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Manual

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Title:
PROJECT SCOPE MANAGEMENT

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PROJECT SCOPE MANAGEMENT

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Revision Summary

Revision Number	Date	Comments
R002	2019-12-06	- Revised to add definition of Contract Scope of Work as well as to clarify difference between Project Scope of Work and Contract Scope of Work.
R001	2019-07-31	- Revised to cover all OPG Projects, including portfolio projects and strategic projects. - Standard WBS diagrams changed from *Portfolio Projects* to *EPC Projects*. - The WBS level for *Phase* changed to *Scope Category* in Figure 1 of Appendix A.
R00	2019-03-26	Initial issue.

1.0 DIRECTION

The objective of Project Scope Management is to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the *project scope* is primarily concerned with defining and controlling what is and is not included in the project. Improved scope detail and subsequent scope control contribute significantly towards improved estimate, schedule and cost accuracy.

This document receives authority from Project Management standard [R1] and is a component of the overall Enterprise Project Management governance framework. The Enterprise Project Management governance is applicable to all projects planned and executed within OPG.

Each project needs to fulfil the specific scope management requirements for the different project levels as defined in the Scalable Project Delivery Model [R2]. This includes the use of established Project Management Information Systems (PMIS) tools and software for managing related project work.

> The Scalable Project Delivery Model [R2] provides a, scaled application of project management principles and processes reflective of a projects complexity and cost. The model provides the minimum requirements for a project by knowledge area. It is expected that Project Managers will apply the intent of the knowledge area and exceed the minimum requirements as appropriate. The Business Unit Execution Line Management and/or Project Management Office may define additional requirements based on the specific project and program/portfolio requirements.

All project information and documentation that does not exist within PMIS should be maintained and stored within SharePoint in a standardized project working folder structure. Related project records and controlled documents should be managed in accordance with the Project Communication and Stakeholder Management manual [R3].

Note: ***Strategic Projects and/or Programs*** may have additional or varied expectations or requirements for projects within the program, and for the overall program itself. These should be documented in a project controls plan (or equivalent) for the program.

1.1 Overview

In the project context, the term “scope” can refer to:

- ***Product (incl. mod) scope*** – The features and functions that characterize a product, service, or result.
- ***Project scope*** – The work performed to deliver a product, service, or result with the specified features and functions. *Project scope* will include *product scope and can include contract scope*.

- ***Contract scope*** – is the agreed to items and/or services between two or more competent parties in a contract.

Documentation of *project scope* is represented by the Project Management Plan (PMP), while documentation of *product scope* is represented by the Requirements Traceability Matrix (RTM) or similar. Both aspects of scope are addressed within this manual. Contract scope is documented in a Contract Scope of Work document and is governed by the Contract Management Program [R12].

Scope Management includes the following processes:

- Plan Scope Management (Section 2.1)
- Collect Requirements (Section 2.2)
- Define Scope (Section 2.3)
- Create Work Breakdown Structure (WBS) (Section 2.4)
- Validate Scope (Section 2.5)
- Control Scope (Section 2.6)

Desktop guides and templates associated with this manual are available on the Enterprise Project Management website.

2.0 SCOPE MANAGEMENT PROCESSES

2.1 Plan Scope Management

Plan Scope Management is the process of creating a *scope management plan* that documents how the *project* and *product scope* will be defined, validated, and controlled. The key benefit of this process is that it provides guidance and direction on how scope will be managed throughout the project. This process is performed once or at predefined points in the project.

2.1.1 The *scope management plan* should be included in the PMP as per the Project Integration Management [R4] manual, and assessed periodically throughout the project as needed.

2.1.2 The *scope management plan* should describe how the scope was defined, and how it will be developed, monitored, controlled, and validated. The plan can be broadly framed or highly detailed, based on the needs of the project and should satisfy the requirements as defined in the Scalable Project Delivery Model [R2].

2.2 Collect Requirements

Collect requirements is the process of determining, documenting, and managing stakeholder needs and requirements to meet objectives. The key benefit of this process is that it provides the basis for defining the *product scope* and *project scope*. This process is performed once or at predefined points in the project.

The project's success is directly influenced by active stakeholder involvement in the determination and decomposition of needs into project and product requirements and by

the care taken in determining, documenting, and managing the requirements of the product, service, or result of the project.

Requirements are the conditions or capabilities that need to be satisfied by the project. They include the quantified and documented needs and expectations of the sponsor, customer, and other stakeholders. These requirements need to be elicited, analyzed, and recorded in enough detail to be included in the scope baseline and to be measured once project execution begins. Requirements become the foundation of the work breakdown structure (WBS). Cost, schedule, quality planning and procurement are all based on these requirements.

2.2.1 Project requirements should be gathered during the *development phase* and further defined through subsequent gates as per the Project Phase-Gate Management process [R5] and documented in accordance with the Scalable Project Delivery Model [R2].

- **Requirements Listing (Project level C, D):** Simple document listing the requirements categorized by stakeholder and priority. Document should be referenced in the *scope management plan*, and/or embedded within the PMP. Additional guidance is provided in the Project Management Plan template [R6].
- **Requirements Traceability Matrix (RTM) (Project levels A, B):** More elaborate document that links the product requirements from their origin to the deliverables that satisfy them. The RTM helps ensure that each requirement adds business value by linking it to the business and project objectives. It provides a means to track requirements throughout the project life cycle, helping to ensure that requirements approved in the RTM are delivered at the end of the project. Finally, it provides a structure for managing changes to the *product scope*. The RTM should be referenced in the *scope management plan* and prepared in the standard Requirements Traceability Matrix form [R7] or equivalent.

2.2.2 The requirements listing or RTM should be prepared by the project manager or delegate. The project manager or delegate should engage/review multiple sources to collect requirements. These sources may include but are not limited to:

- Project charter or scope request
- Stakeholders as per the stakeholder register identified in the PMP (e.g. Project sponsor, design team and system engineers, work management, safety, environmental, supply chain, human factors, contract management, vendors, and subject matter experts).
- Tie-in points and interfaces with other projects and/or plant operations and boundary limits
- Regulatory requirements and commitments (e.g. CNSC, TSSA, MOE, MOL, etc.)
- Station and system health reports / component condition assessments, life cycle management plans
- Safety reports
- Facilitated workshops / challenge sessions

- Walk downs
- OPEX, Lessons Learned, and Station Condition Records (SCR)
- Operations and maintenance governance
- Conceptual reports and/or studies

Note: Scope that involves modifications to power plant systems, structures or components require mandatory input from Engineering, Operations, Maintenance, Safety and Construction. Plant walk downs shall be conducted unless access control precludes access.

2.2.3 Requirements may start out at a high level and become progressively more detailed as more information about the requirements are known. However, prior to establishing the *scope performance measurement baseline* at the completion of the *development phase* (Gate 2), requirements should be measurable, testable, traceable, complete, consistent, and acceptable to key stakeholders.

2.2.4 The requirements document should be approved by the sponsor and accepted by the Business Unit Executing Line Management.

2.2.5 The requirements listing or RTM should be maintained and referenced throughout the project life cycle, and will be used as criteria to evaluate the scope, and evidence that the completion criterion were met during the final assessment of project success at project closeout.

2.3 Define Scope

Define Scope is the process of selecting the final project requirements, and developing a detailed description of the project and product. The key benefit of this process is that it describes the product, service, or result boundaries and acceptance criteria.

2.3.1 Using the output of the Collect Requirements process, the project manager and/or delegate should develop the *project scope statement* which should include the following:

- **Project, Product and Contract scope description:** Progressively elaborates the characteristics of the project and product, service, or result described in the *project charter* and requirements documentation. Refer to the Contract Management Program [R12] and associated governance support documents when there is contract scope to manage.
- **Deliverables:** Identifies any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables also include ancillary results such as project management reports and documentation.
- **Acceptance Criteria:** A set of conditions that is required to be met before deliverables are accepted.
- **Project Exclusions:** Identifies what is excluded from the project. Explicitly stating what is out of scope for the project helps manage stakeholders' expectations and can reduce scope creep.

The *project scope statement* is the description of the *project scope*, major deliverables, assumptions, and constraints. The *project scope statement* includes the entire scope including *project*, *product scope and contract scope*. It describes the projects deliverables in detail. It also provides a common understanding of the *project scope* among stakeholders and may contain explicit scope exclusions that can assist in managing stakeholder expectations. **The scope statement provides the baseline for evaluating whether requests for changes or additional work are contained within or outside the projects boundaries.**

2.3.2 The *project scope statement* should be progressively elaborated throughout the project life cycle in accordance with the Project Phase-Gate Management [R5] objectives and requirements.

- **Gate 1 (Completion of Initiation Phase):** High level information on the project purpose, objectives, requirements, boundaries and key deliverables documented within the *project charter* as per Project Integration Management [R4].
- **Gate 2 (Completion of Development Phase):** Scope statement within PMP (Level C or D) or *Scope of Work (SoW) document* (Level A, B) for entire project with an increased level of detail and definition based on the completion of preliminary design, as well as a detailed scope statement for next phase of work (i.e. definition phase).
- **Gate 3 (Completion of Definition [Planning] Phase):** Further refined scope statement within PMP (Level C or D) or SoW document (Level A, B) for <u>entire project</u> with an increased level of detail and definition based on the completion of detailed design and work planning.

Additional details on the SoW document are provided in the Scope of Work Template [R8].

2.3.3 The *project scope statement* should be approved by the Business Unit Executing Line Management and accepted by the sponsor via the SOW document (project levels A, B). For level C and D projects, the scope statement should be approved by the Business Unit Executing Line Management via approval of the PMP. Any changes to the approved scope statement should be documented and managed as per Project Integrated Change Control process [R9].

2.3.4 The scope statement should be utilized to form the basis of any procurement and contract management strategies. It is recommended that any scope details provided to vendors are a direct subset of the documented scope statement to ensure alignment.

2.3.5 *Value Engineering* may be performed during the early phases of project development and/or definition, as determined by the Business Unit Executing Line and as documented in the *scope management plan*.

> *Value Engineering* is a systematic process used by a multidisciplinary team to improve the value of a project, process or product through the analysis of its functions. The approach offers and assess alternatives to improve project deliverable quality and reduce total project costs while satisfying all necessary requirements.

2.3.6 At a minimum, a *Project Definition Rating Index* (PDRI) process should be performed for all project level A and B projects as per the requirements defined in Project Phase-Gate Management manual (Appendix A Phase-Gate Road Map) [R5]. Refer to the Enterprise Project Management website for the PDRI tool and associated process and methodology.

> The PDRI is a powerful tool for measuring the degree of scope development on a project. The tool was developed by the Construction Industry Institute (CII) and is utilized across multiple industries. It quantifies the level of scope development and maturity based on the project teams rating of ~70 elements. The PDRI process is typically performed in a workshop environment and facilitated by an individual outside of the project team. The primary benefit of the PDRI process is the open discussion and identification of any gaps and risks, and the resulting action.

2.4 Create Work Breakdown Structure (WBS)

Create *Work Breakdown Structure* (WBS) is the process of subdividing project deliverables and project work into smaller, more manageable components. The key benefit of this process is that it provides a framework of what has to be delivered. This process is performed during initiation phase, and is progressively elaborated as the project progresses through phases.

The WBS is a hierarchal decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables. The WBS organizes and defines the total scope of the project and represents the work specified in the current approved *project scope statement*.

The planned work is contained within *Work Packages* (the lowest level of WBS components) which are supported by activities. A *Work Package* can be used to group the activities where work is scheduled, estimated, monitored and controlled. The level above a *Work Package* is a *Control Account*. *Control Accounts* are used to group like *Work Packages*, and control and monitor project costs.

Each descending level of the WBS represents an increasingly detailed definition and breakdown of the project work. The WBS will dictate the structure of how the project is estimated, scheduled, monitored and controlled and therefore the level of decomposition is guided by the degree of control needed to effectively manage the project. The level of detail for *Work Packages* will vary with the size and complexity of the project.

Decomposition of the total project work into *Work Packages* generally involves the following activities:

(a) Identifying and analysing the deliverables and related work

(b) Structuring and organizing the WBS

(c) Decomposing the upper WBS levels into lower-level detailed components

(d) Developing and assigning identification codes to the WBS components

(e) Verifying that the degree of decomposition of the deliverables is appropriate.

Note: Excessive decomposition can lead to non-productive management effort, inefficient use of resources, decreased efficiency in performing the work, and difficulty aggregating data over different levels of the WBS.

2.4.1 The project manager should create a project WBS in accordance with the Standardized WBS [Appendix A]. The WBS is created during the initiation phase for all projects (excluding level D projects) as per the Scalable Project Delivery Model [R2] and Project Phase-Gate Management [R5] requirements. The associated *WBS dictionary* should be prepared in the WBS Dictionary template (Refer to the Enterprise Project Management website). Where possible, the WBS should be determined in consultation with the groups/organizations/vendors who will be planning and performing the work.

Use of the standardized WBS structure and coding is mandatory as it provides the foundation of scope, cost and schedule integration within the Project Management Information Systems (PMIS) including project and program/portfolio reporting. Deviation from the mandatory coding may result in inaccurate project performance information and project team rework.

The *WBS dictionary* is a document that provides detailed deliverable activity and scheduling information about each component in the WBS. Most information within the *WBS dictionary* is created by other processes and added to this document at a later stage. Information within the *WBS dictionary* may include: WBS identifying code, description of work, responsible organization, schedule milestones, resources required, cost estimates, and progress measurement and acceptance criteria.

2.4.2 The WBS and associated dictionary should be documented with the SoW document (project level A, B) or the PMP (project level C) and should form the initial *scope performance measurement baseline* which will be established at Gate 1. The WBS and *WBS dictionary* should be progressively elaborated throughout the project life cycle as scope becomes more defined. All changes to the *scope performance measurement baseline* should be controlled through the Project Integrated Change Control process [R9].

2.4.3 The SoW document (including the WBS and associated dictionary) should be developed early in the project planning process and is an input into the Project Estimating process [R10].

2.4.4 The standardized WBS utilizes *scope category* as the primary decomposition, with the product and project deliverables defined beneath. This facilitates the use of standardized scheduling templates and tools, and program/portfolio performance assessments.

Note: The standardized scope categories for Engineering Procurement Construction (EPC) projects are Project Management, Inspection, Engineering, Procurement, Construction, Commissioning, Closeout (i.e. PIEPCCC). The standardized scope categories for IT projects are Project Management, Client/User Requirements, System Design, Procurement, System Construction, Commissioning, Closeout (i.e. PCDPCCC).

2.4.5 The level of detail of the project WBS should reflect the project cost and complexity, and the degree of control needed to effectively manage the project. The minimum WBS requirements are identified in the Scalable Project Delivery Model [R2].

2.4.6 The project WBS should reflect contract strategies and project implementation strategies so that work scope, budgets and responsibilities can be clearly allocated.

2.5 Validate Scope

Validate Scope is the process of formalizing acceptance of the completed project deliverables. The key benefit of this process is that it brings objectivity to the acceptance process and increases the probability of final product, modification, service, or result acceptance by validating each deliverable. This process is performed periodically throughout the project as needed.

2.5.1 The project manager should perform scope validation throughout the project as project progress is reported, deliverables are achieved and *Work Packages* are completed.

2.5.2 The verified deliverables should be reviewed with and accepted by the customer or sponsor to ensure they are completed satisfactorily. The validation is primarily concerned with acceptance of the deliverables against the Requirements Listing or RTM.

2.5.3 Scope validation may include but is not limited to the review of design reports and approvals; material review and approvals; commodity installation checks; site walk-down reports; factory inspections and acceptance tests; simulator tests; post modification and commissioning testing; and available for service (AFS), operational acceptance and turnover reports.

2.6 Control Scope

Control Scope is the process of monitoring the status of the project and *product scope* and managing changes to the *scope performance measurement baseline* (referred to as scope baseline). The key benefit of this process is that the scope baseline is maintained throughout the project. The uncontrolled expansion to *product* or *project scope* without adjustments to time, cost, and resources is referred to as scope creep. The Control Scope process is performed throughout the project life cycle.

2.6.1 The scope baseline is the approved version of the scope statement (Level C and D) or SoW document including WBS and its associated dictionary (Level A and B).

2.6.2 All changes to the scope baseline shall be performed via the Integrated Change Control process [R8]. This process ensures that changes are appropriately evaluated, integrated with schedule and cost baselines, and approved by the appropriate authority.

2.6.3 All scope changes should be reviewed and approved by the sponsor. If the sponsor deems the change significant to the project, a revised business case summary (BCS) is required as per Developing and Documenting Business Cases [R11].

Note: Scope changes are significant if they affect the approval basis of the project (e.g. Investment Rate of Return (IRR), Net Present Value (NPV), Organizational Authority Register (OAR) funding approval, or final in-service date). A new scope and funding request approval is required to continue with the project.

2.6.4 The project manager should ensure that, as a result of the scope change, all affected documentation is updated as required. This may include but is not limited to the *project charter*, PMP, basis of estimate (BoE), BCS, and design documents.

3.0 ROLES AND RESPONSIBILITIES

3.1 Project Sponsor

(a) Accepts the project SoW and validates consistency with the project charter, and approves changes to the scope of work.

(b) Validates scope by reviewing and accepting that the verified deliverables have been completed satisfactorily.

3.2 BU Executing Line

(a) Reviews the requirements listing or RTM.

(b) Approves the project SoW.

(c) Determines if value engineering is required.

3.3 Project Manager

(a) Plans, identifies requirements, defines (via SOW and WBS), validates, executes, monitors, and controls project scope.

(b) Ensures appropriate ongoing communication with the Project Sponsor and other project stakeholders regarding changes to project scope.

3.4 BU PMO

(a) Assists the project manager with scope definition and preparation of WBS.

3.5 Enterprise PMO

(a) Acts as single point of contact for scope management methodologies, processes, and associated tools and templates.

4.0 DEFINITIONS AND ACRONYMS

4.1 Definitions

Control Account	Control Account is a management control level where scope, budget, actual cost and schedule are integrated and used to compare to earned value for performance management.
Development Phase	Includes developing the preliminary design and scope of work document outlining the specifications and preliminary schedule and cost information along with project strategies in accordance with design requirements.
Product Scope	Features and functions that characterize a product, service or result.
Project Charter	Defines the high-level information about the project that will be elaborated in various components of the PMP.
Project Definition Rating Index	Used to measure the adequacy of scope definition on a project.
Project Scope Statement	Describes the project scope, major deliverables, assumptions, and constraints.
Scope Management Plan	Documents how the project and product scope will be defined, validated, and controlled.
Project Scope of Work Document	Provides a comprehensive description of the total scope of work (SOW) to be executed on a project.
Contract Scope of Work Document	Is the agreed to items and/or services between two or more competent parties in a contract.
Scope Performance Measurement Baseline	Used to compare, manage, and control performance and to evaluate whether requests for changes or additional work are contained within or outside the projects boundaries.
Value Engineering	Is a systematic process used to improve the value of a project, process or product by either improving the function or reducing the cost.
WBS Dictionary	Is a document that provides detailed deliverable activity and scheduling information about each component in the WBS.

Work Breakdown Structure (WBS)	A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables
Work Package	Work Package is the work defined at the lowest level of Work Breakdown Structure for which cost and duration can be estimated and managed.

4.2 Abbreviations and Acronyms

AFS	Available For Service
BCS	Business Case Summary
BOE	Basis of Estimate
CII	Construction Industry Institute
CNSC	Canadian Nuclear Safety Commission
IRR	Investment Rate of Return
NPV	Net Present Value
OAR	Organizational Authority Register
OPEX	Operating Experience
PDRI	Project Definition Rating Index
PIR	Post Implementation Review
PMP	Project Management Plan
RTM	Requirements Traceability Matrix
SCR	Station Condition Record
SOW	Scope of Work
TSSA	Technical Standards and Safety Association
WBS	Work Breakdown Structure
WP	Work Package

5.0 REFERENCES

5.1 Performance References

Ref #	Document Number	Document Title
R1	OPG-STD-0148	Project Management
R2	OPG-MAN-00120-0010	Project Integration Management – Appendix A: Scalable Project Delivery Model
R3	OPG-MAN-00120-0017	Project Communication and Stakeholder Management
R4	OPG-MAN-00120-0010	Project Integration Management
R5	OPG-MAN-00120-0019	Project Phase - Gate Management (Appendix A Phase-Gate Road Map)
R6	OPG-TMP-0026	Project Management Plan
R7	OPG-FORM-0275	Requirements Traceability Matrix
	Nuclear associated with ECC: N-FORM-11621	
R8	OPG-TMP-0028	Scope of Work Template
R9	OPG-MAN-00120-0016	Integrated Change Control
R10	OPG-MAN-00120-0012	Project Estimating
R11	OPG-STD-0076	Developing and Documenting Business Cases
R12	OPG-PROG-0038	Contract Management

5.2 Developmental References

Project Definition Rating Index – Industrial & Building Projects, CII

Project Management Body of Knowledge (PMBOK Guide)

Appendix A: Standardized Project Work Breakdown Structure

A.1 PURPOSE AND CORE PRINCIPLES

This appendix provides details on the standardized Work Breakdown Structure (WBS) for all projects executed across OPG, and provides guidance on the use of the Program WBS, Project WBS, Control Accounts and Work Packages.

The standardized WBS applied to all OPG and contractors performing or supporting OPG project planning and/or execution.

A.2 PROJECT WBS

The WBS consists of a 10 character alpha-numeric Program WBS and a 10 digit Project WBS. Each element of the WBS represents a level in the hierarchy. An example of a standard WBS nomenclature is provided in Figure 1, and a description of the components in Table 1.

Figure 1: Work Breakdown Structure Nomenclature

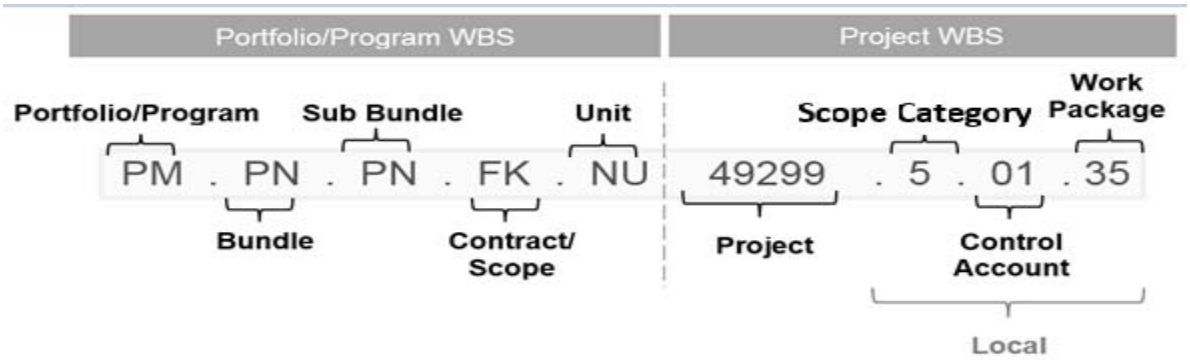

Table 1: Work Breakdown Structure Definition

Portfolio/Program WBS (determined by Program/Portfolio Management)	
Portfolio/Program	Highest level of the WBS and grouping of work.
Bundle	Facility, region that the group of work is executed at.
Sub-Bundle	Sub Bundle grouping
Contract/Scope	A unique identifier for grouping like scope to facilitate reporting.
Unit	Unit that the project is executed on. A multiple-unit code is used for projects that include execution scope on multiple units.
Project WBS	(determined by the Project Team)
Project	The 5-digit project number aligned with the financial reporting system.
Scope Category	Each project is broken down to 8 Scope Categories: (0) Cost only, (1) Project management, (2) Pre-construction inspections or Client/User requirement development (IT Projects), (3) Engineering/design, (4)

	Procurement, (5) Construction, (6) Test & commissioning, and (9) Closeout. If Test and commissioning work is small effort that is in parallel with or immediately after construction, then test and commissioning work can be performed under construction.
Control Account	A maximum of 99 Control Accounts may be defined in each Scope Category. Each Control Account is then broken down to Work Packages. **Control Account is the level at which cost management occurs.**
Work Package	A maximum of 99 Work Packages can be defined in each Control Account. Each Work Package is then broken down to detailed activities. **Work Package is the level at which schedule management and EVM occurs.**

A.3 GENERAL PRINCIPLES

The following general principles apply:

- The WBS defines the SOW for the project and represents 100% of the SOW (at all levels within the hierarchy).
- The granularity of the WBS is reflective of the cost and complexity of the project.
- The WBS is progressively elaborated as a deliverable during the project life cycle. The WBS is revised in accordance with the project change control. This includes changes to titles etc.

Control Accounts

- Control Accounts should follow the standardized structure (if appropriate).
- One Control Account should contain at least one Work Package, while one Work Package belongs to only one Control Account.
- One Control Account should contain a group of related Work Packages that are owned and can be completed by a unique organization.

  Unique Organization does not preclude the requirement that Owner obliged activities such as Hold Point, Witness Point and Owner supporting activities should be included in Vendor's Work Packages; but the cost and labor hours of those activities are not in Vendor's Control Accounts.
- A Control Account should be assigned to one releasing Gate.
- A Control Account should be completed in **a continuous time window**.
- For Construction & Commissioning, the Control Account may be specific for one station Unit in one Outage or Innage window.
- Control account durations should reflect the complexity of the work and facilitate adequate performance monitoring (normally less than two reporting periods).
- As a guide, a medium (level B) size project is recommended to be broken down to 20-50 Control Accounts, resulting in the average budget of one Control Account being 2-5% of the total project budget.

Work Package

- A Work Package is a group of detailed activities that can be completed by a **unique organization**, in a continuous time window, in one location, and within one financial releasing gate.

  Unique Organization does not preclude the requirement that Owner obliged activities such as Hold Point, Witness Point and Owner supporting activities should be included in Vendor's Work Packages; but the cost and labor hours of those activities are not in Vendor's Work Packages.

- Performance measurement, including earned value management, is performed at Work Package level and can be rolled up to Control Account, scope category, and Project etc.

- Work Package durations should reflect the complexity of the work and facilitate adequate performance monitoring, normally less than two reporting periods.

Planning Package

- A Control Account is subdivided further into Work Packages; or at the preliminary planning stage, it may contain only one planning package that is the space holder of the budget.

- Below a Control Account, the ID of the planning package is 99, e.g.50199, 50299. After the detailed planning stage, if three WPs are developed for 50100, then the effort and budget is moved from 50199 to 50101, 50102 and 50103.

WBS Naming

- The names of all WBS components shall be clearly distinguishable from other components. That is to say, without reviewing the parent level WBS component, the lower level WBS component names should still be clear and concise, reflecting the work scope.

- The names of all WBS components shall be deliverable oriented and have two segments: ***object + action*** form. E.g. "*Unit 2 System A Valves Replacement*"

WBS Integration

- WBS is used during estimating, scheduling and budgeting (cost management).

- All Control Account and Work Package attributes including number, title, scope, start date, finish date and Physical Completion Percentages, must be aligned in all PMIS tools.

A.4 STANDARDIZED CONTROL ACCOUNTS

Standard Control Accounts have been established as follows for (1) **EPC Projects** and (2) **IT Projects**. Not all the Control Accounts may be applicable to every project.

Scope Category 0: Cost Only		
0X100	*Defined by Project Manager*	
0X500	*Expenses*	Cost for expenses that are not allocated to specific Work Packages
0X700	*Interest*	Cost for interest
0X900	*Contingency*	Cost for contingency
Scope Category 1: Project Management		
1X100	*Project Management*	Work setting up the strategies and plans for Project Management, such as PMP, SoW, project integration, Risk Management Plan Development, Risk Assessment, etc.
1X200	*Project Controls*	Project controls work such as, Scheduling, Estimation, Funding Request Development, BCS Development, Alternative Option Decision Making Strategies Development, Gate Documents etc.
1X300	*QA/Health, Safety and Environment*	Work such as Quality Management Plan Development, Industrial Safety Management Plan Development, Regulatory Approval Application Documents Development, etc.
1X400	*Organization / Staffing and Training*	work such as Resource Support Identification, Staffing Management Plan Development, Labor Agreement, Training Management Plan Development, Training, etc.
1X900	*Other Management Deliverables*	Work that cannot be allocated in other management areas.
Scope Category 2: Pre-Construction Inspection (for EPC Project) *or* **User/Client Requirement (for IT Project)**		
2X100	*Pre-Construction Inspections Preparation*	Preparation work for Pre-Construction walk down/inspections, including Work Orders preparation for inspections, etc.
2X200	*Pre-Construction Inspections Execution*	Pre-Construction walk down, inspection execution and reports. Site work on different Units may be in different Control Accounts.
20100	*Client/User Requirement - Software*	For IT Project only
20200	*Client/User Requirement - Hardware*	For IT Project Only
20300	*BCS Preparation*	For IT Project Only

Scope Category 3: Engineering (for EPC Project) *or* **System Design (for IT Project)**		
3X100	Engineering Analysis/Technology and SOW Development	Including engineering analysis, technology development, Scope of Work development, conceptual design and specifications, etc.
3X200	OPG Engineering Oversight and Support	For OPG Engineering Level of Effort, such as engineering reviews, oversight and approvals, execution engineering support, commissioning support, design closeout support, etc.
3X300	Preliminary Engineering	Including Engineering Mobilization and Preliminary Design.
3X400	Detailed Engineering including Detailed Design	Including Detailed Design, Design Approval and DCAVR work.
3X500	Field Engineering and Engineering Support during Construction	Mainly refers to Field Engineering and Engineering Support during Construction.
3X600	Other Engineering Deliverables	Refers to other Engineering Deliverables.
3X700	Work Plan Development	Including Comprehensive Work Packages, Construction Plans, Specifications and Commissioning Plans, etc.
3X800	Modification Training and Specialty Training	Refers to the training work to OPG staff after Vendor performs a modification.
3X900	TPAR/TCR and Other Procedure Change	TCR refers to the work for Temporary Change Record; TPAR refers to the work for Technical Procedure Action Request, and other Procedure Changes.
30100	Initial Software Design	For IT Project Only
30200	Final Software Design	For IT Project Only
30300	Initial Hardware Design	For IT Project Only
30400	Final Hardware Design	For IT Project Only
Scope Category 4: Procurement		
4X100	*OPG Commercial Strategies*	The development and approval of commercial strategies.
4X200	*OPG Procurement*	For OPG to issue RFP's, negotiate and award the contracts.
4X300	*OPG Contract Management*	For OPG Contract Management level of effort.
4X400	*OPG Materials and*	For OPG large components acceptance and warehouse

	Tools Receiving and Storage Management	management efforts.
4X500	*Procurement for Long Lead Packages*	EPC Contractor's Purchase Orders shall be identified as Work Packages below this Control Account.
4X600	*Procurement for Non Long Lead Packages*	EPC Contractor's Purchase Orders shall be identified as Work Packages below this Control Account.
4X700	*Manufacturing / Fabrications*	If EPC Contractor needs to manufacture / pre-fabricate equipment or components.
4X800	*Packaging / Shipment and Delivery to OPG Site*	Contractor's packaging, shipment and delivery to OPG Site. Below this Control Account, Delivery Work Packages are identified. Delivery work can be included in Procurement Packages or Manufacturing / Fabrication Packages, if the Delivery work is immediately after the procurement or manufacturing.
40100	*OPG Procurement*	*IT Project Only*
40200	*Vendor Procurement*	*IT Project Only*

Scope Category 5: Construction

The Control Accounts below Construction vary from project to project, since different projects contain different scopes of work.

Construction work is to be further broken down as per construction phases, areas, systems, subsystems or disciplines, etc., according to (1) the SOW documents, (2) the size, duration, and complexity of the work, (3) the construction strategies and (4) the location, area and discipline.

A construction Control Account contain work may only for one specific station Unit in one Outage window or Innage window.

The number for Control Account can be from 50100, 50200, to 59900.

50100	*Software Configuration / Development*	IT Project Only
50200	*Hardware Installation*	IT Project Only
50300	*Customized User Documentation*	IT Project Only
50400	*Customized Training Materials*	IT Project Only

Scope Category 6: Test & Commissioning

Similar with Construction, Control Accounts below Test & Commissioning vary from project to project.

Test & Commissioning is to be further broken down by phases, areas, systems, subsystems or

disciplines, etc. Control Accounts are to be setup at certain levels depending on the size, duration, complexity of the work, and the strategies of how the project team is going to do the work. Test and Commissioning normally aligns with Construction Packages, or by systems.

For some projects, if Test and Commissioning work is small and is done in parallel with, or immediately after construction work, then Test and Commissioning work can be included in the Construction Work Packages.

A test & commissioning Control Account should only contain work on one unit and should contain either innage or outage work.

The number for Control Account can be from 60100, 60200, to 69900.

60100	*Test & Commissioning Plans Development*	IT Project Only
60200	*QA Instance Testing and Improvement*	IT Project Only
60300	*System Entering Production*	IT Project Only
Scope Category 9: Closeout		
9X100	*AFS (Available for Service) Work*	AFS (Available for Service) Work
9X200	*As Built Documents Development and MEC/EC Closeout*	Including As-Built documents development and submission to the owner, and MEC/EC Closeout
9X300	*Administration Closure*	Including project team demobilization, large construction machines withdrawing from the site, etc.
9X400	*Contract Closure*	Closing the contract.
9X500	*Handover to Client / Station*	Once project work is finished, components, systems and facilities are handed over to Client/Station, including final inspections and handover document signing.
9X600	*Project Closure*	Including closeout all work, final invoice submission, REIS review, scope closeout, project closure report, and Final Post Implementation Plan Review, etc.
90100	*User Training*	IT Project Only
90200	*End User Support*	IT Project Only
90300	*Project Closure*	IT Project Only

Note:

Within the 5 digit Control Account numbers, for the Scope Category of Project Management, Engineering, Procurement and Closeout, the second digit currently marked as “X” may be used to differentiate owners if multiple owners work in the project, and/or differentiate time frames if the work is not continuous, or differentiate releasing gates; otherwise, 0 is used to replace X. For example, if two Vendors has AFS Work within the same project number, and both of them have AFS work in two separate windows, then 91100, 92100, 93100 and 94100 may be defined.

ONTARIO POWER GENERATION

Manual

Internal Use Only	
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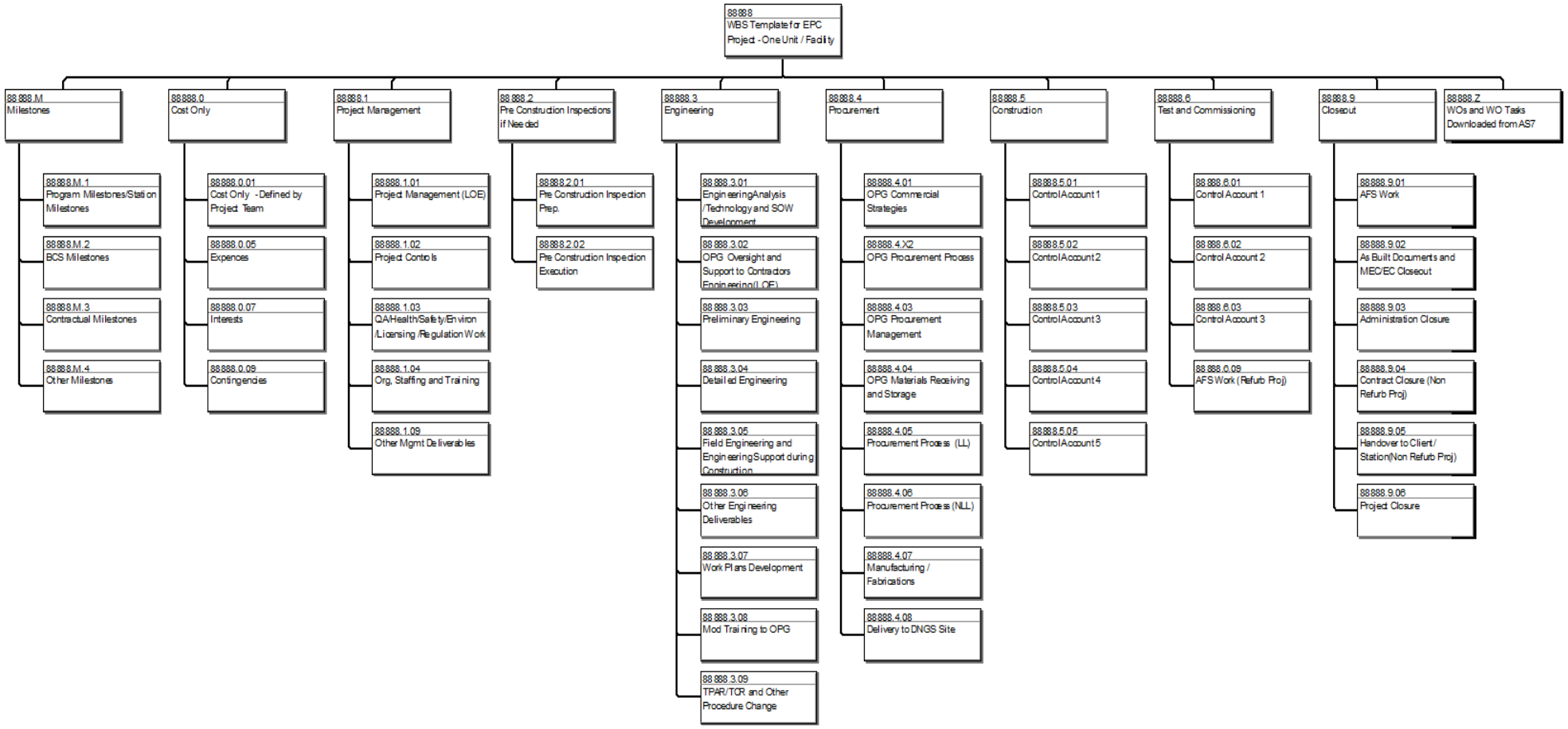
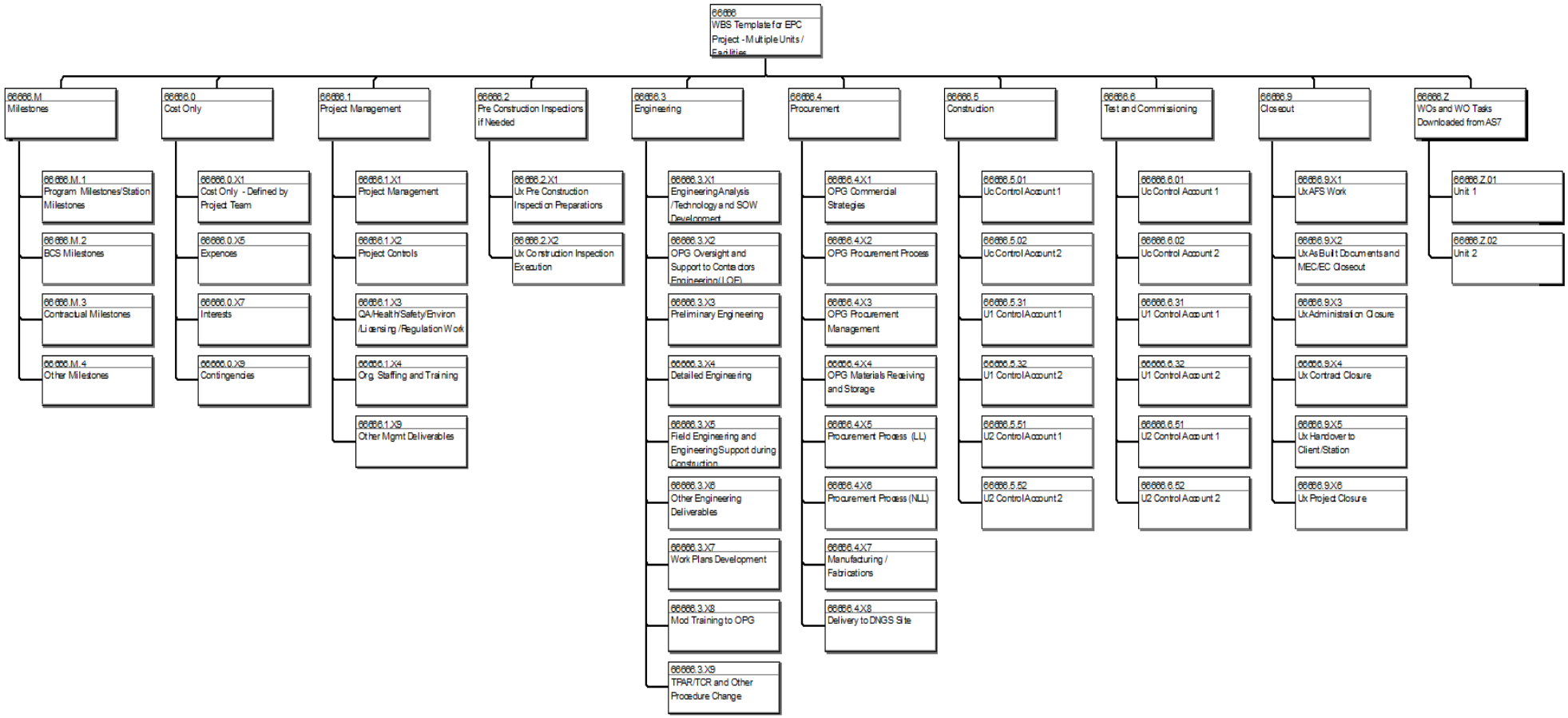
Title: PROJECT SCOPE MANAGEMENT

Standard WBS Template for EPC Project – Single Unit/Facility



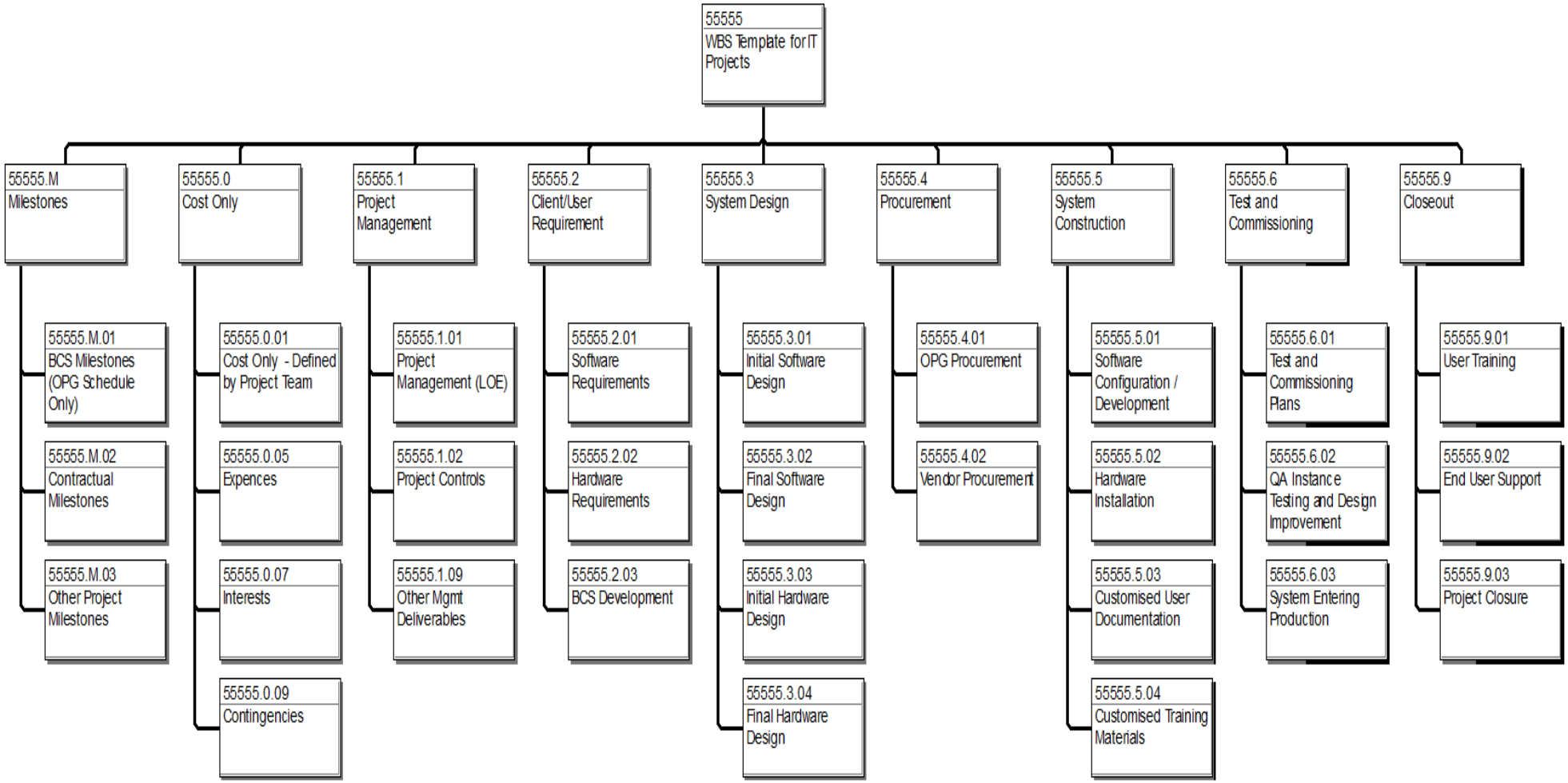
Note: (1) This template is for Projects that contain work of only one generating unit or construction facility; (2) 88888 is to be replaced by the 5-digit project number; (3) One Control Account should contain Work Packages in one continuous period, of only one owner and within one financial releasing Gate; (4) For Inspection, Construction and Commissioning work in power station, one Control Account contains work only in one Outage Window or Innage Window.

Standard WBS Template for EPC Project – Multi Units/Facilities



Note: (1) 66666 is to be replaced by the 5-digit project number; (2) One Control Account contains Work Packages in one continuous period, of only one owner and within one financial Releasing Gate; (3) For Inspection, Construction and Commissioning work in power station, one Control Account contains work only on one Unit in one Outage Window or Innage Window.

Standard WBS Template for IT Project



Note: (1) 55555 is to be replaced by the 5-digit project number; (2) Not all Control Accounts are to be used.