Considerations

Considerations must be made for hazardous location zone 21 and zone 22 installations, exposure to noise above 85 dB(A), exposure to high temperature environment, exposure to low temperature environment, exposure to low illumination environment, exposure to crystalline silica dust, exposure to fly ash, exposure to coal dust, ergonomic stress due to awkward or strenuous climbing; posture; and walking, electrical contact, driving, working on a conveyor adjacent to a conveyor in operation and working at heights.

3.2. Information Technology Functional Requirements

3.2.1 Special Tools Requirements

The *Contractor* shall provide any special tools required to install and commission the protection devices.

3.2.2 Cyber Security

This system is not a cyber asset, thus there is no cyber security requirements for this work.

3.2.3 Software Configuration

The *Contractor* installs all required software to meet the functional requirements of the diagnostic and monitoring system as described in the Works Information.

Installation software required to recover the system in the event of a failure are provided to the *Employer*. The software is categorised per installation and software licences are clearly defined.

3.2.4 Support - Hardware / Software / Backups

It is of the utmost importance to ensure the reliability of the backup system. The system must be tested at least every 6 months and any test failures must be reported to management.

In normal situations any file, workspace or database must be recovered in less than 2 hours. If the time to recover a file exceeds 4 hours, the backup philosophy will be improved and updated.

3.3 Documentation

The Contractor is responsible to plan for the supply of the documentation for the installations and commissioning.

3.3.1 Documentation Control

All documents and records management are performed according to Technical Document and Record Management Work Instruction (240-76992014), Gx Projects Documentation Deliverable Requirements Specification (240-65459834) and Engineering Drawing Standard – Common Requirements (240-86973501) and the *Project Manager* ensures that the *Contractor* is provided with latest revisions.

Any uncertainty regarding all specified documents should be clarified with the *Project Manager* and clarification updates should be reflected in updated versions of these documents.

The *Contractor* complies with all minimum document metadata as specified in Smart plant Owner Operator Technical Documentation Metadata Standard (240-54179170).

3.3.2 Documentation Pre-submission (VDSS)

The *Project Manager* will compile and provide the Vendor Documentation Submittal Schedule (VDSS) to the *Contractor* as part of the enquiry package. The VDSS will list minimum documentation deliverables for the work to be done as per the Works Information.

The *Contractor* upon receiving the VDSS must review it and ensure that the delivery dates of documentation are linked with the completion of work as per the activities in the programme. After review, the VDSS will then be submitted by the *Contractor* to the *Project Manager* for review and acceptance. Should the programme be revised and affect documentation deliverable dates, the updated VDSS must be submitted as per the revised programme.

3.3.3. Process for Documentation Submission

All documentation submitted must be accompanied by the completed transmittal with the following fields as a minimum:

- a) Name of *Contractor*
- b) Transmittal Number
- c) *Contractor* Details
- d) Date of Submission

- e) Description of Document
- f) Document Number
- g) Document revision
- h) Document type
- i) Document media type
- j) Number of copies
- k) Signed by and date

Final documentation is submitted in both electronic and hard copies to the *Employer's Project Manager*. The *Contractor* adheres to one soft copy in a compact disc and one hard copy per station.

3.3.4 Documentation Recording

The *Contractor* develops; list and maintains the Master Document List (MDL) of all documents submitted to the *Project Manager* with all the relevant metadata.

3.3.5 Documentation Review and Turn-around

The *Project Manager* has a maximum seven (7) working days to review and consolidate review comments for documentation submitted by the *Contractor*. The *Contractor* also has a maximum of seven (7) working days to respond and / rectify as per the comments by the *Project Manager*.

3.4 Parts of the works which the *Contractor* is to perform

The *Contractor* shall carry out, compile a Kusile specific detailed belt protection system for the installation base. However the appointed *Employer's* representatives will be required to work in close collaboration with the *Contractor* and assume overall responsibility on behalf of the *Employer* for all activities carried out the installation and commissioning.

- a) Work with the *Employer's* representatives to update drawings.
- b) Work with the *Employer's* representatives to create unique KKS for the additional devices.
- c) Work with the *Employer's* representatives to update tear detector firmware to trip with one arm or both arms.
- d) Work with the *Employer's* representatives to commission the belt protection system.

3.5 Procedure for submission and acceptance of *Contractor's* design

The *Contractor* shall submit the design on Micro Station format and submit 2 x hardcopies and 2 x soft copies to the *Project Manager*.

3.6 As-built drawings, operating manuals and maintenance schedules

The *Contractor* is to provide:

- 3.6.1 Two hard copies of all as-built drawings as well two soft copies on a CD-R are to be provided to the *Employer*. Drawings are to be in Micro-Station format.
- 3.6.2 As-built drawings are to be handed over to the *Employer* prior to commencement of final commissioning in each area.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

Eskom Holdings Limited's requirements regarding employment of unskilled or semi-skilled workers are as follows:

Kusile Power Station requires that during recruitment of unskilled or semi-skilled labour, the *Contractor* or its subsidiaries should make every effort to employ minimum target as per SDL&I requirements. The *Contractor* shall under no circumstances be allowed to recruit labourer(s) at Kusile Power Station main security gate.

4.2 Subcontracting

4.2.1 Limitations on subcontracting

The *Contractor* may sub-contract specialised work and shall not subcontract more than a 25% of the whole of the contract.

4.3 Plant and Materials

4.3.1 Spares and consumables

The *Contractor* shall handover any excess material to the *Employer*.

4.4 Tests and inspections before delivery

It is the responsibility of the *Contractor* to ensure that the system is tested after installation/restoration to the satisfaction of the *Employer's* data quality requirements.

4.5 Marking Plant and Materials outside the Working Areas

Contractor's equipment shall be marked, as material need to be declared at the gate before entering the site, and the same declaration shall be used to remove equipment from site.

4.5.1 People restrictions on Site; hours of work, conduct and records

The *Contractor* keeps records of his people on Site, including those of his Subcontractors which the Project Manager or Supervisor have access to at any time. These records may be needed when assessing compensation events.

4.5.2 Cooperating with and obtaining acceptance of Others

The Contractor may be required to give or obtain access from Others during execution of the *Works*.

4.5.3 Publicity and progress photographs

The *Contractor* shall not take any photographs on site without the *Employer's* written permission

4.5.4 Site services and facilities

The *Employer* shall provide power supply connection point in the form of 220V AC power, water, waste disposal skips and ablutions facilities.

4.5.5 Facilities provided by the *Contractor*

The *Contractor* shall provide for his own Site accommodation, construction camps, storage, vehicles, office equipment and all other requirements deemed necessary for him to do site establishment. Upon completion of the contract, the *Contractor* shall do site de-establishment and restore the allocated area to its original state.

4.5.6 Sequences of installation

The *Contractor* shall confirm the sequence with the *Employer* before installation takes place.

4.6 Completion, testing, commissioning and correction of Defects

4.6.1 Work to be done by the Completion Date

All the *Works* is to be done by the Completion Date. The *Project Manager* cannot certify Completion until all the work has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the works and Others from doing their work.

4.6.2 Use of the *works* before Completion has been certified

The *Employer* shall certify the *Works* before use.

4.6.3 Commissioning

The *Contractor* shall commission the works before completion date.

4.6.4 Start-up procedures required to put the *works* into operation

In order to put the *Works* into operation the *Employer* may require the *Contractor* to be in attendance whilst he does it.

4.6.5 Access given by the *Employer* for correction of Defects

The *Employer* shall arrange a Permit To Work to allow the *Contractor* to access and use part of the *Works* which has been taken over if needed to correct a Defect. After the *Works* have been put into operation, the *Employer* may require the *Contractor* to undertake certain procedures before such access can be granted.

4.6.6 Performance tests after Completion

The *Contractor* shall demonstrate that the works can operate as specified by the *Employer* here in this *Works Information*.

4.6.7 Training and technology transfer

There are no training requirements for this project.

4.7 Investigation, survey and Site clearance

The *Contractor* is to survey the site around the proposed location before commencing final design.

5. List of drawings

5.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Annexure – Detector Installation Numbers Components						
Conveyor	Drawing	Scanbelt IBTD100 Tear Detector c/w T- Frame Extd	Scanbelt Slack Rope Rip Detector Combo Extd	Scanbelt Dual Misalignm ent Unit c/w T- Frame Extd	Scanbelt Combo Control Unit with Reset Extd	Tear Detector Firmware update
T1A	0.90/42619	1	1	0	1	1
T1B	0.90/42620	1	1	0	1	1
T2A	0.90/39451	1	1	0	1	1
T2B	0.90/39452	1	1	0	1	1
T2C	0.90/39453	1	1	0	1	1
T2D	0.90/39454	1	1	0	1	1
T2E	0.90/39455	1	1	0	1	1
T2F	0.90/39456	1	1	0	1	1
T3A	0.90/39457	1	1	0	1	1
T3B	0.90/39458	1	1	0	1	1
T3C	0.90/39459	1	1	0	1	1
T3D	0.90/39460	1	1	0	1	1
T3E	0.90/39461	1	1	0	1	1
T3F	0.90/39462	1	1	0	1	1
T4A	0.90/39463	5	5	3	8	1

Components						
Conveyor	Drawing	Scanbelt IBTD100 Tear Detector c/w T- Frame Extd	Scanbelt Slack Rope Rip Detector Combo Extd	Scanbelt Dual Misalignm ent Unit c/w T- Frame Extd	Scanbelt Combo Control Unit with Reset Extd	Tear Detector Firmware update
T4B	0.90/39464	5	5	3	8	1
T4C	0.90/39465	5	5	3	8	1
T4D	0.90/39466	5	5	3	8	1
T4E	0.90/39467	5	5	3	8	1
T4F	0.90/39468	5	5	3	8	1
T5A	0.90/39469	1	1	0	1	1
T5B	0.90/39470	1	1	0	1	1
T5C	0.90/39471	1	1	0	1	1
T5D	0.90/39472	1	1	0	1	1
T5E	0.90/39473	1	1	0	1	1
T5F	0.90/39474	1	1	0	1	1
T6A	0.90/39475	1	1	0	1	1
T6B	0.90/39476	1	1	0	1	1
T6C	0.90/39477	1	1	0	1	1
T6D	0.90/39478	1	1	0	1	1
T6E	0.90/39479	1	1	0	1	1
T6F	0.90/39480	1	1	0	1	1
T7A	0.90/39481	1	1	1	2	1
T7B	0.90/39482	1	1	1	2	1
T7C	0.90/39483	1	1	1	2	1

Components						
Conveyor	Drawing	Scanbelt IBTD100 Tear Detector c/w T- Frame Extd	Scanbelt Slack Rope Rip Detector Combo Extd	Scanbelt Dual Misalignm ent Unit c/w T- Frame Extd	Scanbelt Combo Control Unit with Reset Extd	Tear Detector Firmware update
T7D	0.90/39484	1	1	1	2	1
T7E	0.90/39485	1	1	1	2	1
T7F	0.90/39486	1	1	1	2	1
T8A	0.90/39487	1	1	1	2	1
T8B	0.90/39488	1	1	1	2	1
T8C	0.90/39489	1	1	1	2	1
T8D	0.90/39490	1	1	1	2	1
T8E	0.90/39491	1	1	1	2	1
T8F	0.90/39492	1	1	1	2	1
SY1	0.90/42610	1	1	0	1	1
SY2A	0.90/42615	1	1	0	1	1
SY2B	0.90/42616	1	1	0	1	1
SY3A	0.90/42617	1	1	0	1	1
SY3B	0.90/42618	1	1	0	1	1
SYR1	0.90/42613	2	2	1	3	1
SYR2	0.90/42614	2	2	1	3	1
SYR3	0.90/42623	2	2	1	3	1
SYS1	0.90/42611	1	1	0	1	1
SYS2	0.90/42612	3	3	2	5	1
FDR1	0.90/42811	1	1	0	1	1

Components						
Conveyor	Drawing	Scanbelt IBTD100 Tear Detector c/w T- Frame Extd	Scanbelt Slack Rope Rip Detector Combo Extd	Scanbelt Dual Misalignm ent Unit c/w T- Frame Extd	Scanbelt Combo Control Unit with Reset Extd	Tear Detector Firmware update
CVY1	0.90/42808	1	1	0	1	1
CVY2	0.90/42809	3	3	2	5	1
CVY3	0.90/42810	1	1	0	1	1
GYC1A	0.90/39509	1	1	0	1	1
GYC1B	0.90/39510	1	1	0	1	1
GYC2A	0.90/39511	1	1	0	1	1
GYC2B	0.90/39512	1	1	0	1	1
TAC1	0.90/39507	7	7	2	9	1
TAC2	0.90/39508	7	7	2	9	1
OLC1	0.90/39515	2	2	1	3	1
OLC2	0.90/39516	2	2	1	3	1
ESC	0.90/39513	1	1	0	1	1
ERC	0.90/39514	1	1	0	1	1
CAC1	0.90/39501	1	1	0	1	1
CAC2	0.90/39502	1	1	0	1	1
CAC3	0.90/39503	1	1	0	1	1
CAC4	0.90/39504	1	1	0	1	1
CAC5	0.90/39505	1	1	0	1	1
CAC6	0.90/39506	1	1	0	1	1