

	<p align="center">Work Instructions</p>	<p align="center">Group Capital Division</p>
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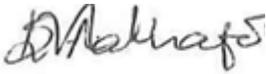
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Compiled by	Supported by	Authorized by
		
<p>Sentsho Makhafola Middle Manager Project Controls</p>	<p align="center">Shakes Mashinini Middle Manager Projects</p>	<p align="center">Yvette Shibambo General Manager (Acting)</p>
<p>Date: 03 August 2021</p>	<p align="center">Date: 04 August 2021</p>	<p align="center">Date: 19 August 2021</p>

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1. Introduction

The Project Controls Manager and the Planner/Scheduler should be involved with the development of the contract and/or tender document. The intent of this effort is to afford them the opportunity to address any and all contractual requirements that reference or relate to cost, schedule and progress measurement.

Because contracts do not usually group all schedule-related items under one neat heading, important information may be scattered throughout the contract. This document therefore aims to highlight some of the important issues to be addressed prior to contract award. It should provide the guidance and clarity on planning and scheduling requirements for ease of development of schedules once the contract has been awarded.

2. Supporting Clauses

2.1 Scope

The scope of this document is applicable to Gx Coal and Clean Technology Portfolio that encompasses the following projects:

- Gx Automated Coal Information Project
- Battery Energy Storage Project
- Ingula Pump Storage Scheme Project
- Majuba Power Station Rail, Ash Dam, NOx and Refurbishment Projects
- Camden Power Station Ash Dam and Burners Project
- Tutuka Power Station Refurbishment and Ash Dam Project
- Matla Power Station Refurbishment Project
- Kriel Power Station Refurbishment Project
- Kendal Power Station Refurbishment Project
- Duvha Power Station Refurbishment Project
- Lethabo Power Station Refurbishment Project.
- Kusile Power Station Ash Dam Project

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2.1.1 Purpose

The purpose of this document is to guide the project team in terms of planning and scheduling requirements during procurement phase and ensure compliance to PMBOK and contractual obligations of all parties to the contract. The work instruction has the following purposes:

- Guidance on the process of developing the schedule
- Clarify on planning and scheduling requirements for tender submissions by contractors; and
- Describe procedures that will be followed when contract is awarded

2.1.2 Applicability

The applicability of this document is limited to Gx Coal and Clean Technology Portfolio.

2.1.3 Effective date

This document will be effective from the date of authorisation, which will be effective once all relevant parties have signed the document.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition in conjunction with the documents listed in the following paragraphs.

2.2.1 Normative

- | | | |
|-----|---------------|---|
| [1] | 240-96807626 | Procedure for Project Controls Management PCM |
| [2] | 240-99011662 | Monitor and Control Project Controls PCM |
| [3] | 240-100224066 | Standard for integrating OPCM with Project Control System |
| [4] | 240-100224104 | Project Controls - Planning and Scheduling Standard |

2.2.2 Informative

- | | | |
|-----|----------|--|
| [1] | ISO 9001 | Quality Management Systems |
| [2] | PMBOK 5. | Project Management Body of Knowledge 5 |

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2.3 Definitions

N/A

2.4 Abbreviations

Abbreviation	Explanation
PMBOK	Project Management Body of Knowledge
CPM	Critical Path Method

2.5 Roles and Responsibilities

The Project Controls Manager shall be responsible for managing the project controls effort on a project or projects and the implementation of all requirements listed within this standard, while the project scheduler shall be responsible for ensuring that the project controls deliverables are complete, accurate, and timely and conform to the applicable standards and guides.

2.6 Process for Monitoring

The project controls manager and the scheduler will maintain awareness of this requirements and ensure compliance during the procurement phase.

2.7 Related/Supporting Documents

N/A

3. Procurement Phase Supporting Information

3.1 Works Information Specification for Planning & Scheduling

3.1.1 General

The Contractor submits a single resource loaded programme that incorporates the programmes of all of his sub-contractors. The interface points between his different sub-contractors as well as the interface points between the individual sub-contractors and the Contractor are to be clearly identified.

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Project Key Milestones (Refer to C1.2 Contract Data Part 1 of Engineering and Contracting Contract) as supplied by the Project Manager, are incorporated into the programme as per the NEC Core Clause 31.2.

3.1.2 Employer details and those who would be occupying the working space in parallel

Other Contractors are working in the same area as the work of this contract. In this regard, the Contractor co-ordinates his work with the Project Manager to maintain harmonious working conditions on site.

During the progress of the works the Contractor provides access to others who also execute work in the same area, on an as and when required basis.

The Contractor makes his own assessment of the problems and difficulties which may be encountered for providing access to and interfacing with others (this includes access difficulties experienced during construction or commissioning phase).

No extra payment or claim of any kind on account of providing reasonable access is allowed.

3.1.3 Computerised Planning and Reporting

The Project Manager does not intend duplicating the Contractor's programming and planning, however, portions or high level extractions of the Accepted Programme may be used in the Employer's internal master project programme for control purposes.

The Contractor submits updated computer files on a monthly basis, or at any other time as required by the Contractor or as instructed by the Project Manager.

The updated computer file shows the logic and all filters and layouts used in the programme. Primavera Project Planner (version 15.1) or MS Project has been adopted by the Employer for all planning, progress monitoring and reporting.

The Contractor obtains this software and applies it for the planning and control of the works in line with the accepted Work Breakdown Structure.

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3.1.4 Additional Programme Requirements

The Contractor uses the Critical Path Method (CPM) technique for programme and planning.

The programme shows the actual critical path clearly. The preparation of the programme contains a programme basis document. This 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 schedule.

The programme layout takes into account the accepted WBS, reflecting the manner in that the works are to be performed and how control data are summarised, reported and monitored.

The minimum requirements for the WBS are as per the Works Information.

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)

The Contractor submits the level 3 programme with the tender documentation. The level 4 programme is to be submitted within one month following design freeze of the unit

3.1.4.1 Management Level Program (Level 1)

The management level programme is used to establish work goals and overall time frames for the works.

It is a statement of project objectives recorded in graphic form. The management level programme defines:

- Established goals or major milestones key dates,
- The duration of major operations and their relationship to one another,
- Identified Long Lead material items,
- Responsibility assignments for accomplishing project objectives.

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3.1.4.2 Project Level Program (Level 2)

A "rolled up" programme from the control level programme is produced. It is separated by Unit, plant area and by Phase (Engineering, Procurement, Construction and Commissioning).

3.1.4.3 Control level Program (Level 3)

The project level programme is prepared representing the significant work activities and deliverables associated with the works. The end product is a time scaled bar-chart schedule developed through use of a logic network. This programme is separated by Unit, by plant area, by Phase, by WBS.

The work within each plant area is broken down by engineering discipline, procurement of tagged equipment and bulks, construction by contractor, and commissioning & start-up. The control level programme is resource-loaded. It forms the basis for progress measurement, progress curves and histograms for each discipline within a plant area.

3.1.4.4 Discipline Speciality Program (Level 4)

The need for supplemental or discipline speciality programme is dependent upon the requirements and/or circumstances of the contract.

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 is usually formatted as a spreadsheet or database report utilising the WBS structure.

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, Plant, Material and Equipment and reflected in the resource histograms is to be provided by the Contractor.

3.1.5 Submission of Revised Programmes and Progress Reporting

The Contractor submits two hard copies and one electronic copy in Primavera, of each revised programme and progress report to the Project Manager for acceptance. All formally issued reports are to follow the progress reporting requirements as stated below.

3.1.6 Status Reports

A weekly status report and a two weeks look ahead shall be 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. Projects may also require a daily update during outages. Contents of a weekly report may include the following items:

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- The updated Primavera programme
- Programme summary narrative
- Progress and performance summaries
- Schedule rolling horizon
- Sectional Completion and Key Milestone status

3.1.7 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 during current reporting period per discipline, including the activities of the Employer and Others.
- Activities in progress during current reporting period per discipline, including the activities of the Employer and Others.
- Activities undertaken during next reporting period per discipline, including the activities of the Employer and Others.
- Status overview by unit, by plant area, by phase.
- Key issues / Items of concern and corrective actions.
- Progress curves and tabular progress reports.
- Cost and Cash flow.
- Cost curve 'S-curve'.
- Early warning log.
- Compensation event log.

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- General planning report (computer generated).
- Critical activities report.
- Key event report (computer generated).
- Report selecting all of the activities of the Employer and Others - (computer- generated).
- Updated bar charts.
- Updated resource schedule and histogram (If changed).
- Updated activity schedule (If changed and if applicable, Option A).
- Forecast rate of payment schedule updated with actual progress.
- Statement and report on works ahead and behind progress.
- The monthly progress reporting cycle is based on a month end “cut-off”.

3.1.8 Meetings

Meetings are between the Project Manager and the Contractor (and any other co-opted members) as per the Project Manager discretion. The venue for these meetings is as determined by the Project Manager at the inaugural meeting. The Project Manager writes the minutes of these meetings. Any action of the Project Manager, Supervisor, Contractor and Adjudicator implied in the minutes of meeting are to be confirmed by a separate communication given in accordance with this contract.

The Contractor reports the overall progress and as a minimum requirement, the following is addressed:

- Contractor’s current activities progress and planned finish dates.
- Contractor’s planned start and finish dates for the works
- Contractor’s and Project Manager’s programme agenda compared for problematic differences.
- The progress of any other relevant activities.
- To discuss any technical or commercial issues.

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3.2 Tender evaluation Criteria

PLANNING & PROGRAMME	100.00%
Programme Compliance (and General)	10.00%
The tenderer has provided a level 4 Primavera P6 format, showing activities of all the project work to be done by the contractor, and the other work covered by the contract that is being done by the sub-contractors(i.e. is the entire scope of the works represented?).	20.00%
The schedule show a logical links/ sequence/ relationships that connect the various activities together.	10.00%
The CPM (Critical Path Method) technique is used for programme and planning	10.00%
The programme has in it, hold-points for approving of the works by the Employer's professional team (i.e. key milestones are incorporated into programme).	20.00%
The works is completed within accepted durations that are in consistence with key dates provided in the contract data.	40.00%

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Sentsho Makhafola	Middle Manager: Project Controls
Yonela Makhoba	Project Controls Manager (Acting)
Jabu Seboto	Project Controls Manager (Acting)
Niresh Hurbuns	Project Controls Manager

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Name	Designation
Thulisa Madonsela	Project Controls Manager

5. Revisions

Rev 1

Date	Rev.	Compiler	Remarks
Month 2021	1	SA Makhafola	To provide clarity for planning and scheduling requirements during the procurement phase.

6. Development Team

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

Name	Designation
Sentsho Makhafola	Middle Manager: Project Controls

7. Acknowledgements

N/A

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Appendix A – Planning Tender Evaluation Report

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