

# PLANNING PLAYBOOK – SOLAR POWER PROJECT

**Comprehensive Planning Guide for Solar Project Execution**



Part 1/6 | Playbook Series for Project Nav Saksham  
*Developed for Torrent Power*

Revision	Date	Purpose of Issue	Prepared by	Reviewed by	Approved by

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## Abstract

This playbook is a comprehensive guide to the Planning of solar projects at Torrent Power. Its primary objective is to standardize, streamline, and optimize the Planning process, ensuring continued execution excellence as the organization scale up the RE. The playbook brings a structured approach to each stage of the RE project from a Planning point of view (from the development of Final L1 Plan during the bid submission to finalization of detailed Plans and their subsequent revisions)

Each chapter outlines clear process steps, process maps, RACI matrices, and KPIs to further streamline operations, ensuring consistency and efficiency across projects. By establishing standardized operating procedures (SoPs) and integrating best practices, this playbook will support Torrent Power in scaling its solar projects more effectively, while maintaining high standards of quality and performance.

## Objectives

- **Establish a Standardized Approach** – Provide a unified, repeatable methodology for Planning function, ensuring consistency across all solar projects
- **Streamline Planning Processes** – Optimize the Planning stages through well-defined steps and roles, ensuring efficient project execution
- **Monitor and Improve Performance** – Track and analyze performance using KPIs and RACI matrices, identifying bottlenecks and improving accountability
- **Support Scalable Growth** – Facilitate the growth of Torrent Power's solar projects by creating a robust Planning process, that can aid scale enhancement with increasing project portfolio complexity
- **Enhance Collaboration** – Foster improved communication and decision-making by clearly defining processes and expectations for all stakeholders involved

## Scope

This playbook outlines the structured approach to Planning solar projects at Torrent Power. The scope includes:

- **Process Steps** – Detailed guidelines for each phase of the Planning process, from initial bid submission through to final Plan development and its subsequent revisions. This ensures that all Planning activities are consistent, systematic, and aligned with the overall project goals.
- **Process Maps** – Visual representations of the key workflows and steps involved in the Planning stages. These maps help to clarify the sequence of activities, decision points, and dependencies, facilitating seamless understanding of cross-team collaboration.
- **KPIs** – Clearly defined metrics for tracking team performance throughout the Planning stages. These KPIs facilitate efficient monitoring and help identify potential bottlenecks, ensuring timely intervention to optimize project flow.
- **RACI** – Clear RACI matrices that define roles and responsibilities for each step of the Planning process. This ensures accountability and transparency, clarifying who is responsible for each task and who needs to be consulted or informed at each step.

This playbook serves as the foundation for establishing consistent and efficient Planning practices, supporting the successful execution of future solar projects at Torrent Power.

## Coverage

The document covers planning process throughout project's lifecycle. It is structured as follows –

- **Chapter 1 - Plan integration management** – Planning for project phases from the development of Final L1 Plan during the bid submission to finalization of detailed Plans and their subsequent revisions

- 1.1 - Project Plan preparation during bidding
- 1.2 - Project schedule and execution approach
- 1.3 - Land finalization Plan
- 1.4 - Engineering Plan
- 1.5 - Procurement Plan
- 1.6 - Construction Plan
- 1.7 - Commissioning Plan
- 1.8 - Plan Integration
- 1.9 - Plan update
- **Chapter 2 - Scope Management Plan** – Create Work Breakdown Structure (WBS) for the project by ensuring alignment with the project scope, schedule, and control philosophy, to facilitate effective monitoring, coordination, and execution of the project.
- **Chapter 3 - Cost Management Plan** – Develop Cost Breakdown Structure (CBS) by aligning it with the WBS, project budget, and scope, ensuring accurate cost estimation, monitoring, and control.
- **Chapter 4 - Quality Management Plan** – Establish the Project Quality Management Plan (PQMP) by defining quality standards, roles, timelines, and control measures, ensuring consistent quality oversight and compliance
- **Chapter 5 - Statutory Approval Management Plan** – Draft the Statutory Approval Management Plan (SAMP) by identifying the required approvals, along with their prerequisites, costs, and risks. Create a clear action Plan and designate Points of Contact (PoC) to ensure timely statutory approvals.
- **Chapter 6 - Risk Management Plan** – Create Risk Management Plan (RMP) by identifying, assessing, and mitigating risks, and ensuring regular updates to the Risk Register throughout the project lifecycle

## Who is this playbook for?

- **Plan Preparation**
  - **Planning Team** – Teams directly responsible for the development of project Plans. It provides a structured approach to Planning, ensuring consistency and clarity in Planning function throughout the entire project lifecycle
  - **Cross-Functional Teams** – Departments involved in the Planning process, such as engineering, procurement, and project team. The playbook helps align each team's contributions, clarifies roles and responsibilities through RACI, and ensures seamless coordination during the Planning stages.
- **Plan Monitoring**
  - **Project Team** – Teams overseeing project progress during the execution phase, ensuring alignment with the Planned objectives. The playbook also provides a comprehensive list of KPIs to be monitored, enabling rigorous progress tracking.

# Chapter 1 - Plan Integration Management

This section covers Planning for project phases from RFP participation to conceptualization up to execution & delivery

## Section 1.1 – Project Plan Preparation During Bidding

### 1.1.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	– Bid Incharge <sup>1</sup> appoints Bid Planner <sup>2</sup> (BP) and shares the Bid Summary <sup>3</sup> with BP for the development of Final L1 Plan					-
<b>P1</b>	– BP analyses the Bid Summary and develops the delivery milestones and timeline for the project	<b>I1</b>	Bid Summary	<b>O1</b>	Delivery Milestones & Timeline (Template Provided)	1
<b>P2</b>	– BP develops the Preliminary L1 Plan by updating the Solar Project Master Plan to meet the delivery milestones and timelines for the project	<b>I2</b>	Solar Project Master Plan	<b>O2</b>	Preliminary L1 Plan	
<b>P3</b>	– BP updates the Preliminary L1 Plan based on the Preliminary (or Detailed) Feasibility Report <sup>4</sup> shared by the Land Team to draft the Final L1 Plan	<b>I3</b>	PFR/ DFR			1
<b>P4</b>	– BP shares the Final L1 Plan with functional leads <sup>5</sup> for inputs					2
<b>P5</b>	– BP evaluates feedback from the functional teams and incorporates necessary modifications to the Final L1 Plan					
<b>P6</b>	– BP shares the Final L1 Plan for sign off by the functional leads <sup>4</sup>					1
<b>P7</b>	– BP seeks review and approval on the Final L1 Plan from COO	<b>I4</b>	Final L1 Plan			1

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

<sup>1</sup> Bid incharge is responsible for overseeing end to end bid submission.

<sup>2</sup> Bid Planner, from the Bidding Team, creates Final L1 Plans for bid submission.

<sup>3</sup> Bid Summary captures all relevant details from the tender document.

<sup>4</sup> Considerations for creating preliminary feasibility report are detailed in Pre-Development Playbook.

<sup>5</sup> Functional Leads include leads from Land, Engineering, Commercial, Regulatory and Project Team

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
P8	– BP incorporates any changes recommended by COO in the final L1 Plan			O3	Final L1 Plan (Template Provided)	1
E	– BP shares the Final L1 Plan with Bid Incharge for bid submission					<b>Total –</b> 7 – 8 days
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						



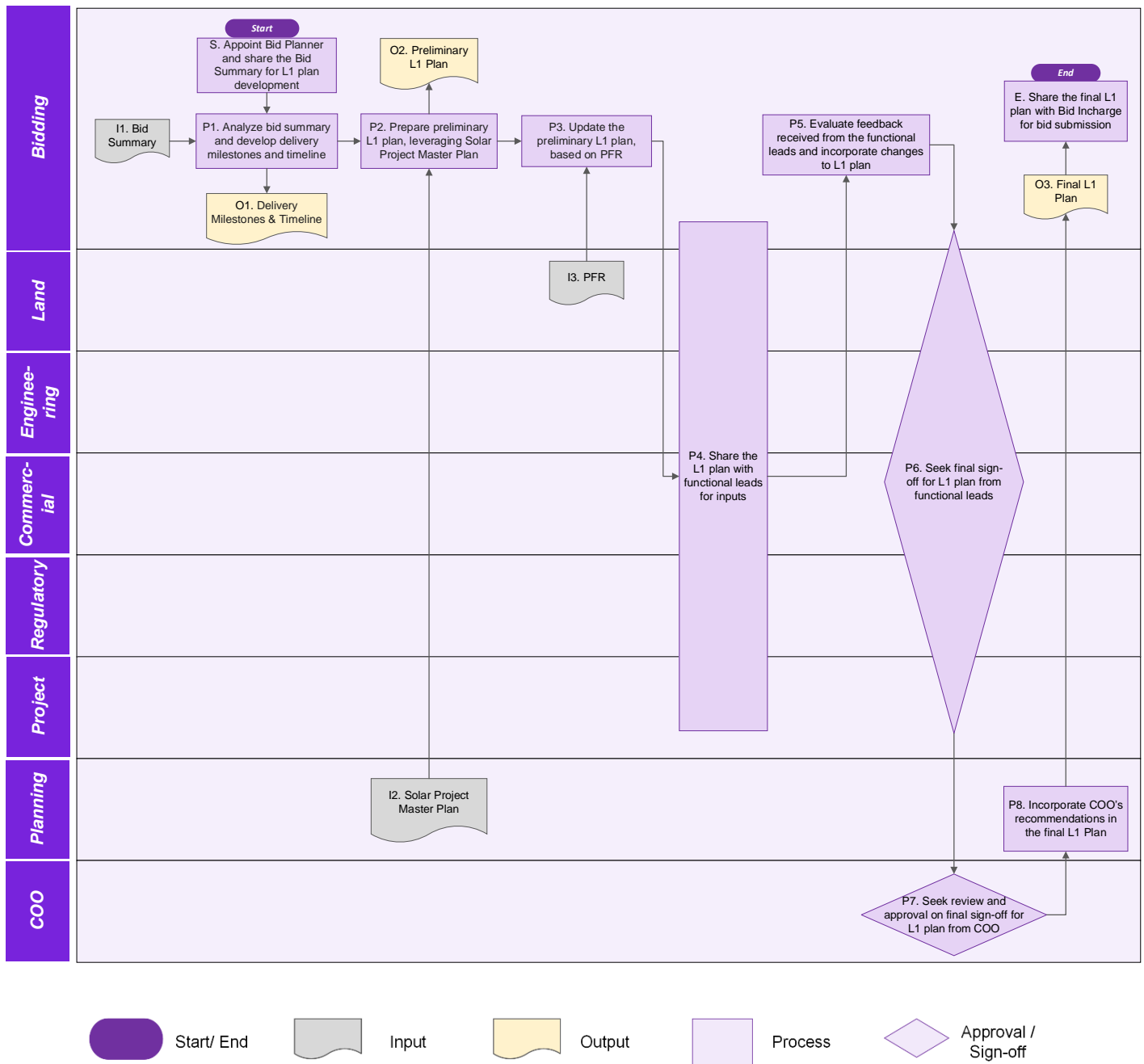
### 1.1.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Appoint Bid Planner (BP) and share the Bid Summary for Final L1 Plan development	Bid Incharge	Bid Incharge		Bid Planner
<b>P1</b>	Analyze bid summary and develops delivery milestones and timeline for the project	Bid Planner	Bid Incharge		
<b>P2</b>	Prepare Preliminary L1 Plan by leveraging the Solar Project Master Plan and modifying it to align with project requirements	Bid Planner	Bid Incharge		
<b>P3</b>	Update the Preliminary L1 Plan based on the Preliminary (Detailed) Feasibility Report <sup>1</sup> to draft the Final L1 Plan	Bid Planner		Land Manager	
<b>P4</b>	Share the Final L1 Plan with functional leads <sup>2</sup> for inputs	Bid Planner		Functional Leads	
<b>P5</b>	Evaluate feedback from the functional leads and incorporate changes to Final L1 Plan	Bid Planner			
<b>P6</b>	Seek sign-off for Final L1 Plan from functional leads	Bid Planner	Bid Incharge	Functional Leads	
<b>P7</b>	Seek review and approval on the Final L1 Plan from COO	Bid Planner	Bid Planner	COO	
<b>P8</b>	Incorporate COO's recommendations in the final L1 Plan	Bid Planner	Bid Planner		
<b>E</b>	Share the Final L1 Plan with Bid Incharge for bid submission	Bid Planner			Bid Incharge
<b>KEY - S: Start   P: Process Steps   E: End</b>					

<sup>1</sup> Considerations for creating preliminary feasibility report are detailed in Pre-Development Playbook.

<sup>2</sup> Functional Leads include leads from Land, Engineering, Commercial, Regulatory and Project Team

### 1.1.3 Process Maps



<sup>1</sup> **Map Glossary** – BP: Bid Planner | PFR: Preliminary Feasibility Report

1.1.4 Templates for Input/ Output

1. Delivery Milestones & Timeline

Milestone #	Milestone Description	Deliverable	Owner	Start Date	End Date	Duration (Weeks)	Status

2. Final L1 Plan

Activity #	Key Task	Deliverable	Owner	Start Date	End Date	Duration (Weeks)

<sup>1</sup> **Map Glossary** – BP: Bid Planner | PFR: Preliminary Feasibility Report

## Section 1.2 – Project Schedule and Execution Approach

### 1.2.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	– The Bid Incharge notifies the Chief Projects about any bid being won					-
<b>P1</b>	– Chief Projects designates a Project Planner (PP) and Project Manager (PM) for the project					1
<b>P2</b>	– Bid Incharge shares the Final L1 Plan and Final Bid Report <sup>1</sup> (FBR) with Chief Projects					-
<b>P3</b>	– Chief Projects shares the Final L1 Plan and Final Bid Report with Project Planner and Project Manager, to initiate the development of the Project Schedule (PS) and Project Execution Approach (PEA) respectively	<b>I1</b>	Final L1 Plan			-
		<b>I2</b>	FBR			
<b>P4A</b>	<ul style="list-style-type: none"> <li>– Project Planner prepares the preliminary Project Schedule by leveraging the Solar Project Master Plan and modifying it to align with project requirements</li> <li>– To understand project requirements, Project Planner and Project Manager analyze key milestones, critical timelines, land availability, and other details by reviewing the Final L1 Plan and Final Bid Report</li> <li>– The project timeline is broken down into specific tasks with start and end dates, along with intermediate deadlines for key deliverables.</li> <li>– Each phase is detailed to account for task dependencies, and critical path activities.</li> <li>– The Plan includes float for potential risks or delays</li> </ul> <p><i>PS must align with the L1 schedule submitted during bid stage. Any deviations must be communicated by the Project Planner to the Project Manager for review and necessary action</i></p>	<b>I3</b>	Solar Project Master Plan	<b>O1</b>	Preliminary PS	2 (P4A and P4B to occur parallelly)
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						

<sup>1</sup> Final Bid Report (FBR) is a comprehensive document prepared at the end of the bidding process, summarizing all the key details, findings, early risks identified, assumptions taken during bid submission, high level budget details, and outcomes related to a project's bid submission

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
P4B	<ul style="list-style-type: none"> <li>Project Manager leverages the Final Bid Report<sup>1</sup> to develop Project Execution Approach<sup>2</sup>, which provides a high-level overview of the entire project               <ul style="list-style-type: none"> <li>Scope of the project (scope matrix)</li> <li>Land availability and high-level requirements, specifying the type, size, and amount of land needed; if land parcel has already been identified for the project, details of the land parcel to also be a part of PEA <i>(in consultation with Land Team)</i></li> <li>Budgeting, including the value engineering target, to optimize cost-efficiency without compromising quality <i>(in consultation with Commercial Team and Engineering Team)</i></li> <li>Regulatory compliance requirements, necessary permits, environmental considerations, and safety regulations <i>(in consultation with Regulatory Team)</i></li> </ul> </li> </ul>			O2	Scope Matrix <i>(Template Provided)</i>	2  <i>(P4A and P4B to occur parallelly)</i>
P5	<ul style="list-style-type: none"> <li>Project Planner reviews Project Schedule with Project Manager to ensure alignment. Any modifications identified during this review are incorporated. <i>In case of any discrepancies between Project Manager and Project Planner, the Project Manager takes the final decision</i></li> </ul>					1
P6	<ul style="list-style-type: none"> <li>Project Planner and Project Manager circulate Project Schedule and Project Execution Approach respectively to functional leads<sup>3</sup> for review, to seek alignment and address potential conflicts or gaps at an early stage</li> </ul>					2
P7A	<ul style="list-style-type: none"> <li>Project Planner, in consultation with Project Manager, assesses the feedback received from functional leads and adjusts the Project Schedule</li> </ul>					2  <i>(P7A and P7B to occur parallelly)</i>

**KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks**

<sup>1</sup> FBR consolidates critical details from bidding stage (incl. budget details, risk assessment, and cost sheets), serving as a key input for PEA preparation

<sup>2</sup> Project Execution Approach is to be prepared without disclosing any confidential information

<sup>3</sup> Functional Leads include Engineering, Commercial, Project, Land and Regulatory

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P7B</b>	– Project Manager incorporates necessary changes in Project Execution Approach			<b>O3</b>	PEA (includes scope matrix) (Template Provided)	2 (P7A and P7B to occur parallelly)
<b>P8</b>	– Project Planner seeks sign-off on Project Schedule from functional leads			<b>O4</b>	PS (Template Provided)	1
<b>E</b>	– Project Planner retains finalized Project Schedule, and – Project Manager shares Project Execution Approach with Project Planner for future cross-functional <sup>1</sup> coordination					<b>Total – 9 – 11 days</b>

**KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks**

## 1.2.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Notify Chief Projects about any bid being won	Bid Incharge			Chief Projects
<b>P1</b>	Designate Project Planner (PP) and Project Manager (PM) for the project	Chief Projects	Chief Projects		Project Planner & Project Manager
<b>P2</b>	Share Final L1 Plan and Final Bid Report with Chief Projects	Bid Incharge			Chief Projects
<b>P3</b>	Share Final L1 Plan and Final Bid Report with Project Planner and Project Manager	Chief Projects			Project Planner & Project Manager
<b>P4A</b>	Prepare the draft Project Schedule (PS), leveraging the Solar Project Master Plan and insights from Final L1 Plan and Final Bid Report	Project Planner			Chief Projects
<b>P4B</b>	Develop Project Execution Approach (PEA) leveraging Final Bid Report	Project Manager		Chief Land Officer, Chief Procurement, Chief Regulatory and Chief Engineering	Chief Projects
<b>P5</b>	Review Project Schedule with Project Manager for alignment	Project Planner		Project Manager	
<b>P6</b>	Circulate Project Schedule and Project Execution Approach with functional leads <sup>1</sup> for review	Project Planner, Project Manager		Functional Leads	Chief Projects
<b>P7A</b>	Assess feedback from functional leads and adjust Project Schedule accordingly	Project Planner		Project Manager	
<b>KEY - S: Start   P: Process Steps   E: End</b>					

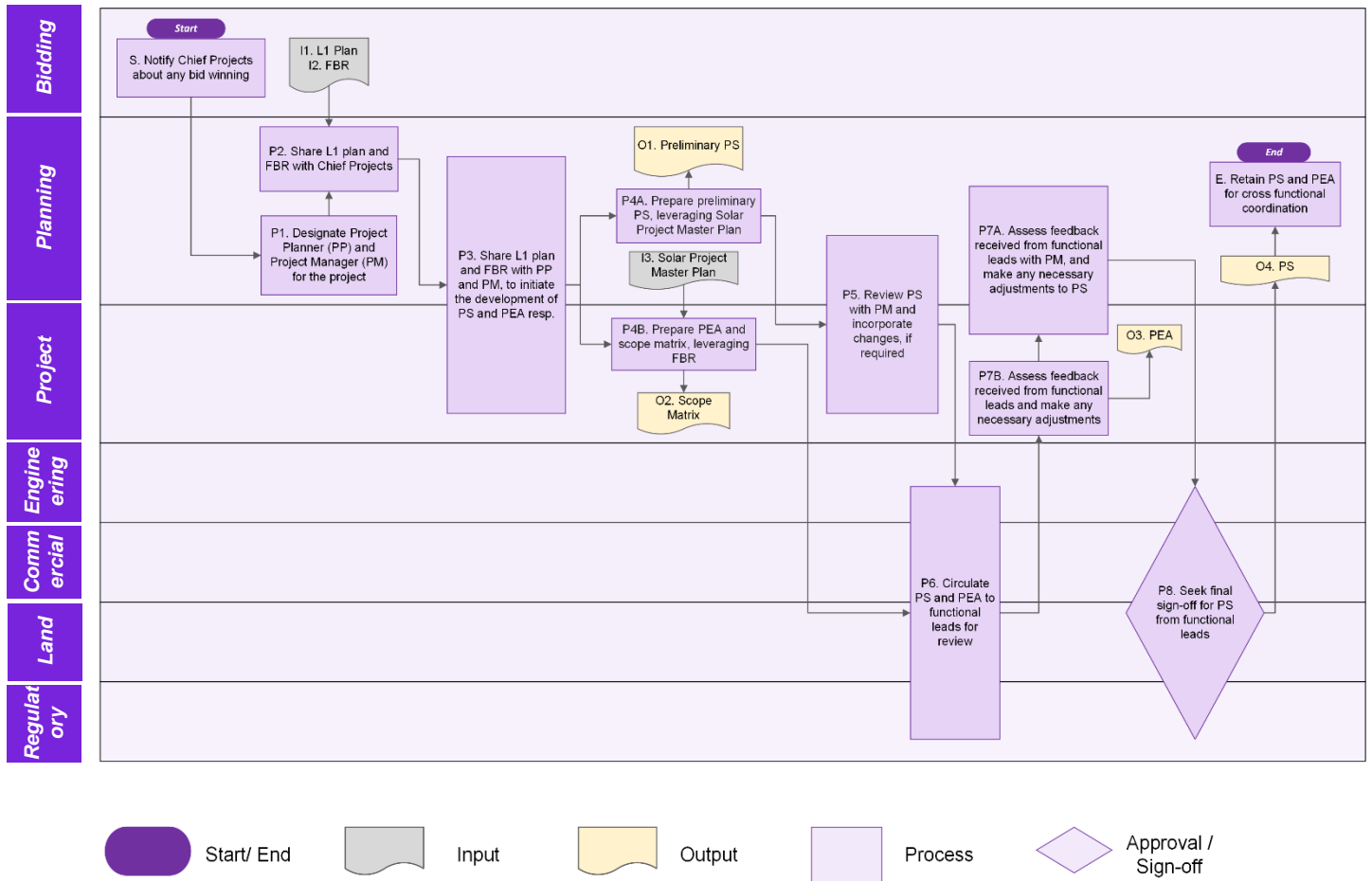
<sup>1</sup> Functional Leads include Engineering, Commercial, Project, Land and Regulatory

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>P7B</b>	Assess feedback from functional leads and finalize Project Execution Approach	Project Manager	Chief Projects		
<b>P8</b>	Seek sign-off on Project Schedule from functional leads to finalize it	Project Planner	Chief Projects	Functional Leads1	
<b>E</b>	Retain the finalized Project Schedule and Project Execution Approach for future cross-functional coordination in future	Project Planner		Project Manager	

KEY - S: Start | P: Process Steps | E: End



## 1.2.3 Process Maps



<sup>1</sup> **Map Glossary** - FBR: Final Bid Report | L1: Level 1 | PEA: Project Execution Approach | PM: Project Manager | PP: Project Planner | PS: Project Schedule

## 1.2.4 – Templates for Input/ Output

### 1. Scope Matrix

Work Package / Functional Area	Sub-component / Deliverable	In Scope	Owner	Remarks / Assumptions
Civil Works	Foundations	Yes	Projects	Incl. piling if soil requires
	Internal Roads	No	Projects	
	Drainage	To be confirmed	Projects	
	Control Room Building	Yes	Projects	
Electrical System				
SCADA & Communication...				

### 2. Project Schedule

Activity #	Key Task	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

### 3. Project Execution Approach

S. No	Section	Details	Owner	Remarks
1.	Project Details (generation target, technology, geography etc.)			
2.	Project Scope Summary			
3.	Execution Strategy			
4.	Land Availability			
5.	Budget Summary			
6.	Deliverable milestones			
7.	Statutory approval requirements			
8.	Early Risk Assessment			
9.	...			
10.	...			

## Section 1.3 – Land Finalization Plan

*Plan to be created only if Land Parcel hasn't already been leased yet*

### 1.3.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	– Project Planner (PP) shares the Final Bid Report (FBR), Project Schedule (PS) and Project Execution Approach (PEA) with Land Team, and requests for Land Finalization Plan (LFP)					-
<b>P1</b>	– Chief Land Officer appoints Land Manager (LM) on the project, for the development of LFP <i>Preferably appoints the same Land Manager who handled land identification during bid submission</i>					1
<b>P2</b>	– Chief Land Officer shares the inputs (Final Bid Report, Project Schedule and Project Execution Approach) received with appointed LM	<b>I1</b>	FBR			-
		<b>I2</b>	PS			
		<b>I3</b>	PEA (includes scope matrix)			
<b>P3</b>	– LM prepares the draft Land Finalization Plan by leveraging the Solar Project Master Plan and modifying it to align with project requirements – LM reviews Final Bid Report, Project Schedule and Project Execution Approach to evaluate detailed land requirement and timeline – Land Finalization Plan outlines process steps, timelines, milestones, and Point of Contact (PoC) responsible for each phase of land finalization <sup>1</sup> <i>Timelines of LFP must align with Project Schedule. Any deviations must be communicated by the Land Manager to the Project Manager for review and necessary action</i>	<b>I4</b>	Solar Project Master Plan	<b>O1</b>	Preliminary LFP	1

**KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks**

<sup>1</sup> Phases of the land finalization process include land vendors empanelment, land identification, pre-assessment of identified land parcel, creating preliminary feasibility report (PFR), shortlisting suitable land parcel based on PFR, creating detailed feasibility report, land finalization, securing land and verifying ownership, obtaining necessary permits and approvals, executing legal requirements, finalizing land takeover, ensuring complete documentation, and formalizing acquisition/lease agreement.

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P4</b>	– LM shares the LFP with Chief Land Officer for review and approval ( <i>approval via formal sign-off</i> )					1
<b>P5</b>	– If changes are required, LM incorporates the feedback and reshares for approval – If no changes are required, LM finalizes the Land Finalization Plan			<b>O2</b>	LFP ( <i>Template Provided</i> )	
<b>E</b>	– LM communicates the finalized LFP post approval to Project Planner for cross-team coordination					<b>Total –</b> 3 – 4 days

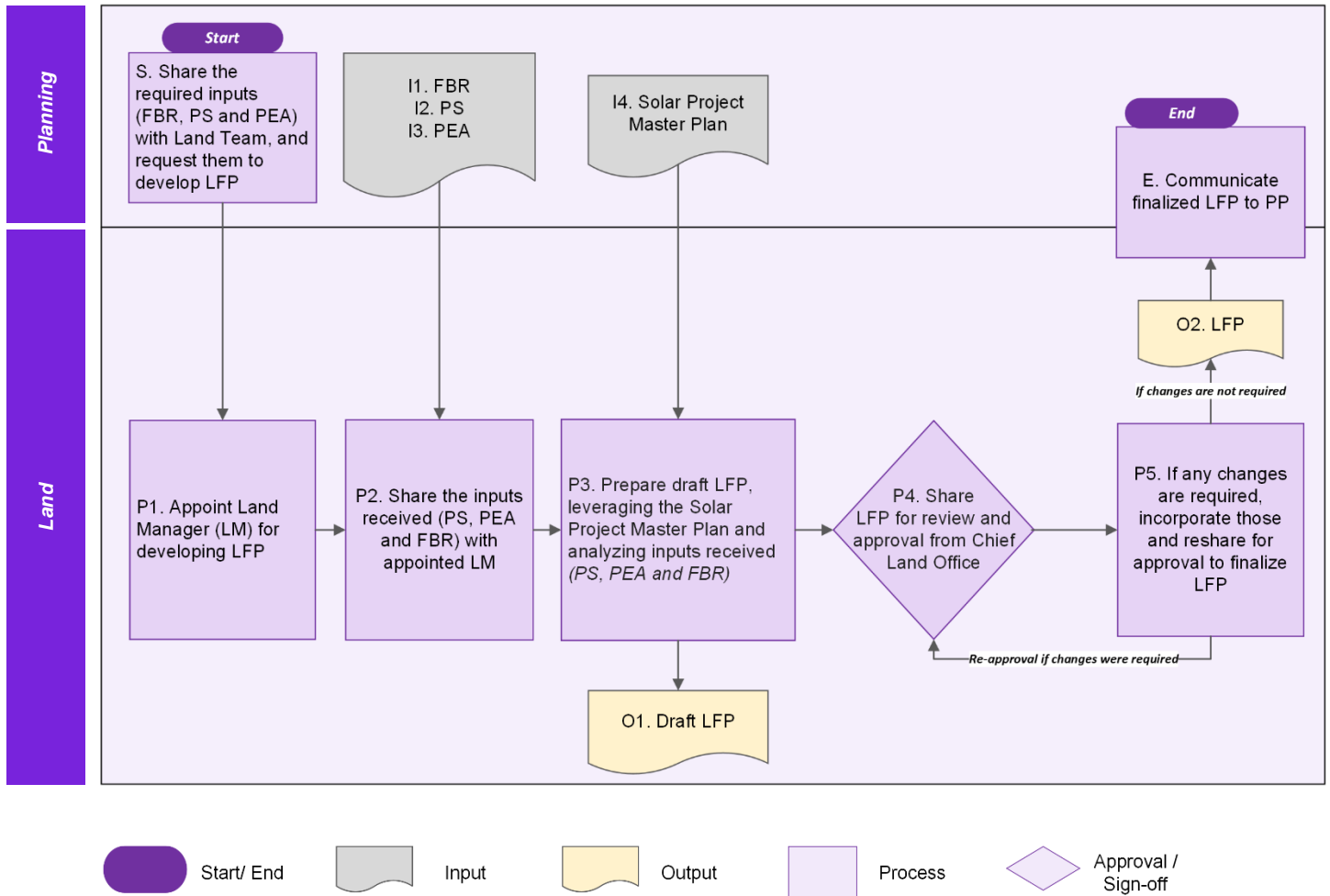
KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

### 1.3.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share Final Bid Report (FBR), Project Schedule (PS) and Project Execution Approach (PEA) with Land Team	Project Planner			Chief Land Officer
<b>P1</b>	Appoint Land Manager (LM) for development of Land Finalization Plan (LFP)	Chief Land Officer			Land Manager
<b>P2</b>	Share inputs (Final Bid Report, Project Schedule and Project Execution Approach) received with appointed LM	Chief Land Officer			Land Manager
<b>P3</b>	Prepare draft Land Finalization Plan (LFP) by leveraging the Solar Project Master Plan and inputs received in P2	Land Manager			Chief Land Officer
<b>P4</b>	Share Land Finalization Plan with Chief Land Officer for review and approval ( <i>approval via formal sign-off</i> )	Land Manager			Chief Land Officer
<b>P5</b>	Incorporate feedback and reshare for approval, if changes are required	Land Manager		Chief Land Officer	
<b>E</b>	Communicate finalized Land Finalization Plan to Project Planner for cross-team coordination	Land Manager			Project Planner

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

### 1.3.3 Process Maps



<sup>1</sup> **Map Glossary** - FBR: Final Bid Report | LFP: Land Finalization Report | LM: Land Manager | PEA: Project Execution Approach | PP: Project Planner | PS: Project Schedule

1.3.4 Templates for Input/ Output

1. Land Finalization Plan

Activity #	Key Task	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

## Section 1.4 – Engineering Plan

### 1.4.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) shares the following with the engineering team, and requests for Engineering Execution Plans (EEPs) <ul style="list-style-type: none"> <li>Project Schedule (PS) and</li> <li>Project Execution Approach (PEA)</li> </ul> </li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>Solar Engineering Head appoints Project Engineering Managers (PEMs) for the project <ul style="list-style-type: none"> <li>PEMs can manage multiple projects simultaneously</li> <li>PEMs are appointed separately for civil, electrical and plant design</li> </ul> </li> </ul>					1
<b>P2</b>	<ul style="list-style-type: none"> <li>Solar Engineering Head shares the inputs received (Project Schedule and Project Execution Approach) with PEMs</li> </ul>	<b>I1</b>	PS			-
		<b>I2</b>	PEA (includes scope matrix)			
<b>P3</b>	<ul style="list-style-type: none"> <li>PEMs, in collaboration with respective Quality Managers<sup>1</sup> (QM), define the standard quality requirements to be implemented on the project (as detailed in quality management Plan) <ul style="list-style-type: none"> <li>These requirements are established in alignment with industry standards and the value engineering targets<sup>2</sup></li> </ul> </li> </ul>			<b>O1</b>	Project Quality Requirements (Template Provided)	1
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						

<sup>1</sup> Quality standard for mechanical, civil, electrical and HSSE to be aligned with Mechanical Quality Head, Civil Quality Head, Electrical Quality Head and HSSE Quality Head respectively. Incase there are no separate heads, everyone to report to Chief QHSSE

<sup>2</sup> Value Engineering Target is covered in Project Execution Approach. The target is aligned with Commercial Team during cross functional review.



#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P4</b>	<ul style="list-style-type: none"> <li>PEMs prepare the Basic Engineering Scope (BES), which is a list of all engineering deliverables to be executed throughout the project, along with its associated timelines</li> <li>PEMs review Project Schedule and Project Execution Approach (including scope matrix) to identify engineering-related project requirements and timelines</li> <li>Based on this review, PEM lists all engineering deliverables for the project</li> <li>PEMs assess the criticality of each engineering deliverable and prioritize them according to the project's critical path to ensure alignment with the overall project timeline</li> </ul>			<b>O2</b>	BES (Template Provided)	1
<b>P5</b>	<ul style="list-style-type: none"> <li>PEMs develop Engineering Execution Plans (EEPs) by modifying the Solar Project Master Plan to align it with project requirements and timelines, as identified in BES</li> <li>EEPs cover engineering milestones and timelines, and execution strategy for all engineering design-related activities</li> <li>EEPs are drafted separately for civil, electrical and Plant design</li> <li>EEPs are developed in consultation and alignment with Owner's Engineer and EPC Contractor</li> </ul> <p><i>Timelines of EEPs must align with Project Schedule. Any deviations must be communicated by PEM to the Project Manager for review and necessary action</i></p>	<b>I3</b>	BES	<b>O3</b>	Draft EEPs	1
		<b>I4</b>	Solar Project Master Plan			
<b>P6</b>	PEMs share EEPs with Solar Engineering Head for review and approval ( <i>approval via formal sign-off</i> )					1
<b>P7</b>	<ul style="list-style-type: none"> <li>If changes are required, PEMs incorporate the feedback and reshapes for approval</li> <li>If no changes are required, PEMs finalize the EEPs</li> </ul>			<b>O4</b>	EEPs (Template Provided)	
<b>P8</b>	PEMs seek further approval from Chief Engineering ( <i>approval via formal sign-off</i> ) <i>Required only for projects &gt; 50 MW capacity</i>					1

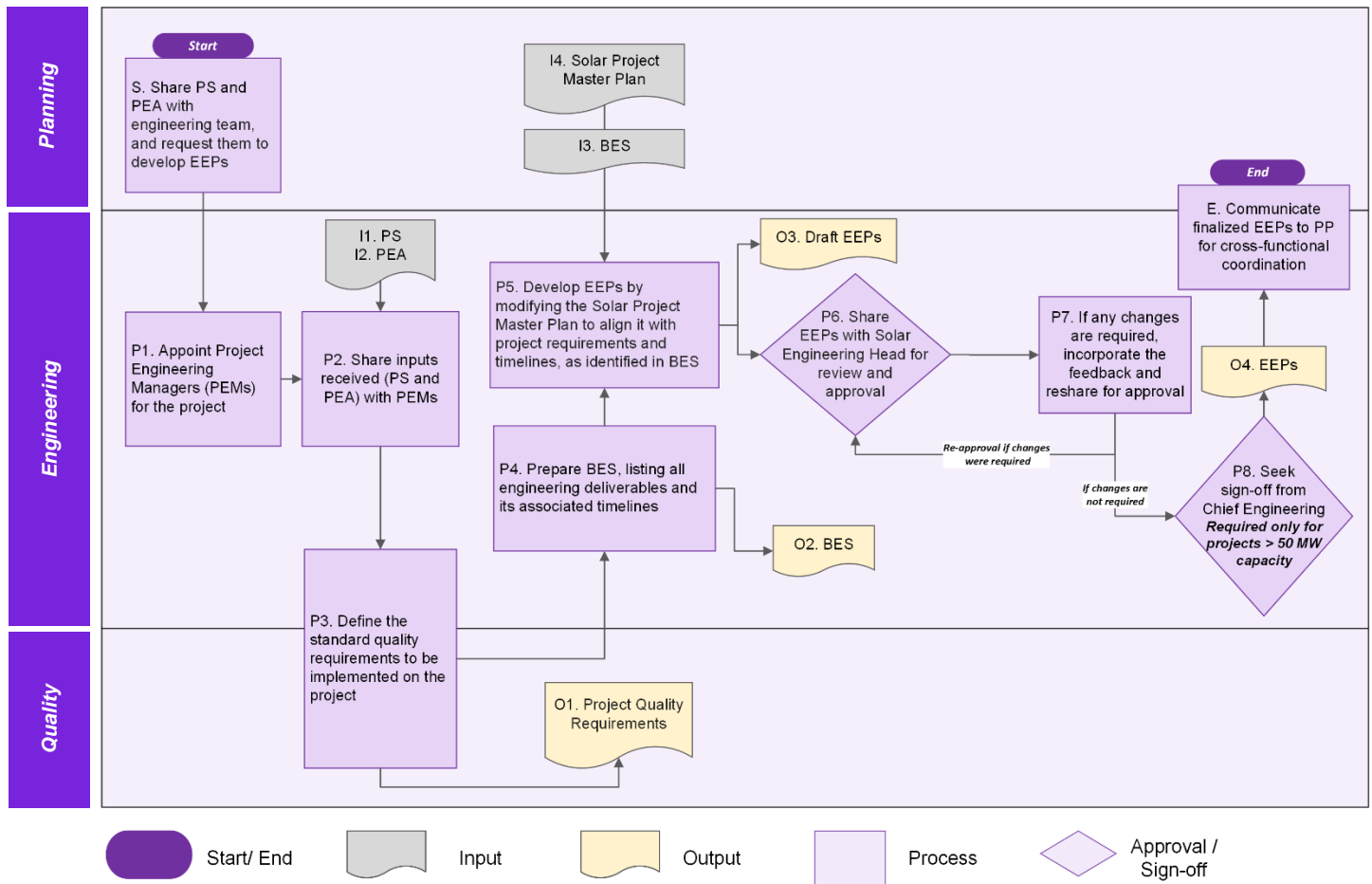
KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
E	– PEMs share EEPs with Project Planner for cross-functional coordination					<b>Total –</b> 6 – 8 days
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

## 1.4.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share Project Schedule (PS) and Project Execution Approach (PEA) with engineering team, and requests for Engineering Execution Plans (EEPs)	Project Planner			Solar Engineering Head
<b>P1</b>	Appoint Project Engineering Managers (PEMs) for the project	Solar Engineering Head			PEMs
<b>P2</b>	Share inputs received (Project Schedule and Project Execution Approach) with PEMs	Solar Engineering Head			PEMs
<b>P3</b>	Define standard quality requirements to be implemented on the project	PEMs		Quality Managers	
<b>P4</b>	Prepare the Basic Engineering Scope (BES) to list all engineering deliverables for the project, leveraging Project Schedule and Project Execution Approach	PEMs	PEMs		Solar Engineering Head
<b>P5</b>	Prepare the draft EEPs by leveraging the Solar Project Master Plan and aligning it with project requirements	PEMs	Solar Engineering Head		
<b>P6</b>	Seek approval from Solar Engineering Head for EEPs	PEMs		Solar Engineering Head	
<b>P7</b>	Incorporate feedback and reshare for approval, if changes are required	PEMs		Solar Engineering Head	
<b>P8</b>	Seek further approval from Chief Engineering <i>(Required only for projects &gt; 50 MW capacity)</i>	PEMs	Solar Engineering Head	Chief Engineering	
<b>E</b>	Circulate finalized EEPs with Project Planner	PEMs			Project Planner
<b>KEY - S: Start   P: Process Steps   E: End</b>					

### 1.4.3 Process Maps



**1 Map Glossary** - BES: Basic Engineering Scope | EEP: Engineering Execution Plan | PEM: Project Engineering Manager | PEA: Project Execution Approach | PP: Project Planner | PS: Project Schedule

## 1.4.4 Templates for Input/ Output

### 1. Project Quality Requirement

Discipline / Area	Requirement Type	Quality Requirement / Standard	Applicable Standards / Guidelines	Remarks / Notes
Civil	Foundation Design	Design Compliance	Civil designs to be in line with IS ---, IS ----- and relevant site geotechnical data	IS ---, IS -----
Electrical				
Plant Design				

### 2. Basic Engineering Scope –

Activity #	Key Task	Start Date	End Date	Duration (Weeks)

### 3. Engineering Execution Plan *(To be drafted separately for Civil, Electrical and Plant Design)*

Activity #	Key Task	Execution Strategy (inhouse / outsource)	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

## Section 1.5 – Procurement Plan

### 1.5.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) requests the procurement team for Project Procurement Plan and shares the following to Solar Procurement Head (SPH) – <ul style="list-style-type: none"> <li>Project Schedule (PS),</li> <li>Project Execution Approach (PEA), and</li> <li>Engineering Execution Plans (EEPs) <i>as they are progressively prepared, enabling procurement Planning to commence concurrently</i></li> </ul> </li> <li>Chief Procurement appoints Solar Procurement Head (SPH) to oversee the preparation of Project Procurement Plan and shares the inputs received</li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>SPH reviews the Project Schedule, Project Execution Approach and Engineering Execution Plans to identify the items for procurement, technical requirements and timelines across the project lifecycle <ul style="list-style-type: none"> <li>Items to be procured encompass materials, components and services</li> </ul> </li> </ul> <i>If needed, SPH seeks clarifications from Project Engineering Managers</i>	<b>I1</b>	PS	<b>O1</b>	Procurement Requirement List (Template Provided)	1
		<b>I2</b>	PEA (includes scope matrix)			
		<b>I3</b>	EEPs			
<b>P2</b>	<ul style="list-style-type: none"> <li>SPH designs the contracting packages for materials and services, leveraging Execution Strategy Framework (ESF) to identify the right package strategy for the project</li> <li>SPH may consult functional leads<sup>1</sup> in drafting the contracting packages for the project</li> </ul>	<b>I4</b>	ESF	<b>O2</b>	Procurement Package Strategy (draft)	0.5
<b>P3</b>	<ul style="list-style-type: none"> <li>SPH shares the package strategy with Functional Leads<sup>1</sup> for review and sign-off</li> </ul>	<b>I5</b>	Procurement Package Strategy (draft)			1
<b>P4</b>	<ul style="list-style-type: none"> <li>SPH incorporates any modifications suggested by Functional Leads<sup>1</sup></li> </ul>					1
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

<sup>1</sup> Functional Leads may include Land, Engineering, and Projects teams

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
P5	<ul style="list-style-type: none"> <li>SPH shares the package strategy with Chief procurement for review and approval (<i>approval via formal sign-off</i>)</li> </ul> <i>Required only for projects &gt; 50 MW capacity</i>					0.5
P6	<ul style="list-style-type: none"> <li>If required, SPH modifies the package strategy basis inputs from Chief Procurement and seeks re-approval to finalize the strategy</li> </ul>			O3	Procurement Package Strategy (Template Provided)	
P7	<ul style="list-style-type: none"> <li>SPH assigns the procurement packages to the respective Procurement Leads</li> <li>Procurement Leads further notify the vendors<sup>1</sup> about the procurement Plan</li> </ul>					-
P8	<ul style="list-style-type: none"> <li>Procurement Leads prepare their draft Procurement Schedules by modifying the Solar Project Master Plan based on inputs from:               <ul style="list-style-type: none"> <li>Analysis of items to be procured and timelines in P1</li> <li>Inputs from vendors</li> </ul> </li> </ul> <i>Further refinements to the draft Plan are made based on subsequent rounds of alignment with vendors</i>	I6	Solar Project Master Plan	O4	Draft Procurement Schedules	1
P9	<ul style="list-style-type: none"> <li>Procurement Leads share procurement schedule with SPH for review and approval (<i>approval via formal sign-off</i>)</li> </ul>					1
P10	<ul style="list-style-type: none"> <li>If SPH recommends changes to the procurement schedule, Procurement Leads incorporate the changes and reshare for approval</li> </ul>			O5	Procurement Schedules (Template Provided)	
P11	<ul style="list-style-type: none"> <li>SPH shares the finalized procurement schedules with Project Planner</li> </ul>					-
P12	<ul style="list-style-type: none"> <li>Project Planner compiles all the procurement schedules to create consolidated Project Procurement Plan (PPP) and shares it with SPH</li> </ul> <i>Timelines of PPP must align with Project Schedule. Any deviations must be communicated by Project Planner to the Project Manager for review and necessary action</i>	I7	Procurement Schedules			0.5

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks

<sup>1</sup> Vendors include EPC contractor and all suppliers that the procurement team needs to coordinate with for internal procurement

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P13</b>	– SPH seeks further approval for Project Procurement Plan from Chief Procurement <i>Required only for projects &gt; 50 MW capacity</i>			<b>O6</b>	Project Procurement Plan <i>(Template Provided)</i>	0.5
<b>E</b>	– SPH communicates finalized Project Procurement Plan to Project Planner for cross-functional coordination					<b>Total – 7 – 9 days</b>
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						

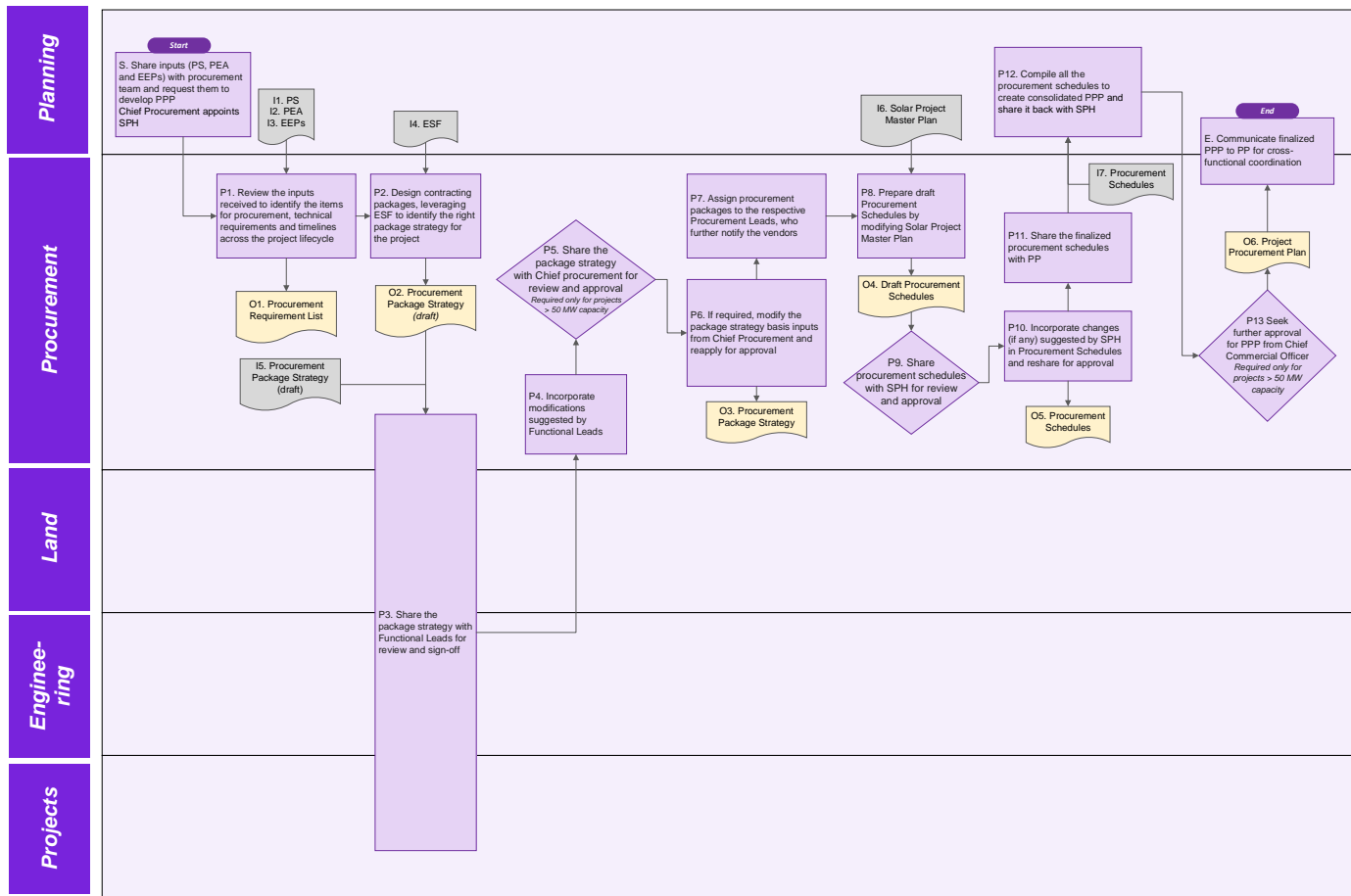


## 1.5.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Request the procurement team for procurement Plan and share Project Schedule (PS), Project Execution Approach (PEA), and Engineering Execution Plans (EEPs)	Project Planner			Chief Procurement
	Appoint Solar Procurement Head (SPH) for the project	Chief Procurement			Solar Procurement Head
<b>P1</b>	Review Project Schedule, Project Execution Approach, and Engineering Execution Plans to identify procurement items, requirements, and timelines <i>Seek clarifications from Project Engineering Managers if needed</i>	Solar Procurement Head		Project Engineering Managers	
<b>P2</b>	Leverage Execution Strategy Framework (ESF) to package procurement activities	Solar Procurement Head		Land Manager, Project Manager, Project Engineering Manager	
<b>P3</b>	Share the package strategy with Functional Leads for review and sign-off	Solar Procurement Head	Solar Procurement Head	Land Manager, Project Manager, Project Engineering Manager	
<b>P4</b>	Incorporate any modifications suggested by Functional Leads	Solar Procurement Head	Solar Procurement Head		
<b>P5</b>	Seek sign-off on procurement package allocation from Chief Procurement <i>Required only for projects &gt; 50 MW capacity</i>	Solar Procurement Head		Chief Procurement	
<b>P6</b>	Modify procurement package basis inputs from Chief Procurement, if required, and seek re-approval to finalize the strategy	Solar Procurement Head		Chief Procurement	
<b>KEY - S: Start   P: Process Steps   E: End</b>					

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>P7</b>	Assign procurement packages to respective Procurement Leads	Solar Procurement Head			Procurement Leads
	Notify EPC contractor about components to be procured by them	Procurement Leads			
<b>P8</b>	Prepare draft Procurement Schedule by leveraging the Solar Project Master Plan and aligning it with project requirements and timelines	Procurement Leads	Solar Procurement Head		
<b>P9</b>	Share procurement schedule with SPH for review and approval ( <i>approval via formal sign-off</i> )	Procurement Leads		Solar Procurement Head	
<b>P10</b>	Incorporate changes to procurement schedule based on SPH's review and reshare for approval	Procurement Leads		Solar Procurement Head	
<b>P11</b>	Share finalized procurement schedules with Project Planner	Solar Procurement Head			Project Planner
<b>P12</b>	Compile all procurement schedules to create consolidated Project Procurement Plan (PPP) and share it with SPH	Project Planner			Solar Procurement Head
<b>P13</b>	Seek further approval for PPP from Chief Procurement <i>Required only for projects &gt; 50 MW capacity</i>	Solar Procurement Head		Chief Procurement	Project Planner
<b>E</b>	Communicate final PPP to Project Planner for future cross functional coordination	Solar Procurement Head			Project Planner
<b>KEY - S: Start   P: Process Steps   E: End</b>					

## 1.5.3 Process Maps



<sup>1</sup> **Map Glossary** - EEP: Engineering Execution Plan | ESF: Execution Strategy Framework | PEA: Project Execution Approach | PP: Project Planner | PPP: Project Procurement Plan | PS: Project Schedule | SPH: Solar Procurement Head

## 1.5.4 Templates for Input/ Output

### 1. Procurement Requirement List

S. No.	Item Description	Category (Material / Component / Service)	Discipline (Civil / Electrical / Plant)	Specification / Technical Requirement	Quantity	Unit	Required at Site Date	Engineering Reference / Drawing No.
1								
2								
3								
4								

### 2. Procurement Package Strategy

S. No.	Package Name	Package Type (Material / Service )	Scope (items included in the package)	Linked Items (from Procurement List)	Discipline (Civil / Electrical / Plant)	Package Strategy (as per ESF)	Justification for Strategy
1							
2							
3							
4							

### 3. Procurement Schedule

S. No	Package Type (Materials / Services / Both)	Item	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

### 4. Project Procurement Plan *(Compilation of all Procurement Schedules)*

S. No	Package Type (Materials / Services / Both)	Item	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

## Section 1.6 – Construction Plan

### 1.6.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) shares the following schedules and Plans with Project Manager (PM) and requests the Construction Management Plan (CMP) –               <ul style="list-style-type: none"> <li>Project Schedule (PS),</li> <li>Project Execution Approach (PEA),</li> <li>Engineering Execution Plans (EEPs), and</li> <li>Project Procurement Plan (PPP)</li> <li>Statutory Approval Management Plan (SAMP)<sup>1</sup></li> </ul> </li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>Project Manager reviews the inputs received to identify –               <ul style="list-style-type: none"> <li>Timeline of activities impacting construction</li> <li>Constraints that may impact the construction – regulatory, financial, time-based, resource-based limitations.</li> </ul> </li> </ul>	<b>I1</b>	PS			0.5
		<b>I2</b>	PEA (includes scope matrix)			
		<b>I3</b>	EEPs			
		<b>I4</b>	PPP			
		<b>I5</b>	SAMP			
<b>P2</b>	<ul style="list-style-type: none"> <li>Project Manager prepares draft CMP by leveraging the Solar Project Master Plan and modifying it to align with project milestones, timelines and constraints as analyzed in P1.</li> <li>CMP includes activities, milestones and timelines for all construction related activities, including:               <ul style="list-style-type: none"> <li>Early Works Schedule (EWS)</li> <li>Mobilization Checklist</li> <li>Construction Schedule</li> <li>Logistics Planning</li> </ul> </li> </ul> <p><i>Timelines of CMP must align with Project Schedule.</i></p>	<b>I5</b>	Solar Project Master Plan	<b>O1</b>	Draft CMP	1
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						

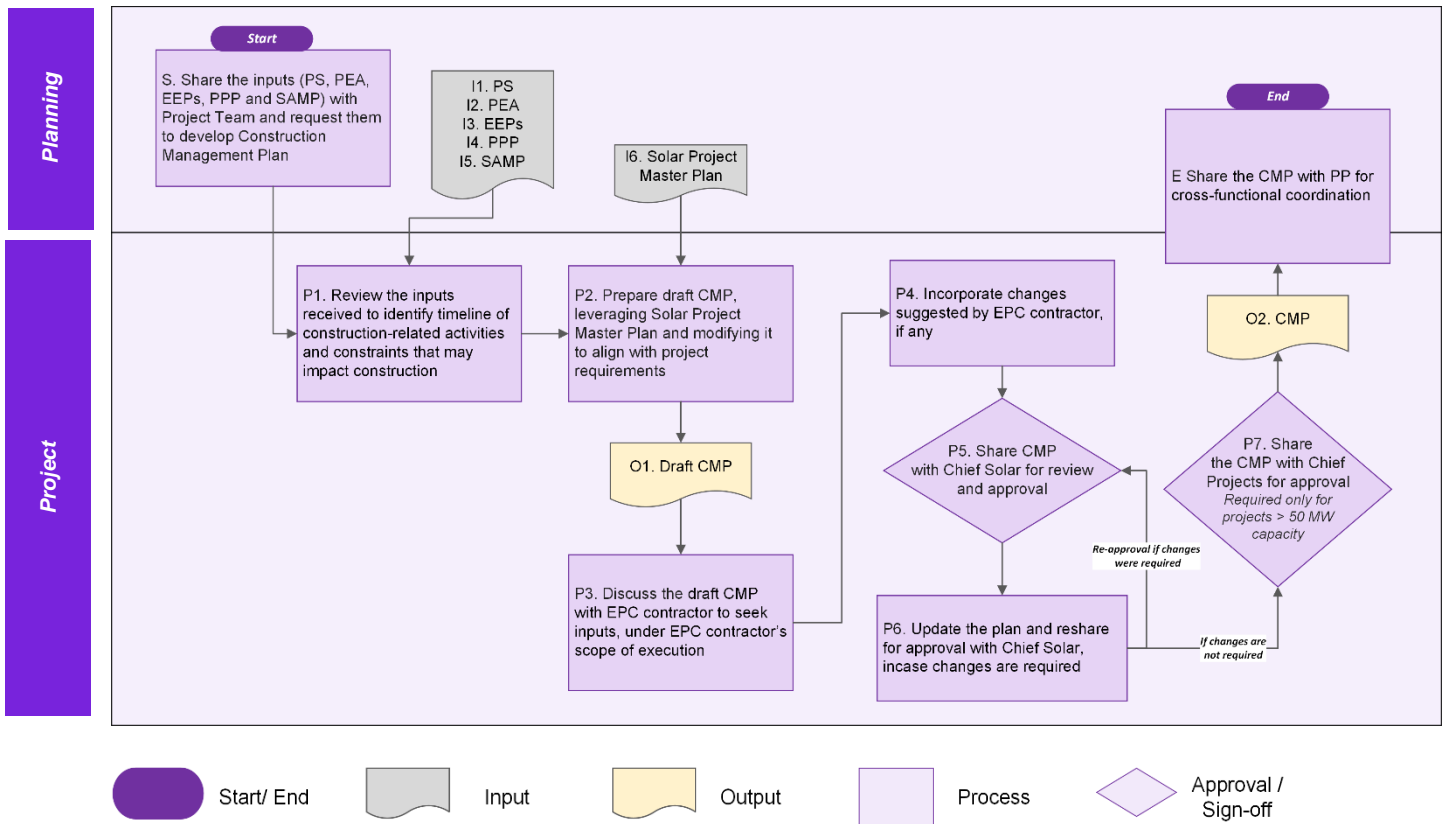
<sup>1</sup> Statutory Approval Management Plan is the Plan that details activities and timelines for getting all statutory approval for the project. The Plan is detailed in chapter – 5

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P3</b>	<ul style="list-style-type: none"> <li>Project Manager discusses the draft CMP with EPC contractor to seek inputs and any required modifications, under their scope of execution</li> </ul> <p><i>While the Project Manager incorporates EPC contractor inputs, ownership of the plan remains with the Project Manager</i></p> <p><i>This step may be bypassed if the EPC contractor for the project has not been selected finalized</i></p>					2
<b>P4</b>	<ul style="list-style-type: none"> <li>Project Manager incorporates changes suggested by EPC contractor, if required</li> </ul>					
<b>P5</b>	<ul style="list-style-type: none"> <li>Project Manager shares CMP with Chief Solar for review and approval (<i>approval via formal sign-off</i>)</li> </ul>					1
<b>P6</b>	<ul style="list-style-type: none"> <li>If changes are needed, Project Manager updates the Plan and reshares for approval with Chief Solar</li> </ul>					
<b>P7</b>	<ul style="list-style-type: none"> <li>Project Manager shares the CMP with Chief Projects for approval</li> </ul> <p><i>Required only for projects &gt; 50 MW capacity</i></p>			<b>O2</b>	CMP (Template Provided)	0.5
<b>E</b>	<ul style="list-style-type: none"> <li>Project Manager shares the CMP with Project Planner for cross-functional coordination</li> </ul>					<b>Total –</b> 5 – 6 days
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

## 1.6.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share Project Schedule (PS), Project Execution Approach (PEA), Engineering Execution Plans (EEPs), Project Procurement Plan (PPP) and Statutory Approval Management Plan (SAMP), and request for Construction Management Plan (CMP)	Project Planner			Project Manager
<b>P1</b>	Review the received inputs to identify timeline of construction-related activities and identify any constraints that may impact the construction	Project Manager	Project Manager		
<b>P2</b>	Prepare draft CMP by leveraging the Solar Project Master Plan and modifying it to align with project requirements	Project Manager			Chief Solar
<b>P3</b>	Share draft CMP with EPC contractor to seek inputs and any necessary modifications, under their scope of execution	Project Manager	Project Manager		
<b>P4</b>	Incorporate changes suggested by EPC contractor, if required	Project Manager			
<b>P5</b>	Seek sign-off on CMP from Chief Solar	Project Manager		Chief Solar	
<b>P6</b>	If changes are needed, update CMP and seek re-approval to finalize CMP	Project Manager		Chief Solar	
<b>P7</b>	Seek further approval from Chief Projects <i>Required only for projects &gt; 50 MW capacity</i>	Project Manager	Chief Solar	Chief Projects	
<b>E</b>	Share CMP with Project Planner for cross-functional coordination	Project Manager			Project Planner
KEY - S: Start   P: Process Steps   E: End					

## 1.6.3 Process Maps



<sup>1</sup> **Map Glossary** - CMP: Construction Management Plan | EEP: Engineering Execution Plan | EPC: Engineering Procurement Construction | PEA: Project Execution Approach | PP: Project Planner | PPP: Project Procurement Plan | PS: Project Schedule | SAMP: Statutory Approval Management Plan



1.6.4 Templates for Input/ Output

1. Construction Management Plan

Activity #	CMP Section (EWS / Mobilization / Construction Schedule / Logistics / Safety / Execution Plan)	Key Task	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

## Section 1.7 – Commissioning Plan

### 1.7.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) shares the following schedules with Project Manager (PM), and requests for Commissioning Plan –               <ul style="list-style-type: none"> <li>Project Schedule (PS)</li> <li>Project Execution Approach (PEA)</li> <li>Construction Management Plan (CMP)</li> <li>Statutory Approval Management Plan (SAMP)</li> </ul> </li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>Project Manager identifies the project activities and dependencies related to pre-commissioning and commissioning activities</li> <li>For this, Project Manager leverages the inputs (Project Schedule, Project Execution Approach, Construction Management Plan and SAMP) received</li> </ul>	<b>I1</b>	PS			
		<b>I2</b>	PEA (includes scope matrix)			
		<b>I3</b>	CMP			
		<b>I4</b>	SAMP			
<b>P2</b>	<ul style="list-style-type: none"> <li>Project Manager defines the Turn-over Systems (TOS) and its completion criteria based on high level pre-commissioning and commissioning activities and package dependencies</li> </ul>			<b>O1</b>	Turnover Systems List & Completion Criteria (Template Provided)	1
<b>P3</b>	<ul style="list-style-type: none"> <li>Project Manager defines the responsibility matrix for TOS, assigning a Point of Contact (PoC) accountable for the completion of each activity</li> <li>Project Manager may consult Site Manager for creation of TOS and responsibility matrix</li> </ul>			<b>O2</b>	Responsibility Matrix (Template Provided)	

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
P4	<ul style="list-style-type: none"><li>– Project Manager prepare draft Pre-Commissioning Plan (PCP) by leveraging the Solar Project Master Plan and modifying it to align with project requirements</li><li>– Project Manager further details PCP, outlining-<ul style="list-style-type: none"><li>– Key timelines and milestones as mentioned in Project Schedule, Project Execution Approach and Construction Management Plan</li><li>– Prerequisites for each pre-commissioning activity and its PoC by leveraging Turnover System List &amp; Completion Criteria and Responsibility Matrix</li></ul></li></ul> <p><i>Timelines of PCP must align with Project Schedule</i></p>	I5	Solar Project Master Plan	O3	Draft PCP	1
P5	<ul style="list-style-type: none"><li>– After preparation of PCP and Statutory Approval Management Plan (SAMP)<sup>1</sup>, Project Manager begins drafting the Commissioning Plan (CP) by leveraging the Solar Project Master Plan and modifying it to align with project requirements</li><li>– Key commissioning activities, milestones and timelines as mentioned in Project Schedule, Project Execution Approach and Construction Management Plan</li><li>– Pre-requisites of commissioning activities and their details as mentioned in TOS &amp; completion criteria and Responsibility Matrix</li><li>– Regulatory timeline as mentioned in SAMP</li></ul> <p><i>Project Manager drafts CP in consultation with Chief O&amp;M</i></p> <p><i>Timelines of CP must align with Project Schedule</i></p>	I4	SAMP	O4	Draft CP	1
		I5.	Solar Project Master Plan			
		I6	Draft PCP			
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

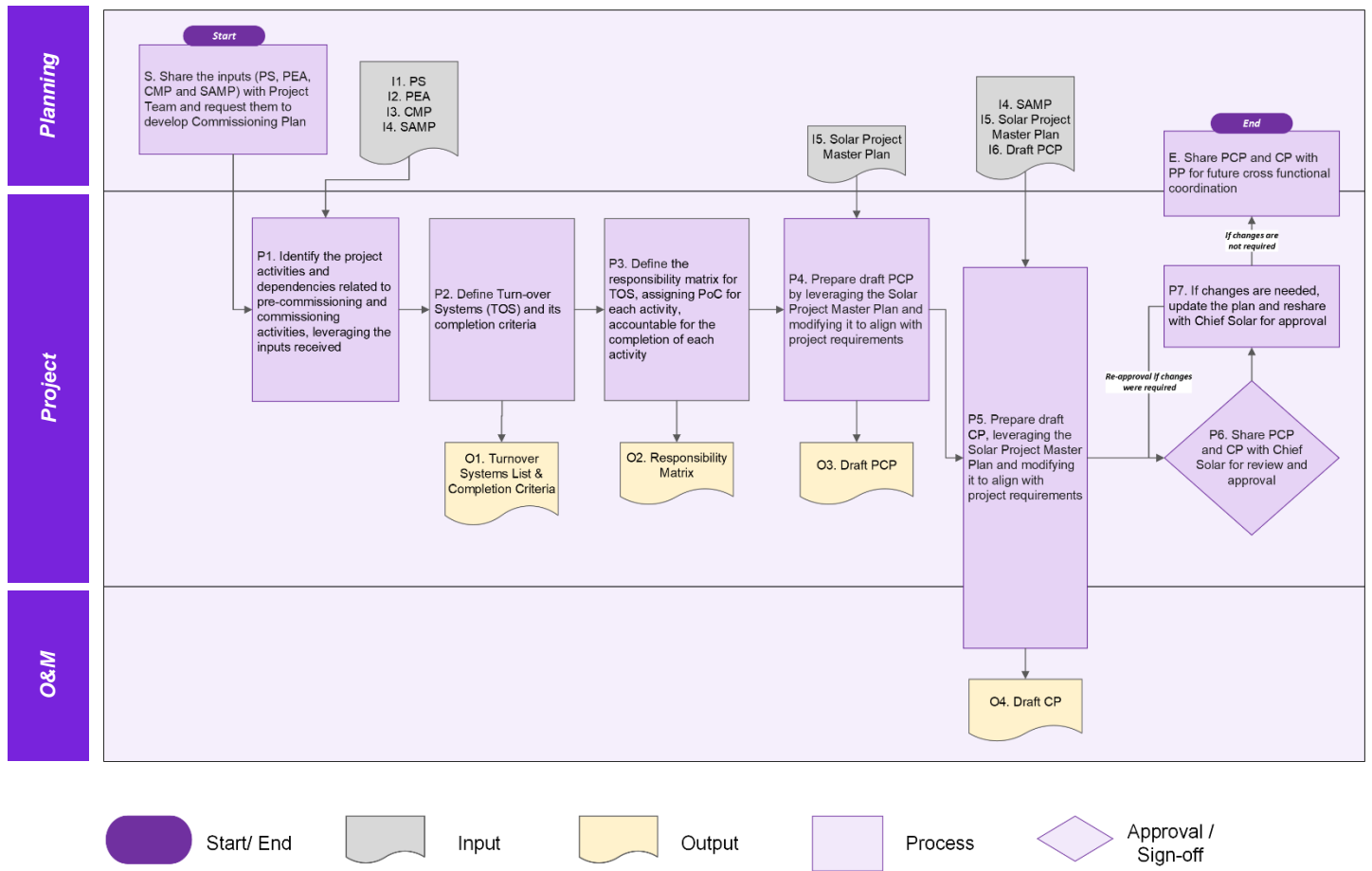
<sup>1</sup> SAMP is the Plan for Statutory Approval Management Plan covered in chapter 3.2. This covers the Plan for obtaining all the First Time Charging (FTC) approvals required before commencing the commissioning activities.

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P6</b>	– Project Manager seeks review and approval ( <i>approval via formal sign-off</i> ) on draft PCP and CP from Chief Solar					1
<b>P7</b>	– If changes are needed, Project Manager updates the Plan and reshares for approval – If no changes are needed, Project Manager finalizes the PCP and CP			<b>O5</b>	PCP ( <i>Template Provided</i> )	
				<b>O6</b>	CP ( <i>Template Provided</i> )	
<b>E</b>	– Project Manager shares the Plans with Project Planner for future cross-functional coordination					<b>Total – 4 – 5 days</b>
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

## 1.7.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share Project Schedule (PS), Project Execution Approach (PEA), Construction Management Plan (CMP) and Statutory Approval Management Plan (SAMP), and request for the development of Commissioning Plan	Project Planner			Project Manager
<b>P1</b>	Identify project activities and dependencies related to pre-commissioning and commissioning activities by leveraging Project Schedule, Project Execution Approach and Construction Management Plan	Project Manager			
<b>P2</b>	Define the Turn-over Systems (TOS) and its completion criteria based on high level pre-commissioning and commissioning activities, and package dependencies	Project Manager			
<b>P3</b>	Define the responsibility matrix for TOS, assigning POCs accountable for completion of each activity	Project Manager		Cross-Functional Heads	
<b>P4</b>	Prepare draft Pre-Commissioning Plan (PCP) by leveraging the Solar Project Master Plan and modifying it to align with project requirements and timelines	Project Manager			Chief Solar
<b>P5</b>	Prepare draft Commissioning Plan (CP) by leveraging the Solar Project Master Plan and modifying it to align with project requirements and timelines	Project Manager			Chief Solar
<b>P6</b>	Seek review and approval ( <i>approval via formal sign-off</i> ) on PCP and CP from Chief Solar	Project Manager		Chief Solar	
<b>P7</b>	If changes are needed, update the Plan and seek re-approval to finalize PCP and CP	Project Manager		Chief Solar	
<b>E</b>	Share the Plans with Project Planner for cross-functional coordination	Project Manager			Project Planner
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks					

## 1.7.3 Process Maps



<sup>1</sup> **Map Glossary** - CMP: Construction Management Plan | CP: Commissioning Plan | PEA: Project Execution Approach | PCP: Pre-commissioning Plan | PP: Project Planner | PS: Project Schedule | SAMP: Statutory Approval Management Plan | TOS: Turn-over Systems | PoC: Point of Contact

## 1.7.4 Templates for Input/ Output

### 1. Turnover Systems List & Completion Criteria

TOS ID	System / Area Description	Completion Criteria	Remarks
TOS-01	Electrical Switchgear System	Installation complete, IR testing, pre-commissioning checklist cleared, energization readiness	
TOS-02			
TOS-03			
TOS-04			

### 2. Responsibility Matrix (with Turnover Systems List & Completion Criteria)

TOS ID	System / Area Description	Completion Criteria	Remarks	Responsibility Matrix			
				Responsibility	Accountability	Consult	Inform
TOS-01	Electrical Switchgear System	Installation complete, IR testing					
TOS-02							
TOS-03							
TOS-04							

### 3. Pre-Commissioning Plan

Activity #	Key Task	Pre-requisites (basis TOS)	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

### 4. Commissioning Plan

Activity #	Key Task	Pre-requisites (basis TOS)	Pre-requisites (Basis SAMP)	Owner	Start Date	End Date	Duration (Weeks)	Status	Reason for delay, if any

## Section 1.8 – Plan Integration

### 1.8.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	– Project Planner receives detailed plans from across the functional teams (Land, Engineering, Procurement, and Projects)					-
<b>P1</b>	– Project Planner integrates all detailed plans received from functional departments ( <i>Land, Engineering, Procurement, Projects</i> ) to create Detailed Project Schedule	<b>I1</b>	PS	<b>O1</b>	Detailed Project Schedule ( <i>draft</i> )	1
		<b>I2</b>	LFP			
		<b>I3</b>	EEPs			
		<b>I4</b>	PPP			
		<b>I5</b>	CMP			
		<b>I6</b>	PCP			
		<b>I7</b>	CP			
<b>P2</b>	– Project Planner shares the Detailed Project Schedule with Chief Projects for sign off	<b>I8</b>	Detailed Project Schedule ( <i>draft</i> )			1
<b>P3</b>	– If Chief Projects recommends any changes, Project Planner incorporates the modifications suggested and resubmits the revised Plan to Chief Projects  <i>Project Planner modifies the plan in consultation with respective functional lead</i>					1
<b>P4</b>	– Chief Projects shares the Detailed Project Schedule with COO to seek final sign-off			<b>O2</b>	Detailed Project Schedule ( <i>Final</i> )	1
<b>P5</b>	– If COO recommends any modifications, Chief Projects notifies the same to Project Planner					-
<b>P6</b>	– Project Planner incorporates COO's recommended modifications and resubmits the revised Plan to Chief Projects  <i>Project Planner modifies the plan in consultation with respective functional lead</i>					1
<b>P7</b>	– Project Planner reshares the Detailed Project Schedule with Chief Projects for seeking approval from COO					1
<b>P8</b>	– Chief Projects shares the signed-off Detailed Project Schedule with Project Planner					1
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   •: Detailed in cross-functional playbooks						



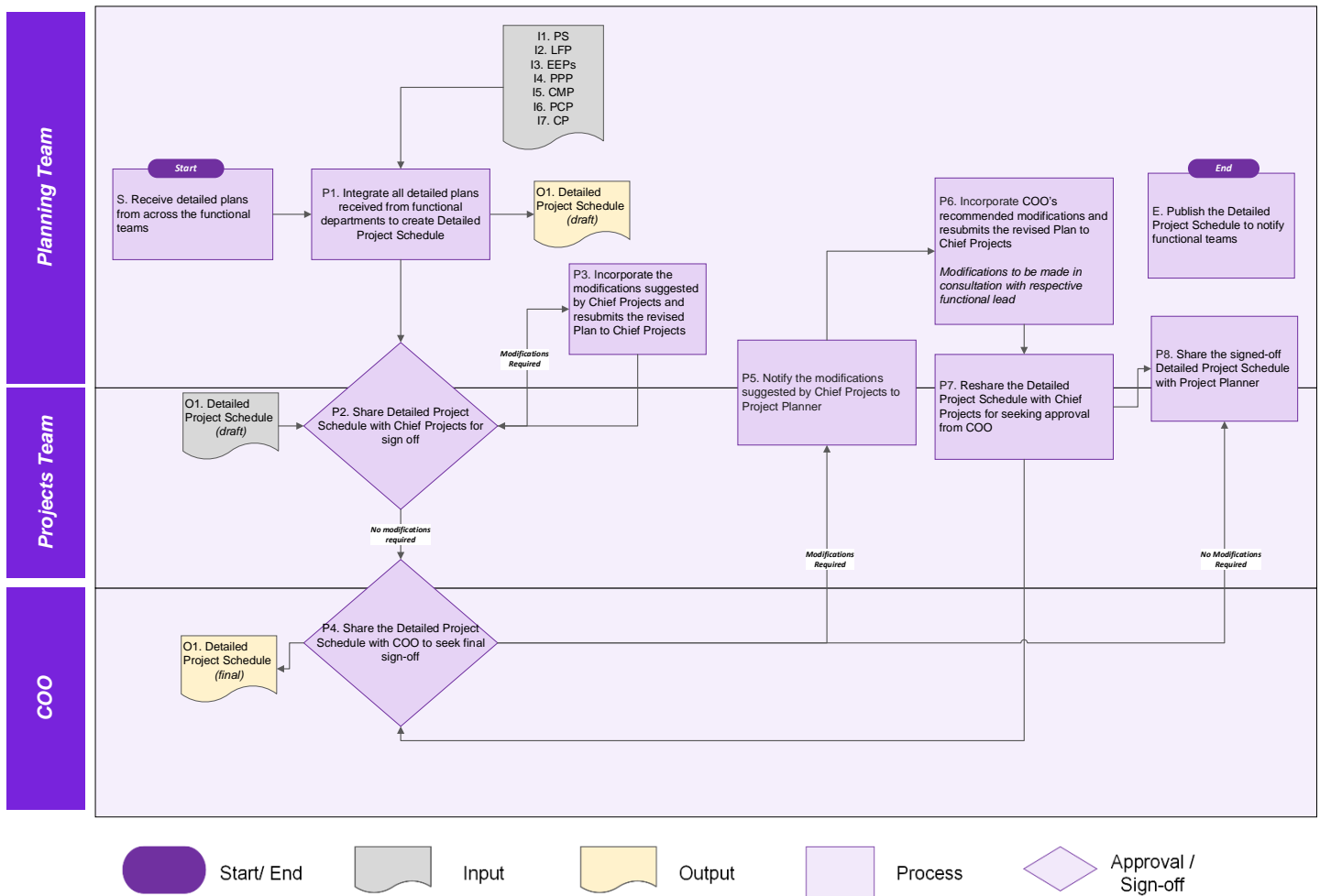
#	Activity	#	Inputs	#	Outputs	Timeline (in days)
E	– Project Planner publishes the Detailed Project Schedule to notify functional teams					<b>Total</b> 4 – 8 days
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

## 1.8.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Receive plans from across cross-functional teams	Project Planner	Project Planner		
<b>P1</b>	Integrate all detailed plans received from functional departments ( <i>Land, Engineering, Procurement, Projects</i> ) to create Detailed Project Schedule	Project Planner	Project Planner		
<b>P2</b>	Share the Detailed Project Schedule with Chief Projects for sign off	Project Planner	Project Planner		Chief Projects
<b>P3</b>	Share the Detailed Project Schedule with COO for final sign-off	Chief Projects	Chief Projects		COO
<b>P4</b>	If COO recommends any modifications, discuss the required modification with the respective functional department	Chief Projects	Chief Projects	Functional Leads	
<b>P5</b>	Update the respective plan, and share the same to Project Planner	Functional Leads	Functional Leads		Project Planner
<b>P6</b>	Integrate the updated functional plan into the Detailed Project Schedule	Project Planner	Project Planner		
<b>P7</b>	Share the Detailed Project Schedule with Chief Projects for seeking approval from COO	Project Planner	Project Planner		Chief Projects
<b>P8</b>	Share the signed-off Detailed Project Schedule with Project Planner	Chief Projects	Chief Projects		Project Planner
<b>E</b>	Publish the Detailed Project Schedule to notify functional teams	Project Planner			Functional Leads

KEY - S: Start | P: Process Steps | E: End

### 1.8.3 Process Map



## Section 1.9 – Plan Update

### 1.9.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>The Schedule Head (SH) or Site Planner (SP) identifies a delay in project execution that necessitates an update to the project Plan</li> <li><i>If delay is identified by SH, SH informs SP about the delay</i></li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>SP informs the PM about the identified delay</li> </ul>					-
<b>P2</b>	<ul style="list-style-type: none"> <li>PM collaborates with the functional lead, responsible for the delayed activity, to assess the impact and define corrective actions, including timeline adjustments and re-sequencing activities across the project</li> </ul>			<b>O1</b>	Corrective Action Plan (Template Provided)	3
<b>P3</b>	<ul style="list-style-type: none"> <li>PM revises the schedules, considering the discussed changes with functional lead and realigns dependent activities</li> </ul>	<b>I1</b>	Corrective Action Plan			1
<b>P4</b>	<ul style="list-style-type: none"> <li>PM submits the revised Plan to Chief Solar for review and approval (<i>approval via formal sign-off</i>)</li> </ul>					3
<b>P5</b>	<ul style="list-style-type: none"> <li>PM incorporates any feedback from the Chief Solar and resubmits the revised Plan to Chief Solar for approval, if needed</li> </ul>			<b>O2</b>	Draft Revised Plan	
<b>P6</b>	<ul style="list-style-type: none"> <li>For a revision of more than 5% delay<sup>1</sup> in the overall timeline, PM also seeks approval from Chief Project</li> </ul>			<b>O3</b>	Final Revised Plan	2
<b>E</b>	<ul style="list-style-type: none"> <li>PM publishes the updated Plan to notify functional leads, and Project Planner of the revised schedule</li> <li><i>The process of Plan revision and schedule management continues throughout the project lifecycle</i></li> </ul>					<b>Total – 9 – 10 days</b>

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

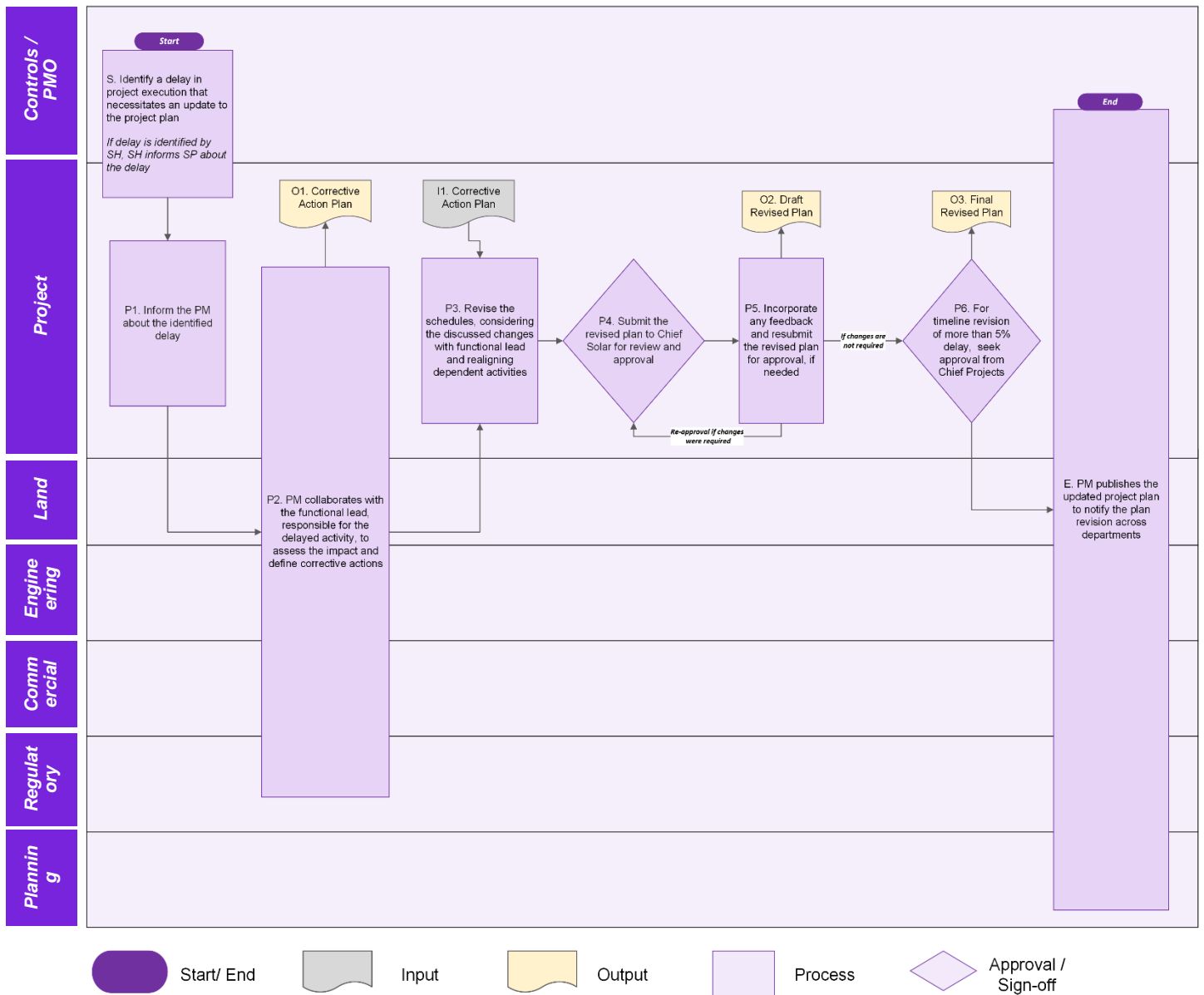
<sup>1</sup> 5% delay will be assessed on a rolling basis against the updated plan, and not on the original plan

## 1.9.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Identify a delay in project execution that necessitates an update to the project Plan	Schedule Head / Site Planner			Site Planner Chief PMO
<b>P1</b>	Inform the PM about the identified delay	Schedule Planner			Project Manager
<b>P2</b>	Collaborate with the functional lead, responsible for the delayed activity, to assess the impact and define corrective actions	Project Manager		Functional Lead	
<b>P3</b>	Revise the schedules, considering the discussed changes with functional lead and realigning dependent activities	Project Manager	Project Manager	Functional Heads	
<b>P4</b>	Submit the revised Plan to Chief Solar for review and approval ( <i>approval via formal sign-off</i> )	Project Manager		Chief Solar	
<b>P5</b>	Incorporate any feedback from the Chief Solar and resubmit the revised Plan to Chief Solar for approval, if needed	Project Manager		Chief Solar	
<b>P6</b>	Any delay beyond 5%, seek approval from Chief Projects	Project Manager		Chief Projects	Chief Solar
<b>E</b>	Publish the updated Plan to notify functional leads and Project Planner of the revised schedule <i>The process of Plan revision and schedule management continues throughout the project lifecycle</i>	Project Manager			Functional Heads & Project Planner

KEY - S: Start | P: Process Steps | E: End

### 1.9.3 Process Map



1.9.4 Templates for Input/ Output

1. Corrective Action Plan

Activity Delayed	Cause of Delay	Impact on schedule	Corrective Action	Owner	Planned Timeline	Revised Timeline

## Chapter 2 – Scope Management Plan

### 2.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)															
S	<ul style="list-style-type: none"><li>Project Planner (PP) requests Chief PMO to develop Work Breakdown structure (WBS) and shares the following inputs –<ul style="list-style-type: none"><li>Project Execution Approach (PEA)</li><li>Project Schedule (PS)</li><li>Scope Matrix</li></ul></li></ul>					-															
P1	<ul style="list-style-type: none"><li>Chief PMO reviews the inputs and project scope definition to finalizes project control philosophy i.e., required level of monitoring and control on the project at each level</li></ul>	I1	PEA (includes scope matrix)	O1	Project Control Philosophy	0.5															
		I2	PS																		
		I3	Scope Matrix																		
P2	<ul style="list-style-type: none"><li>Chief PMO shares the scope matrix and project control philosophy with Schedule Head</li></ul>					-															
P3	<ul style="list-style-type: none"><li>Schedule Head defines WBS elements, based on the approved control philosophy<ul style="list-style-type: none"><li>For defining the elements, Schedule Head leverages the Master WBS Solar and makes necessary changes to ensure alignment with project scope and schedule</li></ul></li><li>The WBS reflects the project level classification to be adopted as listed below:</li></ul> <table><tr><td>L1</td><td>1</td><td>Solar Power Plant</td></tr><tr><td>L2</td><td>1.1</td><td>System (photovoltaic System, Electrical System, Monitoring System)</td></tr><tr><td>L3</td><td>1.1.1</td><td>Sub-system (Solar Modules, Inverters, Mounting Structures)</td></tr><tr><td>L4</td><td>1.1.1.1</td><td>Component (Photovoltaic Panels, DC Cabling, Inverter Units)</td></tr><tr><td>L5</td><td>1.1.1.1.1</td><td>Functional Element (E, P, or C)</td></tr></table>	L1	1	Solar Power Plant	L2	1.1	System (photovoltaic System, Electrical System, Monitoring System)	L3	1.1.1	Sub-system (Solar Modules, Inverters, Mounting Structures)	L4	1.1.1.1	Component (Photovoltaic Panels, DC Cabling, Inverter Units)	L5	1.1.1.1.1	Functional Element (E, P, or C)	I3	Scope Matrix	O2	Preliminary WBS	1
		L1	1	Solar Power Plant																	
		L2	1.1	System (photovoltaic System, Electrical System, Monitoring System)																	
		L3	1.1.1	Sub-system (Solar Modules, Inverters, Mounting Structures)																	
		L4	1.1.1.1	Component (Photovoltaic Panels, DC Cabling, Inverter Units)																	
		L5	1.1.1.1.1	Functional Element (E, P, or C)																	
I4	Project Control Philosophy																				
I5	Master WBS Solar																				

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks



#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P4</b>	– Schedule Head develops the codes for WBS, based on the project level WBS classification to be adopted					1
<b>P5</b>	<ul style="list-style-type: none"> <li>– Schedule Head checks for consistency in alignment between the defined project WBS and Cost Breakdown Structure (CBS) based on the project CBS</li> <li>– In case of a lack of consistency between the WBS and CBS structures, the CBS elements and codes are revised to achieve consistency with WBS</li> </ul>	<b>I6</b>	CBS			
<b>P6</b>	– Schedule Head prepares the WBS for the project using a bottom-up approach, which involves preparing WBS elements at package level which are collated at the project level to form the Project WBS					1
<b>P7</b>	– Schedule Head seeks approval from Chief PMO on the WBS and incorporates any necessary changes			<b>O3</b>	WBS (Template Provided)	0.5
<b>E</b>	<ul style="list-style-type: none"> <li>– Schedule Head publishes the project WBS which forms the basis for project monitoring and control</li> <li>– Schedule Head share the project WBS with Project Planner for cross-functional coordination</li> </ul>					<b>Total –</b> 4 – 5 days

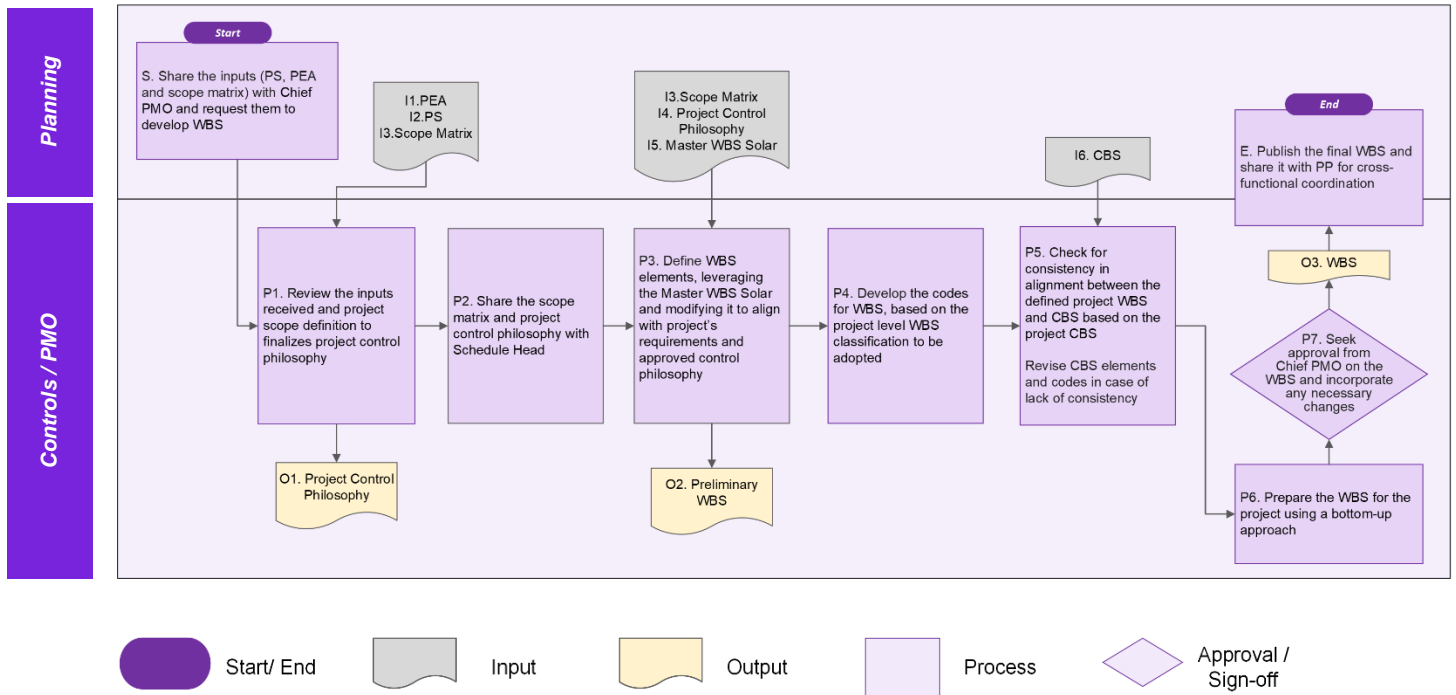
**KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks**

## 2.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Request for Work Breakdown Structure (WBS) and share the required inputs ( <i>Project Execution Approach, Project Schedule, and Scope Matrix</i> )	Project Planner			Chief PMO
<b>P1</b>	Review project scope definition and approve the project control philosophy, i.e., required level of monitoring and control on the project, at each level	Chief PMO			
<b>P2</b>	Share the scope matrix and project control philosophy	Chief PMO			Schedule Head
<b>P3</b>	Define WBS elements based on the approved control philosophy, leveraging the Master WBS Solar and making necessary changes to align with project scope and schedule	Schedule Head			
<b>P4</b>	Define the WBS codes for the project	Schedule Head	Schedule Head		Chief PMO
<b>P5</b>	Check for consistency between the defined project WBS and Cost Breakdown Structure (CBS); revise CBS codes if needed	Schedule Head			
<b>P6</b>	Prepare the WBS for the project using a bottom-up approach, collating package-level WBS elements at the project level	Schedule Head			Chief PMO
<b>P7</b>	Seek approval from Chief PMO on the WBS and incorporate necessary changes	Schedule Head		Chief PMO	
<b>E</b>	Publish and share project WBS	Schedule Head			Project Planner

**KEY - S: Start | P: Process Steps | E: End**

## 2.3 Process Map



<sup>1</sup> **Map Glossary** - CBS: Cost Breakdown Structure | PEA: Project Execution Approach | PMO: Project Management Office | PP: Project Planner | PS: Project Schedule | WBS: Work Breakdown Structure

## 2.4 Templates for Input/ Output

### 1. Work Breakdown Structure

WBS Code	Description	System / Subsystem / Component	Owner / Creator	Remarks
1	Solar Power Plant – Full EPC Scope	-		
1.1	Module Mounting System – Supply, Transport, Installation	System		
1.1.1	Structure Erection – Pile driving, ramming, racking	Sub-system		
1.1.1.1	Pile Installation – Positioning, driving, leveling	Component		

## Chapter 3 – Cost Management Plan

### 3.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) requests for Cost Breakdown Structure (CBS) and shares the following Plans/schedules with Chief PMO – <ul style="list-style-type: none"> <li>Project Schedule (PS)</li> <li>Project Execution Approach (PEA)</li> <li>Project Procurement Plan (PPP)</li> <li>Project Budget (submitted during bid submission)</li> <li>Work Breakdown Structure (WBS)</li> </ul> </li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>Chief PMO asks the Cost Controller to start the development of CBS and shares the inputs (Project Schedule, Project Execution Approach, Project Procurement Plan, Project Budget and Work Breakdown Structure)</li> </ul>	<b>I1</b>	PS			-
		<b>I2</b>	PEA (includes scope matrix)			
		<b>I3</b>	PPP			
		<b>I4</b>	Project Budget			
		<b>I5</b>	WBS			
<b>P2</b>	<ul style="list-style-type: none"> <li>CC defines/ realigns the coding structure for CBS in line with the Work Breakdown Structure coding structure</li> </ul>					0.5
<b>P3</b>	<ul style="list-style-type: none"> <li>CC defines the elements of CBS leveraging the Project Work Breakdown Structure and Master CBS Solar</li> <li>CC makes modifications to master CBS Solar to ensure alignment with project scope and schedule.</li> </ul>	<b>I6</b>	Master CBS Solar	<b>O1</b>	Preliminary CBS	1
<b>P4</b>	<ul style="list-style-type: none"> <li>CC assigns the scope to all elements defined in CBS using the Scope Matrix</li> </ul>	<b>I7</b>	Scope Matrix			
<b>P5</b>	<ul style="list-style-type: none"> <li>CC checks for consistency between Work Breakdown Structure and CBS up to package level based on project control philosophy</li> </ul>					0.5
<b>P6</b>	<ul style="list-style-type: none"> <li>In case of consistency between Work Breakdown Structure and CBS, process P7 is followed and</li> <li>In case of inconsistency between Work Breakdown Structure and CBS, CBS is realigned through process P2</li> </ul>					

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P7</b>	<ul style="list-style-type: none"> <li>– CC assigns the budget cost to the CBS elements based on the project budget</li> <li>– CC allocates specific cost estimates (in INR) to each element</li> <li>– CC uses vendor quotes, historical data, and expert judgment to estimate cost for each item</li> <li>– CC consults Solar Procurement Head, if needed</li> </ul>	<b>I4</b>	Project Budget			1
<b>P8</b>	– CC seeks sign off from Chief PMO for CBS					1
<b>P9</b>	<ul style="list-style-type: none"> <li>– If changes are required, CC makes necessary revisions and reshapes for approval</li> <li>– If no changes are required, CC finalizes CBS</li> </ul>			<b>O2</b>	CBS (Template Provided)	
<b>E</b>	<ul style="list-style-type: none"> <li>– Cost Controller publishes the project CBS, which forms the basis for project cost monitoring and control</li> <li>– CC shares the project CBS with Project Planner for cross-functional coordination</li> </ul>					<b>Total – 4 – 5 days</b>

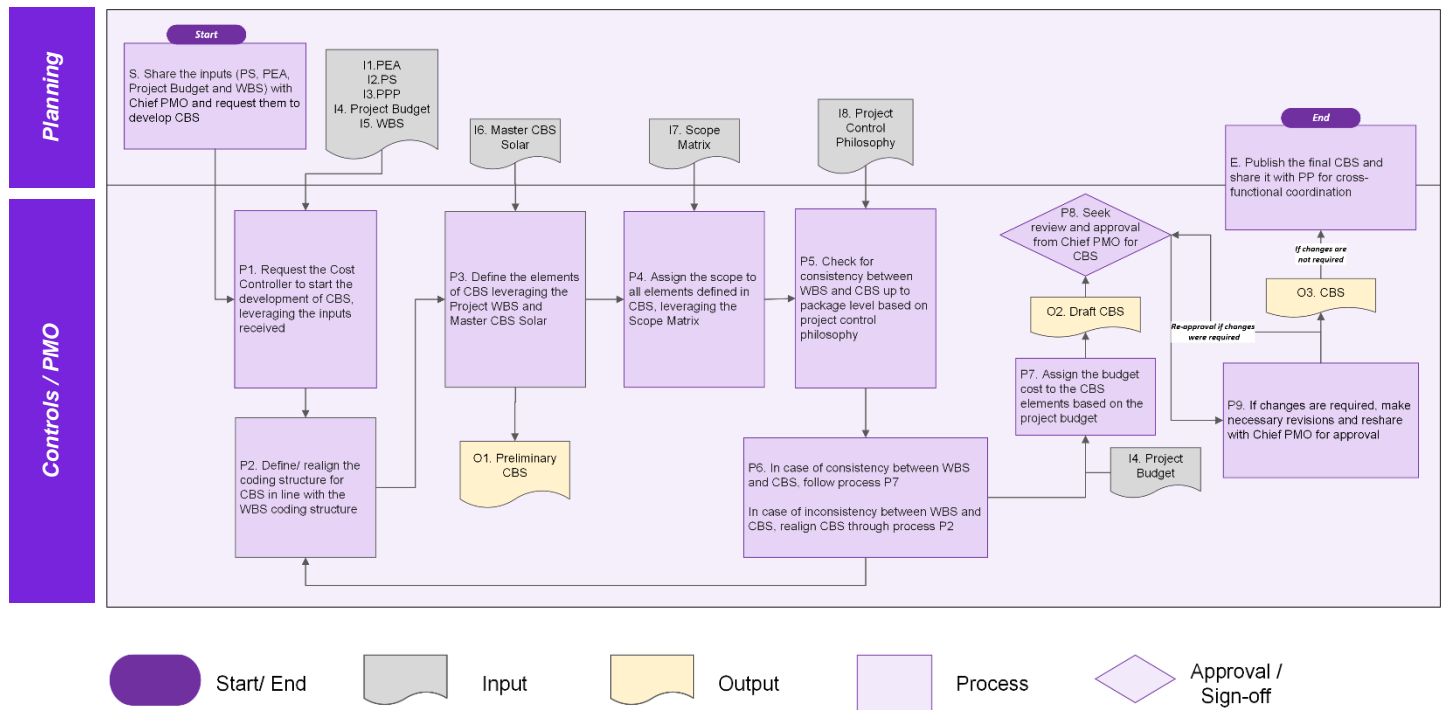
**KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks**

### 3.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Request for Cost Breakdown Structure (CBS) and share the required Plans/schedules with Chief PMO	Project Planner			Chief PMO
<b>P1</b>	Ask the Cost Controller (CC) to commence the development of CBS and share the required inputs with CC	Chief PMO			Cost Controller
<b>P2</b>	Define/realign the coding structure for CBS to align it with Work Breakdown Structure (WBS) coding structure	Cost Controller		Schedule Head	
<b>P3</b>	Define the elements of the CBS, leveraging the WBS and Master CBS Solar, and make the necessary modifications to ensure alignment with the project's scope and requirements	Cost Controller			
<b>P4</b>	Assign the scope to all CBS elements using the Scope Matrix	Cost Controller			
<b>P5</b>	Check for consistency between Work Breakdown Structure and CBS up to the package level	Cost Controller			
<b>P6</b>	If Work Breakdown Structure and CBS are inconsistent, realign CBS to make it consistent with WBS	Cost Controller		Schedule Head	
<b>P7</b>	Assign the budget cost (in INR) to the CBS elements based on the project budget	Cost Controller		Solar Procurement Head	
<b>P8</b>	Seek sign-off from Chief PMO for CBS	Cost Controller	Cost Controller	Chief PMO	
<b>P9</b>	If changes are required, make necessary revisions and reshare for approval, to finalize CBS	Cost Controller	Cost Controller	Chief PMO	
<b>E</b>	Publish the project CBS, which forms the basis for project cost monitoring and control	Cost Controller			Chief PMO
	Share the project CBS with Project Planner for cross-functional coordination	Cost Controller	Chief PMO		Project Planner

**KEY - S: Start | P: Process Steps | E: End**

### 3.3 Process Map



<sup>1</sup> **Map Glossary** - CBS: Cost Breakdown Structure | PEA: Project Execution Approach | PPP: Project Procurement Plan | PP: Project Planner | PS: Project Schedule | WBS: Work Breakdown Structure | PMO: Project Management Office



## 3.4 Templates for Input/ Output

### 1. Cost Breakdown Structure

CBS Code	Cost Element Description	Cost Estimate (INR)	Basis of Estimate	Owner / Creator	Remarks
1	Solar Power Plant – Full EPC Scope		Project Budget	Cost Controller	Overall project budget
1.1	Module Mounting System – Supply, Transport, Installation		Vendor Quotes, PPP	Cost Controller	Per turbine basis
1.1.1	Structure Erection – Pile driving, ramming, racking		Historical Data, Expert Judg.	Cost Controller	
1.1.1.1	Pile Installation – Positioning, driving, leveling		Vendor Quotes	Cost Controller	3 blades per turbine

# Chapter 4 – Quality Management Plan

## 4.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>– Project Planner (PP) shares the following schedules with Chief QHSSE, and requests them to initiate the development of Project Quality Management Plan (PQMP) –</li> <li>– Project Execution Approach (PEA),</li> <li>– Project Schedule (PS), and</li> <li>– Engineering Execution Plans (EEPs) (for standard quality requirements)</li> </ul>					-
<b>P1</b>	<ul style="list-style-type: none"> <li>– Chief QHSSE reviews the Project Schedule and Project Execution Approach to establish an understanding of project calendar which forms the basis for timeline identification for PQMP</li> </ul> <p><i>QM is fully aware of the project's quality standards, having collaborated with the Project Engineering Manager to define the standard quality requirements during the preparation of the EEPs</i></p>	<b>I1</b>	PEA (includes scope matrix)			0.5
		<b>I2</b>	PS			
<b>P2</b>	<ul style="list-style-type: none"> <li>– Chief QHSSE, in consultation with PM, performs the following activities: <ul style="list-style-type: none"> <li>– Determine and outline various functional roles<sup>1</sup> required to ensure the quality standards are met throughout the project's lifecycle</li> <li>– Identify audit requirements during project including frequency and auditors</li> </ul> </li> </ul>					0.5

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | •: Detailed in cross-functional playbooks

1. The functional roles ensuring quality standards include the Project Manager (overseeing procurement, construction, and commissioning to ensure compliance), Site Quality & HSSE (managing quality adherence on-site), Chief SCM & Logistics (procuring material that comply with quality standards), and Project Engineering Manager (ensuring designs meet quality standards)

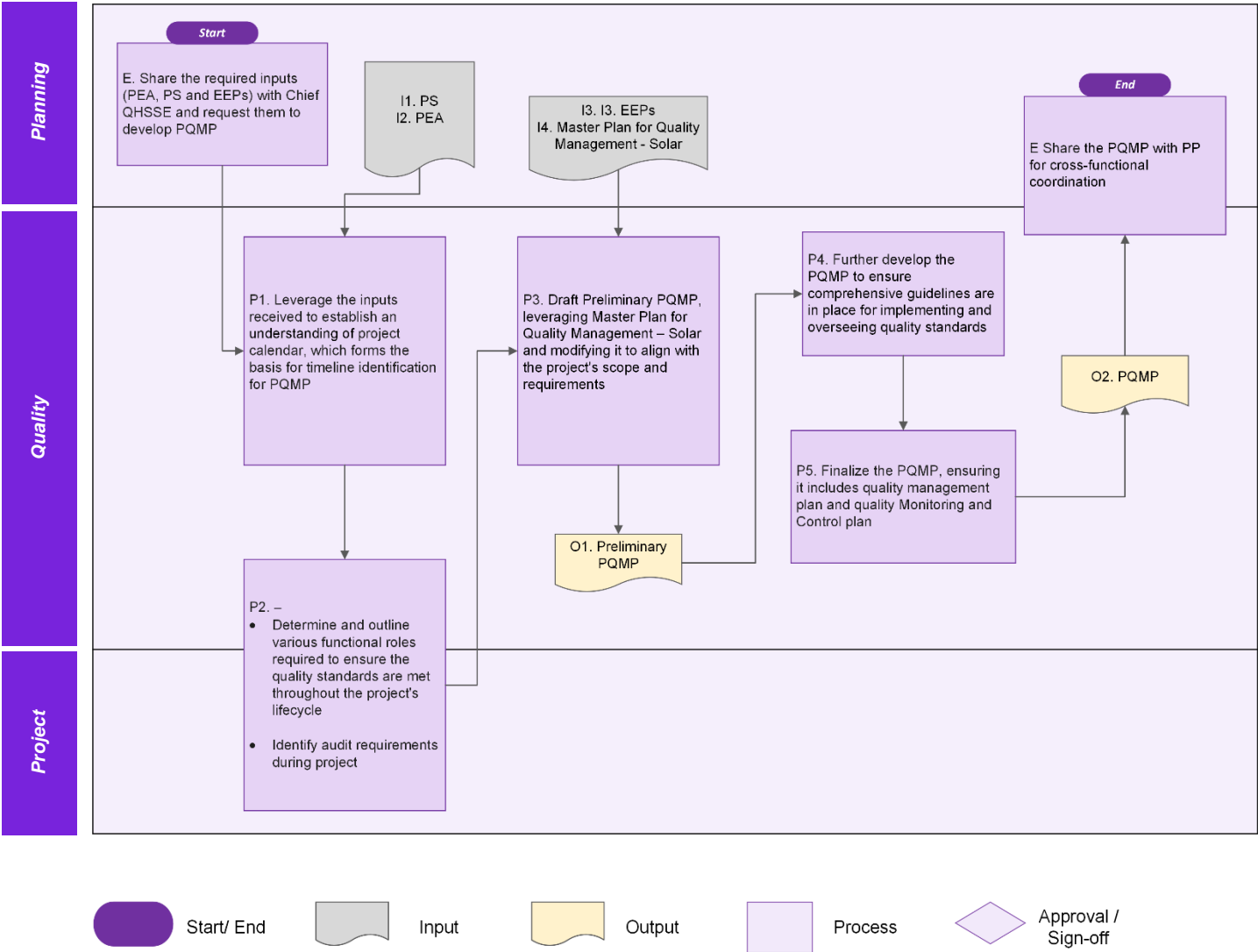
#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P3</b>	<ul style="list-style-type: none"> <li>Chief QHSSE refers to 'Master Plan for Quality Management – Solar' and makes necessary adjustments to align it with the project's scope and requirements</li> <li>PQMP covers plans, timeline and checkpoints, and functional role required to implement quality standard</li> <li>Project Quality Standards are referred to from Project Quality Requirement developed in Engineering Execution Plans</li> </ul>	<b>I3</b>	EEPs	<b>O1</b>	Preliminary PQMP	1
		<b>I4</b>	Master Plan for Quality Management - Solar			
<b>P4</b>	<ul style="list-style-type: none"> <li>Chief QHSSE develops the PQMP to ensure comprehensive guidelines are in place for implementing and overseeing quality standards, which covers –</li> <li>QC hold points</li> <li>Quality documentation requirements by contractors</li> <li>Submittals from contractor for quality approval</li> <li>Non-conformance report (NCR) management and all other requirements in this context</li> </ul>					
<b>P5</b>	<ul style="list-style-type: none"> <li>Chief QHSSE finalizes PQMP, ensuring it includes –</li> <li>Quality Management Plan – Defined roles, audit requirements, and a structured approach with Plans, timelines, and checkpoints to uphold quality standards.</li> <li>Quality Monitoring and Control Plan – Established guidelines for inspections, documentation, submittals, and NCR management to ensure consistent quality throughout the project.</li> </ul>			<b>O2</b>	PQMP (Template Provided)	
<b>E</b>	QHSSE shares PQMP with Project Planner (PP) for facilitating cross-functional coordination					
						<b>Total – 2 – 3 days</b>

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ● : Detailed in cross-functional playbooks

## 4.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share the required Plans/schedules with Chief QHSSE and request them to develop Project Quality Management Plan (PQMP)	Project Planner			Chief QHSSE
<b>P1</b>	Review the Project Schedule to establish an understanding of the project calendar, forming the basis for timeline identification for PQMP	Chief QHSSE			
<b>P2</b>	Determine and outline various functional roles required to ensure quality standards and audit requirements throughout the project's lifecycle	Chief QHSSE		Project Manager	
<b>P3</b>	Refer to 'Master Plan for Quality Management – Solar' and modify it to align with the project's scope and requirements	Chief QHSSE	Chief QHSSE		
<b>P4</b>	Further develop the PQMP to ensure comprehensive guidelines are in place for implementing and overseeing quality standards	Chief QHSSE	Chief QHSSE		
<b>P5</b>	Finalize the PQMP, ensuring it includes quality management Plan and quality Monitoring and Control Plan	Chief QHSSE	Chief QHSSE		
<b>E</b>	Share the PQMP with Project Planner (PP) for cross-functional coordination	Chief QHSSE	Chief QHSSE		Project Planner
KEY - S: Start   P: Process Steps   E: End					

4.3 Process Map



<sup>1</sup> **Map Glossary** - EEP: Engineering Execution Plan | PEA: Project Execution Approach | PP: Project Planner | PQMP: Project Quality Management Plan | PS: Project Schedule | QHSSE: Quality Health Safety Security Environment

4.4 Templates for Input/ Output

1. Project Quality Management Plan

Type of Check	Description of Audit / QC Hold Check Required	When (Project Stage / Milestone)	Owner (Responsible Role)	Required Documentation	Go / No Go	Action Required (if any)

# Chapter 5 – Statutory Approval Management Plan

## 5.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
S	<ul style="list-style-type: none"><li>Project Planner (PP) requests the Project Manager (PM) to develop Statutory Approval Management Plan (SAMP) and shares the required schedules / Plans<ul style="list-style-type: none"><li>Project Schedule (PS),</li><li>Project Execution Approach (PEA)</li><li>Project Procurement Plan (PPP)</li></ul></li></ul>					-
P1	<ul style="list-style-type: none"><li>The Project Manager informs the Chief Regulatory of the need to appoint a Regulatory Manager (RM) for the project</li></ul>					-
P2	<ul style="list-style-type: none"><li>Chief Regulatory appoints a RM for the project</li></ul>					0.5
P3	<ul style="list-style-type: none"><li>PM, in consultation with RM, refers to the Solar Statutory Approval Requirement Compendium to prepare SAMP<sup>1</sup></li><li>The compendium outlines state-level statutory approval requirements for solar power Plants; helps to identify necessary approvals required throughout the project lifecycle</li></ul>	I1	Solar Statutory Approval Requirement Compendium	O1	Preliminary SAMP	1
P4	<ul style="list-style-type: none"><li>The Project Manager incorporates timelines into SAMP</li><li>Project Manager identifies the timelines and criticalities of statutory approvals by reviewing Project Schedule and Project Execution Approach</li></ul>	I2	PS			
		I3	PEA (includes scope matrix)			

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

<sup>1</sup> While the Project Manager consults the Regulatory Manager for SAMP preparation, ownership of its development and updates remains with the Project Manager.

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P5</b>	<ul style="list-style-type: none"> <li>– PM, in consultation with RM, identifies various requirements/ pre-requisites to be fulfilled for obtaining approvals.</li> <li>– Documents required for obtaining approval</li> <li>– Pre-requisites or conditions that must be satisfied before approval is granted</li> <li>– Cost associated with getting approvals</li> <li>– Duration or estimated time for obtaining approval</li> <li>– Risks associated with getting the clearance</li> <li>– Consenting considerations, requirements the approving authority mandates before granting approval</li> <li>– Management action Plan for the process</li> </ul> <p>Project Manager leverages Solar Statutory Approval Requirements Compendium to identify the above</p>					0.5
<b>P6</b>	<ul style="list-style-type: none"> <li>– For each statutory approval required, Project Manager identifies a PoC across function teams, whose work would be impacted by delay in obtaining statutory approvals.</li> <li>– Project Manager may consult functional leads<sup>1</sup> to identify PoC</li> </ul>					0.5
<b>P7</b>	<ul style="list-style-type: none"> <li>– PM, in consultation with the RM, prepares the final SAMP, which includes –</li> <li>– Documentation, pre-requisites, costs, approval timelines, risks, and consenting considerations</li> <li>– A clear action Plan for obtaining approvals</li> <li>– Identification of PoC whose work will be impacted in case of any delay</li> </ul>					1

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

<sup>1</sup> Functional Leads include projects leads from Land, Engineering, Procurement and Project teams.

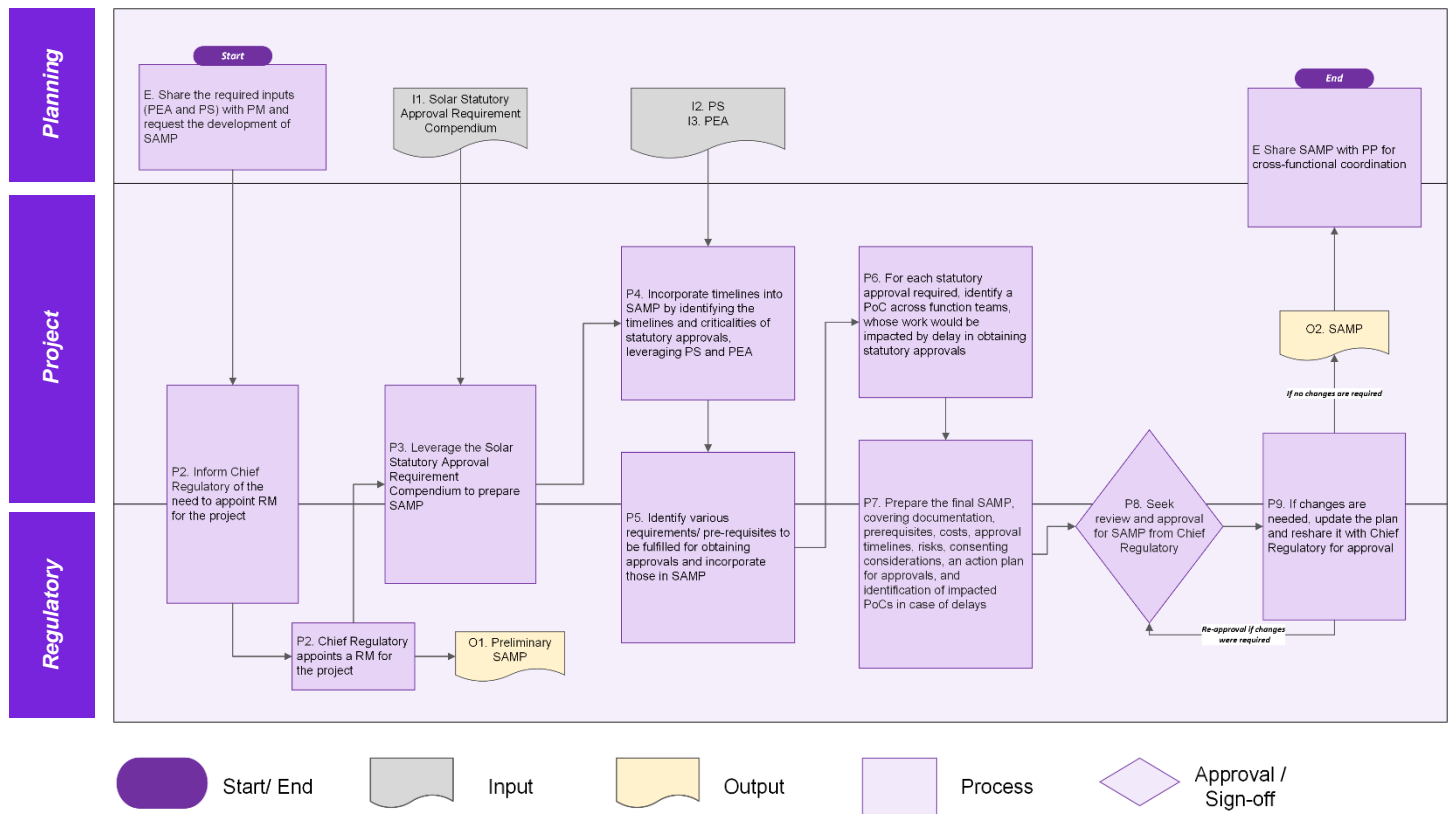


#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>P8</b>	– Project Manager seeks review and approval ( <i>approval via formal sign-off</i> ) for SAMP from Chief Regulatory					1
<b>P9</b>	<ul style="list-style-type: none"> <li>– If changes are required, Project Manager incorporates the feedback and reshapes SAMP with Chief Regulatory for approval</li> <li>– If no changes are required, Project Manager finalizes SAMP</li> </ul>			<b>O2</b>	SAMP ( <i>Template Provided</i> )	
<b>E</b>	– Project Manager shares the SAMP with Project Planner for cross-functional coordination					<b>Total –</b> 5 – 6 days
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

## 5.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share required Plans/schedules with Project Manager (PM), for the development of Statutory Approval Management Plan (SAMP)	Project Planner		Project Manager	
<b>P1</b>	Inform the Chief Regulatory of the need to appoint Regulatory Manager for the project	Project Manager			Chief Regulatory
<b>P2</b>	Appoint a Regulatory Manager for the project	Chief Regulatory	Chief Regulatory		Regulatory Manager
<b>P3</b>	Develop SAMP, leveraging the Solar Statutory Approval Requirement Compendium	Project Manager		Regulatory Manager	
<b>P4</b>	Incorporate timeline for statutory approvals in SAMP by reviewing Project Schedule and Project Execution Approach	Project Manager		Regulatory Manager	
<b>P5</b>	Identify requirements/ pre-requisites to be fulfilled for obtaining statutory approvals, leveraging Solar Statutory Approval Requirements Compendium	Project Manager		Regulatory Manager	
<b>P6</b>	Identify PoC within functional teams whose work would be impacted by delay in obtaining statutory approvals	Project Manager		Cost Controller	
<b>P7</b>	Prepare the final SAMP, detailing documentation, pre-requisites, costs, approval timelines, risks, consenting considerations, and PoC for each approval (as done in P6)	Project Manager	Project Manager	Regulatory Manager	
<b>P8</b>	Seek review and approval ( <i>approval via formal sign-off</i> ) for SAMP from Chief Regulatory	Project Manager	Project Manager	Chief Regulatory	Regulatory Manager
<b>P9</b>	Incorporate changes to SAMP basis feedback received and reapply for approval from Chief Regulatory to finalize SAMP	Project Manager	Project Manager	Chief Regulatory	Regulatory Manager
<b>E</b>	Share final SAMP with Project Planner for cross-functional coordination	Project Manager			Project Planner
KEY - S: Start   P: Process Steps   E: End					

## 5.3 Process Map



<sup>1</sup> **Map Glossary** - PEA: Project Execution Approach | PM: Project Manager | PP: Project Planner | PS: Project Schedule | RM: Regulatory Manager | SAMP: Statutory Approval Management Plan | PoC: Point of Contact

5.4 Templates for Input/ Output

1. SAMP

#	Approval Description	Requirements	Agency	Authority	Responsibility	Required Documents	Pre-requisites	Budgeted Cost (INR)	Budgeted Duration (Days)	Target Approval Date	Risks/ Issues

# Chapter 6 – Risk Management Plan

## 6.1 Process Steps

#	Activity	#	Inputs	#	Outputs	Timeline (in days)
<b>S</b>	<ul style="list-style-type: none"> <li>Project Planner (PP) shares the following with Risk Head (RH), and requests for the initiation of Risk Management Plan (RMP) –               <ul style="list-style-type: none"> <li>Project Schedule (PS) and</li> <li>Project Execution Approach (PEA)</li> </ul> </li> </ul>	<b>I1</b>	PS			-
		<b>I2</b>	PEA (includes scope matrix)			
<b>P1</b>	<ul style="list-style-type: none"> <li>RH reviews the Project Schedule and Project Execution Approach to identify risk review requirement</li> </ul>					-
<b>P2</b>	<ul style="list-style-type: none"> <li>RH conducts Risk Review Workshop, where Functional Leads<sup>1</sup> collectively, identify the risks               <ul style="list-style-type: none"> <li>Risk Head documents the risks in the Risk Register</li> </ul> </li> </ul>			<b>O1</b>	Preliminary Risk Register	-
<b>P3</b>	<ul style="list-style-type: none"> <li>Functional Leads<sup>1</sup> allocate a risk owner for every risk identified.               <ul style="list-style-type: none"> <li>An employee from any of the affected functions could be identified as the risk owner</li> </ul> </li> <li>Project Manager is de facto risk owner of any risk not attributed to any specific functions</li> <li>Project Manager informs the respective Functions of the cross functional risks involved. Joint Risk Owners identified for cross-functional risks</li> <li>From this step, the risk owner holds the primary responsibility of the risk</li> </ul>			<b>O2</b>	Risk Register (Risk Register and risk management plan template shared as a separate file)	-
<b>P4</b>	<ul style="list-style-type: none"> <li>For each risk, Risk Owner initiates the development of Risk Management Plan, which includes the Plan for risk assessment and risk mitigation</li> <li>For Risk Assessment, the Risk Owner quantifies following 4 metric –               <ul style="list-style-type: none"> <li>Impact of risk on project schedule</li> <li>Impact of risk on project scope</li> <li>Impact of risk on project quality</li> <li>Probability of risk occurrence</li> </ul> </li> </ul>			<b>O3</b>	Preliminary Risk Management Plan	2
KEY - S: Start   P: Process Steps   I: Input   O: Output   E: End   ●: Detailed in cross-functional playbooks						

<sup>1</sup> Functional Leads include leads from Land, Engineering, Procurement, Regulatory, PMO and Project Team

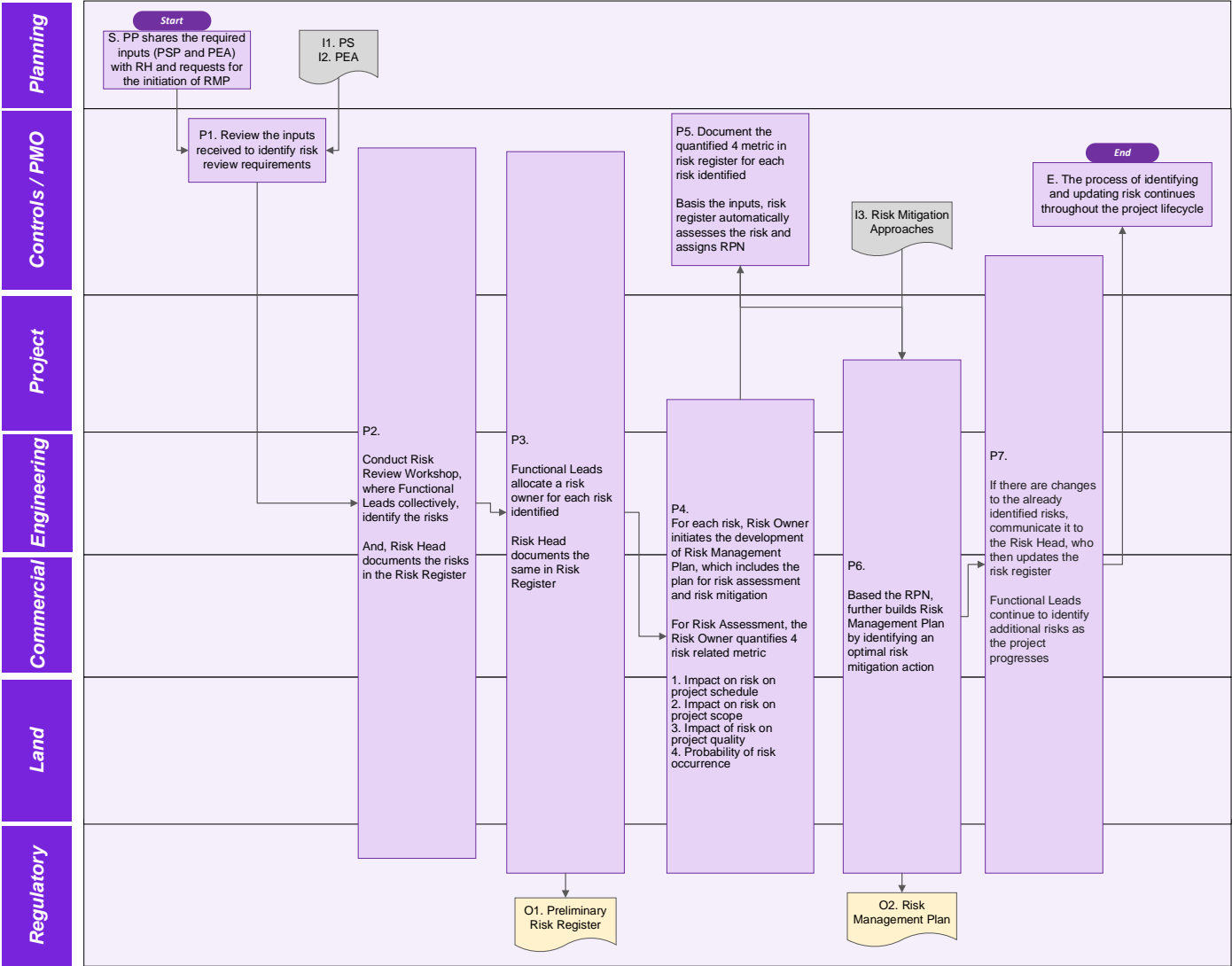
#	Activity	#	Inputs	#	Outputs	Timeline (in days)
P5	<ul style="list-style-type: none"> <li>– Risk Owner identify and communicate the inputs to Risk Head, who updates the risk register.</li> <li>– Basis the inputs, risk register automatically assesses the risk and assigns Risk Priority Number (RPN)</li> </ul>					1
P6	<ul style="list-style-type: none"> <li>– Basis the RPN, Risk Owner further builds Risk Management Plan by identifying an optimal risk mitigation action from different approaches based on an effort-benefit analysis, along with associated timelines</li> </ul>	I3	Risk Mitigation Approaches (Template Provided)	O4	Risk Management Plan (Risk Register and risk management plan template shared as a separate file)	2
P7	<ul style="list-style-type: none"> <li>– If there are changes to the already identified risks, Risk Owner communicates it to the Risk Head, who then updates the risk register</li> <li>– Functional Leads continue to identify additional risks as the project progresses</li> </ul> <p><i>Risk Register is accessible only to Risk Head, and any change in the register must go via Risk Head</i></p> <p><i>The risk register is reviewed periodically during the weekly project review meeting</i></p>					-
E	<ul style="list-style-type: none"> <li>– The process of identifying and updating risk continues throughout the project lifecycle</li> </ul>					<b>Total – 6 – 7 days</b>

KEY - S: Start | P: Process Steps | I: Input | O: Output | E: End | ●: Detailed in cross-functional playbooks

## 6.2 RACI

#	Key Tasks	Responsible	Accountable	Consult	Inform
<b>S</b>	Share the required schedules / Plans with Risk Head (RH), and request RH to initiate the Risk Management Plan (RMP)	Project Planner			Risk Head
<b>P1</b>	Review the Project Schedule and Project Execution Approach to assess the risk review requirement	Risk Head			
<b>P2</b>	Conduct a Risk Review Workshop, where Functional Leads collectively identify the risks with documentation of risks done in Risk Register	Risk Head		Functional Leads	
<b>P3</b>	Identify a Risk Owner for every risk identified	Functional Leads		Risk Head	
<b>P4</b>	Develop the Risk Management Plan, which includes risk assessment and mitigation Plans	Risk Owner	Risk Owner		Risk Head
	For Risk Assessment, quantify certain metrics and communicate it to RM.	Risk Owner	Risk Owner		Risk Head
<b>P5</b>	Update the risk register basis metrics from Risk Owner. Based on the inputs, the risk register assigns Risk Priority Number (RPN).	Risk Head		Risk Owner	
<b>P6</b>	Based on the RPN, identify an optimal risk mitigation action, with associated timelines	Risk Owner			Risk Head
<b>P7</b>	If there are changes to identified risks, communicate it to Risk Head	Risk Owner	Risk Owner		Risk Head
	Update the risk register	Risk Head			
	Functional Leads continue to identify additional risks as the project progresses	Functional Leads			Risk Head
<b>E</b>	Continue identifying and updating risks throughout the project lifecycle	Risk Head			
KEY - S: Start   P: Process Steps   E: End					

6.3 Process Maps



<sup>1</sup> **Map Glossary** - PEA: Project Execution Approach | PP: Project Planner | PS: Project Schedule | RH: Risk Head | RMP: Risk Management Plan | RPN: Risk Priority Number



## 6.4 Templates for Input/ Output

### 1. Risk Mitigation Approaches

Risk Mitigation Strategy	Description
<b>Avoidance</b>	<ul style="list-style-type: none"><li>– Use an alternate approach that does not have the risk</li><li>– This mode is not always an option</li><li>– There are programs that deliberately involve high risks in the expectation of high gains</li><li>– However, this is the most effective risk management technique if it can be applied</li></ul>
<b>Control</b>	<ul style="list-style-type: none"><li>– Controlling risks involves the development of a risk reduction plan and then tracking to the plan</li><li>– The key aspect is the planning by experienced persons</li><li>– The plan itself may involve parallel development programs etc.</li></ul>
<b>Assumption</b>	<ul style="list-style-type: none"><li>– Simply accepting the risk and proceeding</li><li>– However, there can be a tendency within organizations to gradually let the assumption of a risk take on the aura of a controlled risk</li></ul>
<b>Risk Transfer</b>	<ul style="list-style-type: none"><li>– Means causing another party to accept the risk, typically by contract</li><li>– Liability among construction or other contractors is option transferred this way</li></ul>

## Key Performance Indicators

Following KPIs are to be tracked for planning function to measure the effectiveness of planning processes and identify areas for improvement.

Metric	Definition	How to Calculate
<b>Total Planning Duration</b>	Total number of days required to complete the planning process for respective plans	Time elapsed between the planning initiation and the formal approval and finalization of the plan
<b>Plan Accuracy</b>	Degree of deviation between the planned and actual duration of the respective process/ task	Calculated as the difference between the actual time taken and the planned time, expressed as a percentage of the planned duration.

## Glossary

Abbreviation	Expanded
<b>BES</b>	Basic Engineering Scope
<b>BP</b>	Bid Planner
<b>CBS</b>	Cost Breakdown Structure
<b>CC</b>	Cost Controller
<b>CMP</b>	Construction Management Plan
<b>CP</b>	Commissioning Plan
<b>EEP</b>	Engineering Execution Plan
<b>EPC</b>	Engineering Procurement Construction
<b>ESF</b>	Execution Strategy Framework
<b>EWS</b>	Early Works Schedule
<b>FBR</b>	Final Bid Report
<b>LFP</b>	Land Finalization Report
<b>LM</b>	Land Manager
<b>NCR</b>	Non-conformance Report
<b>PCP</b>	Pre-commissioning Plan
<b>PEA</b>	Project Execution Approach
<b>PEM</b>	Project Engineering Manager
<b>PFR</b>	Preliminary Feasibility Report
<b>PM</b>	Project Manager
<b>PMO</b>	Project Management Office
<b>POC</b>	Point of Contact
<b>PP</b>	Project Planner
<b>PPP</b>	Project Procurement Plan
<b>PQMP</b>	Project Quality Management Plan
<b>PS</b>	Project Schedule
<b>QC</b>	Quality Control
<b>QHSSE</b>	Quality Health Safety Security Environment
<b>QM</b>	Quality Manager
<b>RM</b>	Regulatory Manager / Risk Head
<b>RMP</b>	Risk Management Plan
<b>SAMP</b>	Statutory Approval Management Plan
<b>SH</b>	Schedule Head
<b>SP</b>	Site Planner
<b>SPH</b>	Solar Procurement Head
<b>TOS</b>	Turn-over Systems