نيوم NEOM

ENGINEERING PROCEDURES

DESIGN AND PROCUREMENT SCHEDULE MANAGEMENT PROCEDURE

NEOM-NEN-PRC-024 Rev 01.00, May 2020

Document History

Revision code	Description of changes	Purpose of issue	Date
Rev 01.00	First Issue	Issued for Implementation	29.05.2020

Document Approval

	Prepared by	Approved by
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Job Title	Engineering Manager - ESCD	Executive Director - ESCD

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1. Purpose

The purpose of this Procedure is to outline the requirements for procurement schedule management and control in the development and delivery of NEOM Assets.

2. Scope

This Procedure is for design consultants, and contractors with design responsibilities. It addresses design and procurement schedule management and control. In accordance with the NEOM Plan of Work, this Procedure is intended for Stage 3 (Design & Tendering).

3. Definitions and Abbreviations

Table 1: Table of definitions

Term	Definition
Activity	A task to be accomplished in a set period of time as part of working toward a larger project goal. An Activity can be assigned to a resource(s) and have an associated cost. Activities are ordered with logic links.
Asset	Refers to the required physical buildings or infrastructure such as residential, business facilities, commercial & retail facilities, media centre, recreation, entertainment & sports facilities, marinas, hospital, medical clinics, religious facilities, school, library, fire stations, roads/streets/bridges, infrastructure system, and utility networks. Also, it relates to components of buildings and structures that need to be tracked and managed.
Baseline	The combination of scope, budget and schedule that define the goals and objectives for overall Project deliverables/ which have been agreed with NEOM and the Program Management Consultant (PMC) and are placed under configuration control for changes.
Baseline Schedule	The planned timing and duration of activities to deliver the overall Project scope of work, in compliance with the milestones and contractual terms and conditions (the approved plan).
Critical Activity	An activity that is on the project's critical path.
Critical Path	A project's critical path is the sequence of network activities which add up to the longest overall duration. This determines the shortest time possible to complete the project.
Department	Different entities and divisions constituting NEOM organization, which may include the Project Department, Operations Department, Proponent/Sponsor, Urban Department, Environment Department, Loss Prevention & Fire Safety Department, etc.
Design Consultant	The professional firm named in the Consultancy Agreement, who is employed by NEOM to perform the Design Services, and legal successors to the Design Consultant and permitted assignees.
Earned Value Management	The method of assessing Project performance by comparing the amount of work that was planned with what was actually accomplished to determine the combined cost and schedule performance.
Employer	NEOM or Private Developer.

Term	Definition
Float	Float is the amount of time that an activity in a project network can be delayed without causing a delay to: subsequent tasks (free float) or the project completion date (total float).
Level of Effort Activity	A support-type project activity that must be done to support other work activities or the entire project effort.
Milestone	An event to mark specific points in time along a project timeline. These points may signal anchors such as a project start and end date, a need for external review or input and budget checks, among others. In many instances, milestones do not impact project duration. Instead, they focus on major progress points that must be reached to achieve success.
NEOM Representative	Appointed Project Management Consultant, Supervision Consultant, other Consultants or NEOM Departments.
Percent Complete	A percentage value between 0 and 100 that indicates the partial completeness of an activity, project or work package.
Physical Completion	Progress assessed by a physical measurement.
Portfolio	The term used for a collection of programs and projects which are grouped to achieve strategic goals. NEOM will be built from a Portfolio of programs/projects.
Program	A program is a group of related projects managed in a coordinated manner to obtain benefits not available from managing them individually.
Project	Refers to the development and delivery of a NEOM Asset or a group of NEOM Assets.
Resource	A resource is a necessary asset whose main role is to help carry out a certain task or project. A resource can be a person, a team, tools, machinery, building materials, funding/money and time. The lack of a resource will be a constraint on the completion of the project activity.
Resource Histogram	Resource Histogram is a graphical representation of the quantum of resources (X axis) required to be expended over time (Y axis).
Resource Management	Resource management comprises the acquisition and deployment of the internal and external resources required to deliver the project, program or portfolio.
Schedule	A representation of the plan for executing the project's activities including dates, durations, dependencies, resources, costs and other planning information, used to produce a project schedule.
Target Date	A fixed activity due date or deadline.
Total Float	Total Float is the difference between the sums of the durations as computed in a forward pass minus the sum of the durations as computed in a backward pass through the inter-dependencies in the schedule network.
Weighted Percent Complete	Overall progress completion measurement, using activity weightings to normalize disparate activities.
Work Breakdown Structure (WBS)	A hierarchical structure of the work to be executed on the Project with key objectives to achieve the project commitments and create the required deliverables. It also serves to organize and define the total scope of the Project as well as provide the basis for Project progress measurement.

Term	Definition
Works	Encompass all associated engineering, services, procurement, construction (including temporary and permanent), installation, pre-commissioning, commissioning and performance tests that are essential to accomplish the required Asset.

Table 2: Table of abbreviations

Abbreviation	Description
BAC	Budget at Completion
BIM	Building Information Modelling
BOQ	Bill of Quantities
CEO/COO	Chief Executive Officer/Chief Operating Officer
CPI	Cost Performance Index
EAC	Estimate at Completion
ETC	Estimate to Complete
HSE	Health Safety Environment
KPI	Key Performance Indicator
NOCs	No Objection Certificates
SPI	Schedule Performance Index
WBS	Work Breakdown Structure

4. Related NEOM Documents

The requirements contained in the following documents apply to the extent specified in this Procedure.

Table 3: Table of related engineering procedures

Document Code	Document Name
NEOM-NEN-PRC-005	Design Stages Deliverables Procedure
NEOM-NEN-PRC-007	Value Engineering Procedure
NEOM-NEN-PRC-008	Document Numbering and Revision Procedure
NEOM-NEN-PRC-009	GIS & BIM Procedure

Table 4: Table of related cost estimation manual and procedures

Document Code	Document Name
NEOM-NCE-MNL-001	Cost Estimation Policies and Guidelines
NEOM-NCE-PRC-001	Cost Estimating Procedure
NEOM-NCE-PRC-002	Performance Evaluation of Estimators Key Performance Indicator Procedure

Table 5: Table of related program, planning & control manual and procedures

Document Code	Document Name
NEOM-NEN-MNL-001	Program, Planning and Control Manual
NEOM-NEN-PRC-023	Program Management Procedure
NEOM-NEN-PRC-026	Key Performance Indicator Procedure
NEOM-NEN-PRC-028	Risk Management Procedure
NEOM-NEN-PRC-027	Earned Value Management Procedure
NEOM-NEN-PRC-025	Construction Planning Management Procedure

5. Design and Procurement Schedule Management

5.1. Overview

Refer to Design Management Procedures

Design Consultants will be appointed by NEOM to provide the design services as required by the selected procurement and Asset delivery strategies.

Design Consultants shall submit the deliverables, including drawings, BIM, calculations and reports, in accordance with the their obligations under the Consultancy Service Agreement or Contract (Contract).

Outputs from the design phase are as required by the Design Consultant scope of services but typically include:

- Design drawings.
- Design calculations.
- Design reports.
- Building Information Models.
- Bills of Quantities.
- Building Permits and Statutory Authority consents.
- Tender stage documents (typically specifications and drawings).

The level of design detail required increases as the design life-cycle progresses, with additional design information included and greater coordination accuracy.

The stages shall be established based on the selected procurement approach adopted and NEOM's Plan of Work as follows:

Table 6: Plan of work

NEOM Work Plan	Stage 1	Stage 2		Stage 3				Stage 4		Stage 5
	Development Strategy & Feasibility Stage	Urban Development & Technical Services		Design stages & tendering process (based on procurement route & tendering process)				Construction		Operation
		Stage 2A : Structure Plans & Concept Masterplan	Stage 2B: Detailed Masterplan, Infrastructure masterplan (10%) and Technical Services	Stage 3A: Concept Design (30%)	Stage 3B: Schematic Design (60%)	Stage 3C: Detailed Design and Tender Documents (90%)	Stage 3D: Tendering Stage and IFC (100%)	Stage 4A: Construction	Stage 4B: Commissioning & Handing-Over	
Core objectives	Identify assets, prepare asset strategic brief, and high level feasibility study and business case	Develop concept master plan to include identified assets.	Develop detailed master plan and prepare technical basis documents	Prepare project (asset) concept design including infrastructure and architectural concept, outline structural design, building services systems, outline capex and opex	Prepare project (asset) preliminary design including coordinated architectural, structural design, building services systems, outline specifications, detailed capex and opex	Prepare project (asset) detailed design including coordinated architectural, structural design, building services systems, detailed specifications, detailed capex (bill of quantities) and opex	Undertake prequalification and tendering services for the selection of construction contractor	Construction of the asset in line with quality, time, cost, HSE requirements in the contract	Testing and commissioning of the asset and handing-over to operation entity	Cleaning, operation and maintenance of the asset

As described in the Program Management Procedures (NEOM-NEN-PRC-023), Stages 1 & 2 belong to the Portfolio and Program Levels while Stage 3 includes Design & Tendering process as described in the **Technical Governance & Policies**, as follows:

Table 7: Design stages and tendering process

Stage 3			
Design stages & tendering process (based on procurement route & tendering process)			
Stage 3A: Concept Design (30%)	Stage 3B: Schematic Design (60%)	Stage 3C: Detailed Design and Tender Documents (90%)	Stage 3D: Tendering Stage and IFC (100%)
Prepare project (asset) concept design including infrastructure and architectural concept, outline structural design, building services systems, outline capex and opex	Prepare project (asset) preliminary design including coordinated architectural, structural design, building services systems, outline specifications, detailed capex and opex	Prepare project (asset) detailed design including coordinated architectural, structural design, building services systems, detailed specifications, detailed capex (bill of quantities) and opex	Undertake prequalification and tendering services for the selection of construction contractor

The design process includes Hold Points, or Decision Gateways, where the NEOM's approval must be obtained prior to commencement of the next Stage.

A formal review of phase deliverables will be carried out by NEOM at the end of each design phase with an approval will be considered. Upon receipt of approval, the Design Consultant may formally commence the subsequent design phase.

While the overall design process shall generally follow the above sequence, it may be necessary for certain aspects or disciplines of a design to be developed in advance of others, due to procurement or early construction works activities, which could result in the need for a partial design phase approval. The Project Management Plan and Design Management Plan will identify where these situations may occur.

5.2. Roles and Responsibilities

NEOM Representative: Reviews Consultant's recommendations and analysis with respect to planning outputs.

Consultant's Project Director: Manages all project activities including Project Controls. The Project Director delegates this project controls responsibility to the assigned Project Controls Manager.

Consultant's Project Controls Manager: Manages all project controls activities on the project. The Project Controls Manager delegates the associated function to the assigned Lead Planner.

Consultant's Lead Planner: Manages, promotes and communicates all relevant planning and scheduling activities for the Project.

Contractor: Manages all construction schedule activities.

Table 8: Responsibility matrix

Task / Activity Description	NEOM Rep	Consultant	Contractor
Development of Baseline Master Schedule, Updates and Revisions	**A**	**R**	**C**
Contractor Baseline Schedule and Construction Methodology	**A**	**C**	**R**
Updates on Submittal and Procurement Schedules	**C**	**A**	**R**
Update Contractor's Schedules	**C**	**C**	**R**
Monitor Schedule and Performance	**C**	**R**	**I**
Revising the Contractor's Baseline Schedule	**A**	**C**	**R**
Evaluation of Time Impact Analysis or Extension of Time Claims	**A**	**R**	**I**

Note: The Responsibility Matrix should be used as guidance only and under no circumstances does it override the contract agreements.

R – Responsible A – Accountable C – Consulted I - Informed

Responsible: People or stakeholders who do the work. They must complete the task or objective or make the decision.

Accountable: Person or stakeholder who is the "Owner" of the work. The Owner must sign off or approve when the task, objective or decision is complete. This person must make sure that responsibilities are assigned in the matrix for all related activities.

Consulted: People or stakeholders who need to give input before the work can be done and signed-off on. These people are "in the loop" and active participants.

Informed: People or stakeholders who need to be kept "in the picture." They need updates on progress or decisions, but they do not need to be formally consulted, nor do they contribute directly to the task or decision.

5.3. Schedule Development

All designers must submit a baseline schedule for approval compliant with NEOM's / Employer's Requirements within the durations specified in the respective Contract. In general, this schedule will meet the requirements as described within this Procedure.

The design consultants' schedule submission must include:

- Project schedule in .xer formats.
- Write-up or narrative describing the schedule and its content, assumptions, constraints, sequence, priorities, etc.
- Basis of Schedule including discipline manpower curves and commodity curves.
- Project Schedule in pdf formats including a) Milestone Schedule b) Summary Schedule and c) Level 3 Execution Schedule.

The design consultants will prepare a detailed Baseline Schedule which defines the design phases, NEOM/Employer reviews and approvals. Key design deliverables in terms of documents, drawings, specifications and reports which must be produced by the design consultants will be shown on the schedule.

The Designer will be required to submit a Design Baseline Schedule prepared using Primavera P6 showing the order and interdependence of activities and the sequence in which the work is to be accomplished for their awarded Scope of Works.

The Design Schedule submitted will comply with NEOM's / Employer's Requirements included in the consultancy Agreement.

The Designer shall in general plan and schedule each of the following tasks with durations not exceeding 20 calendar days for any one task:

- Design preparation, submissions and NEOM / Employer acceptances.
- All authority approvals, NOCs, and other necessary approvals.
- Gateway Milestones - each significant start and completion date will be represented by a milestone activity.
- Changes - all extra Work Orders, Consultant Change Requests will be represented by network activities as they are administered under the Contract.
- Significant inter-dependencies - all significant inter-dependencies involving relationships with sub-consultants or other Designers as well as obtaining permits will be represented by network activities.

The Design Schedule should also identify the contract time period, contract milestones, the critical path(s), and all activities necessary to accomplish the contract requirements. It should as a minimum comply with the following requirements:

- Resource loaded.
- Schedule activities organized according to the WBS and sorted by area.
- Constraints shall not be used unless they are clearly justified.
- Critical path of the Project identified.
- Activity descriptions, duration, early start, early finish, and total float shown.

The Designer will also be required to provide the following at a minimum along with the schedule submission:

- Schedule Calendar considering summer working hours, National Holidays and the holy month of Ramadan.
- Key Performance Indicators (KPIs).
- Submittal Schedules with planned dates.
- Procurement Schedules.
- Authority Approval Matrix.
- Assumed Production Rates.
- Critical Milestones.
- Manpower/Staff Schedules.
- Progress Curves.

The design consultants will also be required to further submit Tabular Schedule Reports generated from their schedule. The design consultants will develop and submit the initial version of the Baseline Schedule that will reflect the entire scope of the Works as awarded.

The NEOM Representative will review the design consultant's Baseline Schedule and when considered satisfactory, the NEOM Representative will make a recommendation to NEOM / Employer to approve the schedule. This schedule will become the "Approved" Baseline Schedule pursuant to the Conditions of Contract for their respective Contract.

Critical Path:

A detailed explanation of the activities on the critical path and the specific measures that the Consultant will take to manage those tasks.

Path of Design - Construction

Briefly describe the high-level construction sequencing of the project, and the “area” paths of construction.

5.4. Scheduling Method

Critical Path Method (CPM): All projects will submit schedules applying the Critical Path Method generating a logically linked and time phased sequence of activities and milestones. All the detailed requirements of the CPM are described below in the Schedule Development Section. This is the primary approach to Scheduling applied by NEOM.

5.5. Scheduling Systems

The selected Scheduling tool for NEOM is Oracle Primavera P6 EPPM 18.x. (latest version). The scheduling tool includes all the required NEOM structures, can support the aforementioned scheduling methods and detailed schedule elements such as activity attributes, libraries, coding structures etc.

All PMCs and PMs should be using the NEOM database and the templates provided. The scheduling tool is one of the Enterprise Project Management (EPM) applications, integrated with the Project Delivery and Controls system, to enable data exchange and project management integration.

5.6. Schedule Validation

The Critical Path method is used to calculate the schedule’s Early and Late dates, Total Float and Free Float. Once the schedule has been developed is must be validated against the following acceptance criteria:

- Check List: where applicable for non-started activities.
- Critical vs. Near Critical Activities checklist.
- Monte Carlo Simulation: to provide the probability of achieving the project completion date (desired Probability > 80%) (Refer to Risk Management Procedure reference NEOM-NEN-PRC-028).
- Budget Distribution (Refer to the Construction Planning Management Procedure reference NEOM-NEN-PRC-025).
- Resource Assignments and Allocation: Over allocation is not accepted for budgeted values.
- Estimated Resource Productivity diagram.

5.7. Schedule Optimisation

The following things will be examined, on a continuing and a regular basis;

Schedule Compression – For the initial schedule submission, the scheduler would be expected to utilise Fast Tracking techniques to optimise schedule duration. Fast tracking is where the Schedule is optimised to run originally sequential activities in parallel to shorten the overall duration. There may also be occasions when a schedule needs to be “crashed” in order to shorten the duration, this means to assign more resources to complete the activities in a shorter period of time.

Resource optimisation – Resource Optimisation is a key tool used in Scheduling and must be applied in NEOM schedules. This involves Resource Levelling and Smoothing. Resource Smoothing is mandatory and ensures that the schedule does not include over allocated resource. Resource Levelling will be needed to adjust resource to an efficient level within the constraints of the existing float, to not affect the critical path – this will ensure a more cost efficient approach to the Schedule.

Critical Path Monitoring – NEOM will monitor the top 3 critical paths every update cycle and record the results, which will enable the Project Management Teams to manage the critical activities to succeed in achieving the completion date. It’s important to monitor more than one Critical path, as often as a schedule progresses the critical path can change.

The Schedule will be analysed on an ongoing basis to ensure the schedule adheres to the Schedule Management Plan and provides the best chance of the schedule meeting the completion milestones on time.

6. Design and Procurement Control

6.1. Overview

Controlling and Monitoring of the project is essential to ensure that the project is completed within the prescribed target date. It is expected to review progress on the projects on periodic basis, producing monthly reports and issuing necessary instructions or taking corrective measures for timely completion of the projects. It is important for the responsible party to understand the controls' steps in order to monitor the progress and implement any further actions should it not be completed in time. Ensuring the schedule accurately reflects progress, and is updated to reflect delays or changes, is critical because tasks are mutually interdependent and delays can increase costs. Project planning can establish the overall schedule and should specify when particular tasks must be completed. A good technique is to establish milestones that are easily observed and verified in the updates of the schedule. It must be informed by the private partner of any changes that might impact the milestones or the critical path for delivery of the project. Approval of the schedule milestones is usually done by the NEOM Representative who will issue works completion, practical completion, and final completion certificates.

6.2. Schedule Control

- Write-Up supporting the schedule submission, providing insight to the project progress by highlighting the events that occurred during the reporting period and provide information about risks, changes and delays that potentially can impact on the completion of the Works. Such events are listed in the schedule with the appropriate NEOM activity coding structures.
- Schedule Submissions: see Design stages and tendering process form in appendix A
- Provide a summary of the project scope and schedule.
- Provide information about the planning methods and approaches you utilised to develop the schedule.
- Provide a list of the project assumptions.
- Provide a list of key dates as in the schedule and contract: see Activities' planned versus current dates form in appendix B.
- Provide a list of Interfaces: see Activities' list of interfaces form in appendix C.
- Analyse how the schedule has been developed. The Sections below can be used as reference. The Consultants should add their own sections according to the scope of works.

  [WBS]

  [WBS]

  Design/Studies/Surveys

- Schedule Structure

  Activity Identifiers (IDs)

  Activity Codes Structure

- Added / Deleted: see List of added and delelted activities form in appendix D.

- Calendar, Holidays, and Working Times.
- Monthly Progress Overview (Period: From: XX/XX/XXXX- To: XX/XX/XXXX).
- Provide an overview of the progress during the current reporting period.

- Critical Path Analysis.
- Provide an analysis of the Critical Path by WBS / Work Package and by logical sequence of works planned. The sections below can be used as guidance but the Consultant should adjust the appropriately to be aligned with the project scope Procurement:
  Permits and Approvals:
  Design:
- Change Control: see Change log in appendix E.
- Performance Monitoring.
- Baseline Variances: see Variances between contract and current dates form in appendix F.
- Earned Value Analysis.
- Performance Indicators.
  - EAC
  - ETC
  - BAC
  - SPI
  - CPI
- Key Risks.
- Provide a list of the key project risks as they appear in the project's risk register and project schedule: see Risk ID form in appendix G.

- Deliverables Monitoring.
- Deliverable Milestones Cost Loading.
- Cost Breakdown - Deliverable Milestones Values: see Deliverable milestone monitoring form in appendix H.
- Resource and Cost Loading.
- Provide information about the Resource Breakdown Structure and Cost Modelling.

6.3. Schedule Monitoring and Controlling

The actual physical progress of design Works, will be tracked in order to reach a realistic project status. This assessment will be used as the basis for evaluating the necessary remedial measures and plan of actions for achieving the Project Design Milestones.

Tools & Techniques:

Prepare schedule update on a weekly basis. the schedule update review includes checking:

- Updated completion date according to progress: Progress will be measured by assigning weights to each activity and sub-activity using BOQ Cost. Total of weights represents the total BOQ Cost. To calculate total design physical progress, the percentage of completion for each activity, would be multiplied by that activities' weighted factor.
- Conformity with Contractual documents.
- Activity Durations.
- Schedule logic.
- Critical activities.
- Earned Values and percentage completion.
- Inclusion of submittal activities with their approval duration.

The work activities required to complete the design stage of the Project are distributed over the period between start-up and taking over of the design stage. During the course of the Design Stage, the Designer will report periodically the progress of each activity. The Design Stage Manager will closely monitor progress and productivities, and instruct remedial measures when deemed necessary. This is important to achieve timely completion of the design of the Project.

Below is a detailed description of the process:

Baseline: Design works of the project are reflected using two steps as follows:

- The list of deliverables: See Log of activities versus deliverables from in appendix I.
- Primavera activities as itemized and grouped providing the WBS of the project (P6 time schedule).
- Weights are assigned to each activity having level of effort using BOQ Cost, the total of these weights sum is the total contract cost of the priced BOQ.

Updates:

Physical progress for the design works of the project consists of the following steps:

- Assigning the percent complete for each line item of the list of deliverable (Excel Sheet).
- Reflect the percent complete in each of Primavera activity using the output information from the Excel Sheet (list of deliverables). The roll up of primavera will reflect total Design Progress percentage.

Calculation of Total Design Progress Percentage:
To calculate total design physical progress, the percentage of completion for each activity, would be multiplied by that activities' weighted factor. The product of this calculation would be the activities' contribution to total design progress.

See Example of deliverables' weighting percentages in Appendix J and List of Activities/Deliverables versus Dates in Appendix K.

KPIs:

For the avoidance of doubt, the implementation of KPIs shall not in anyway relieve the Design Consultant from its duty of care under the consultancy Agreement, nor shall it affect ability of NEOM to pursue any action as a result of design defect or negligence on behalf of the Design Consultant.

The primary objectives of the KPI mechanism are:

a) Incentivise the Design Consultant to implement a culture of safety, quality and delivery to time and budget throughout the Agreement;
b) Incentivise the Design Consultant to produce a quality design;
c) Measure Project performance; and
d) Drive the behaviour of continuous improvement by being able to measure performance.

There are several types of KPI to be used:

a) Health, Safety and Environment HSE:
    i. Implementation of HSE in Design.
    ii. Life & Fire Safety degree of implementation in Design.
b) Cost:
    i. Awarded Claims by Contractors due to Design Errors and Negligence.
    ii. Project Costs - Predictability Costs Project based on estimated cost for each design stage.
c) Schedule:
    i. Project Predictability of Time for the Project Design.
    ii. From Approval of Gateway to Tender Issue.
    iii. Tender Evaluation>
d) Knowledge Sharing KPI which will be made up of four main components:

i. Program Lessons Learnt: to be measured as a percentage equal to the number of documented and shared Lessons Learnt submitted by the Design Consultant divided by the total number of Lessons Learnt submitted by all the Design Consultants.
ii. Lessons Applied: to be measured as a percentage equal to the number of Lessons Learnt actually applied to the total number of shared Lessons Learnt.
iii. Project Data Sharing: to be measured by the number of project reference data made available by the Design Consultant, accepted by NEOM and shared with other Design Consultants. Project data to be shared includes information such as base-line environmental studies, soil investigations results and topographic survey base maps.
iv. Steering Committee Involvement: to be measured by the number of Steering Committee Meetings attended by the Consultant's CEO/COO level management.

e) Design and production hours per square meter: This KPI shows the required man hours of deign in compare to the built up are of the project. It is going to be changed according to the project type but it gives a role of thumb to estimate the required man-hour for design and production of tender documents drawings.
f) Number of Documents per man-hours: See KPI of documents form in Appendix L

KPI weighting and targets shall be reviewed semi-annually by both Parties and adjusted by mutual agreement. In the event of failure to agree the revised weighting and targets, the previous year's figures shall be used.

6.4. Schedule Updates

Following the establishment of revised baseline schedules, continuous updates of the time integrated schedule will be carried out that act as an iconic tool for the control and monitoring of the Design.

Tools & Techniques: The full procedures will be implemented:

1. Identify interface links and activities.
2. Add the interface links and activities into the program.

A working Schedule will be implemented reflecting the actual progress, and will make sure that the Schedule is updated at least monthly to reflect actual past performance and a more current look at the future.

6.5. Revisions and Design Changes

Variation Orders generally deal with addition and omission of work and with changing quantities, quality, or specifications of the some works in the Project. Any program revision will incorporate such modifications showing their impact on the Project either as extension of time or addition or deduction from the project cost.

Any change in Project's duration or cost requires prior approval from NEOM / Employer. The objective of the updating of the Schedule is:

1. To assess the magnitude of variances occurring between planned and actual situations.
2. To determine the causes of such variances.
3. To decide the corrective actions.

Tools and Techniques:

Analyze, control and report the actual progress versus the planned or baseline progress in the Design Schedule. Delays will be recorded.

7. Forms/Templates

NEOM-NEN-PRC-024_FRM01: Design stages & Tendering process (enclosed in Appendix A)

NEOM-NEN-PRC-024_FRM02: Activities' planned versus current dates (enclosed in Appendix B)

NEOM-NEN-PRC-024_FRM03: Activities' list of interfaces (enclosed in Appendix C)

NEOM-NEN-PRC-024_FRM04: List of added and deleted activities (enclosed in Appendix D)

NEOM-NEN-PRC-024_FRM05: Change log (enclosed in Appendix E)

NEOM-NEN-PRC-024_FRM06: Variances between contract and current dates (enclosed in Appendix F)

NEOM-NEN-PRC-024_FRM07: Risk ID (enclosed in Appendix G)

NEOM-NEN-PRC-024_FRM08: Deliverable Milestone monitoring (enclosed in Appendix H)

NEOM-NEN-PRC-024_FRM09: Log of activities versus deliverables (enclosed in Appendix I)

NEOM-NEN-PRC-024_FRM10: Example of deliverables' weighting percentages (enclosed in Appendix J)

NEOM-NEN-PRC-024_FRM11: List of activities/deliverables versus dates (enclosed in Appendix K)

NEOM-NEN-PRC-024_FRM12: KPI of documents (Nb. of docs per manhour) (enclosed in Appendix L)

8. Reference

Project Management Body of Knowledge 6th edition

9. Appendices

Appendix A: Design Stages & Tendering process Form

Appendix B: Activities' Planned Versus Current Dates Form

Appendix C: Activities' List of Interfaces Form

Appendix D: List of Added and Deleted Activities Form

Appendix E: Change Log Form

Appendix F: Variances Between Contract and Current Dates Form

Appendix G: Risk ID Form

Appendix H: Deliverable Milestone Monitoring Form

Appendix I: Log of Activities Versus Deliverables Form

Appendix J: Example of Deliverables' Weighting Percentages Form

Appendix K: List of Activities/Deliverables Versus Dates Form

Appendix L: KPI of Documents (Nb. of Docs Per Manhour) Form

Appendix A

Design stages & Tendering Process Form

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NEOM-NEN-PRC-024_FRM01

DESIGN STAGES AND TENDERING PROCESS

Contract Number:	
Project/Asset Name:	

Originator:	
Date:	

Version	Issue date	Description	Status
0		Progress to	This submission

Filled by:	

Submitted to:	

Appendix B

Activities' Planned Versus Current Dates Form

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NEOM-NEN-PRC-024_FRM02

ACTIVITIES' PLANNED VERSUS CURRENT DATES

Contract Number:

Project/Asset Name:

Originator:

Date:

Act. ID	Act. Description	Baseline (Contract) Date	Current Date	Comment

Filled by:

Submitted to:

Appendix C

Activities' List of Interfaces Form

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NEOM-NEN-PRC-024_FRM03

ACTIVITIES' LIST OF INTERFACES

Contract Number:		Originator:	
Project/Asset Name:		Date:	

Act. ID	Act. Description	Baseline (Contract) Date	Current Date	Comment

Filled by:		Submitted to:	

Appendix D

List of Added and Deleted Activities Form

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NEOM-NEN-PRC-024_FRM04

LIST OF ADDED AND DELETED ACTIVITIES

Contract Number:		Originator:	
Project/Asset Name:		Date:	

Added Activities

Act. ID	Act. Description	Justification

NEOM نيوم

Deleted Activities

Act. ID	Act. Description	Justification

Filled by:

Submitted to:

Appendix E

Change Log Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM05

CHANGE LOG

Contract Number:		Originator:	
Project/Asset Name:		Date:	

Change No.	Scope Description	Schedule Impact (d)	Cost Impact (SAR)	Status

Filled by:		Submitted to:	

Appendix F

Variances Between Contract and Current Dates Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM06

VARIANCES BETWEEN CONTRACT AND CURRENT DATES

Contract Number:

Project/Asset Name:

Originator:

Date:

Act. ID	Act. Description	Baseline (Contract) Date	Current Date	Comment

Filled by:

Submitted to:

Appendix G

Risk ID Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM07

RISK ID

Contract Number:	
Project/Asset Name:	

Originator:	
Date:	

Act. ID	Act. Description	Risk ID	Comment

Filled by:	

Submitted to:	

Appendix H

Deliverable Milestone Monitoring Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM08

DELIVERABLE MILESTONE MONITORING

Contract Number:

Project/Asset Name:

Originator:

Date:

Milestone Number	Description	Total Value (SAR)	% of Budget	Scope Value (SAR)	KPI Value (SAR)

Filled by:

Submitted to:

Appendix I

Log of Activities Versus Deliverables Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM09

LOG OF ACTIVITIES VERSUS DELIVERABLES

Contract Number:	
Project/Asset Name:	
Originator:	
Date:	
Filled by:	
Submitted to:	

Activity ID	Activity Name	Duration (Days)	Nb. of deliverables				
			Nb. of Drawings	Nb. of Reports	Nb. of Specs	Nb. of Models	Total

Appendix J

Example of Deliverables' Weighting Percentages Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM10

EXAMPLE OF DELIVERABLES' WEIGHTING PERCENTAGES

Contract Number:	
Project/Asset Name:	
Originator:	
Date:	

Deliverables	Percent Complete	Weighted Factor	Project Progress

Filled by:	
Submitted to:	

Appendix K

List of Activities/Deliverables Versus Dates Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM11

LIST OF ACTIVITIES/DELIVERABLES VERSUS DATES

Contract Number:	Originator:
Project/Asset Name:	Date:
Filled by:	Submitted to:

NEOM نيوم

Activity ID	Description	Title of Document Drawing	Drawing Number	Planned Start	Planned Finish/ Submittal Date	Forecast Start Date	Forecast Finish/ Submittal Date	Actual Start	Actual Finish/ Submittal Date	Rev. No

Appendix L

KPI of Documents (Nb. of Docs Per Manhour) Form

NEOM نيوم

NEOM-NEN-PRC-024_FRM12

KPI OF DOCUMENTS (NB OF DOCS PER MANHOUR)

Contract Number:		Originator:	
Project/Asset Name:		Date:	
Filled by:		Submitted to:	

NEOM نيوم

Discipline	Stage	Man-Hours		Number of Docs.		Total Budgetted Cum. Man-Hours	Total Actual Cum. Man-Hours	Total Planned Cum. Nb. Of Docs	Total Actual Cum. Nb. Of Docs	Planned KPI Rate (in Nb of Doc./MHr)	Actual KPI Rate (in Nb of Doc./MHr)	Ratio = Actual KPI/ Planned KPI
		Budgetted Man-hours	Actual Cumulative Man-hours (Up to ----)	Planned or Estimated Number of Docs.	Actual Cumulative Number of Docs.							