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S J Sangiuliano

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A Multi-National Project Management Framework Audit of a European Union Marine Spatial Planning Project

Stephen Joseph Sangiuliano
Stephen.Sangiuliano@gov.scot

Marine Scotland Marine Labratory,
375 Victoria Road, Aberdeen, Scotland, UK, AB11 9DB;

Executive Summary

Marine spatial planning (MSP) is an emerging field of management aimed at promoting the sustainable use of the marine environment. In order to further the progression of MSP, a European Union funded Project is exploring the opportunities for multi-use across Europe's sea basins. Given the complex multi-national partner approach, and the relatively immature status of MSP, the utilization of an effective project management regime is vital in order to achieve the vision set out by The Project. This paper details the development of a Multi-National Project Management Framework Audit (MPMFA) matrix informed by the Project Management Body of Knowledge. The MPMFA is applied to The Project's ongoing project management practices in order to identify knowledge and process gaps and recommend a suite of tools and techniques. The results demonstrate that The Project has underdeveloped cost, schedule, and change management plans in relation to project execution and monitoring phases.

Key Words: Project Management; Marine Spatial Planning; European Union

1. Introduction

Marine spatial planning (MSP) is an emerging field of management aimed at promoting the sustainable use of the marine environment [1]. MSP utilizes sound natural and social science in order to develop provisions supporting blue growth and associated socioeconomic gain while upholding the quality of the marine environment, thus protecting the ecosystem services which are essential to blue growth [2]. Blue growth and ecosystem well-being can be classified within a marine spatial plan as a marine development agenda (MDA) and ecosystem protection agenda (EPA), respectively [3]. Within a marine spatial plan, the MDA and EPA will typically be bilaterally comprised of

subcomponents of various distinct industries grouped either sectorally, for example offshore renewable energy, as is the case for the Scottish National Marine Plan [4], or as a part of the marine spatial plan's broader policy framework, as is the case with the Belgian Part of the North Sea [5]. The intention of MSP is to amalgamate these two distinct agendas and the subcomponents contained therein in order to maximize the efficiency of spatial usage while upholding the vision set out by the plan, as well as the strategic aims influenced by key drivers to realize the stated vision [3].

A European Union (EU) funded project (The Project) jointly undertaken by ten organizations across seven member states is exploring the opportunities for multi-use of marine space across the Baltic, North, Mediterranean, Black, and Eastern Atlantic Seas. Given the complex multi-national partner approach, in conjunction with the relatively immature status of MSP, the utilization of an effective project management regime is vital in order to achieve the vision set out by The Project. A project partner has been delegated as the accountable authority for managing and coordinating high-level inputs, processes, and outputs for all member state participants of The Project throughout the spectrum of the project lifecycle.

Project management is the application of knowledge, skills, tools, and techniques to project activities in order to fulfill project requirements [6]. If utilized effectively, project management can ensure that deliverables are met on schedule, within budget, in accordance with the defined scope, and to specified quality indicators. The international project management standardization and accreditation organization, Project Management Institute (PMI), has been releasing best practice guides for over two decades [7], entitled the Project Management Body of Knowledge (PMBOK). The PMBOK 5th Edition sets out a systematic approach to organize projects according to a project planning methodology which encompasses 11 subsidiary plans within an overall project management plan (PMP) [6]. The distinct subsidiary plans are as follows:

- Costs Management Plan (CMP);
- Schedule Management Plan (SMP);
- Scope Management Plan (SpMP);
- Communication Management Plan (CoMP);
- Human Resources Management Plan (HRPM);
- Procurement Management Plan (PrMP);
- Change Management Plan (ChMP);
- Quality Management Plan (QMP);

- Requirements Management Plan (RqMP);
- Risk Management Plan (RMP);
- Stakeholder Management Plan (SkMP).

Each of the subsidiary plans act as a guideline document on how particular aspects of the ten project management knowledge areas as defined by PMI are to be managed through different phases of the continuum of the project lifecycle. PMBOK suggests that a typical project is comprised of the following five distinct project phases:

- Project Initiation;
- Project Planning;
- Project Execution;
- Monitoring and Controlling;
- Project Closing.

The following sections of this paper presents the results of a Multi-National Project Management Framework Audit (MPMFA) undertaken against the project management framework of The Project. Section 2 details the methodology employed to develop the MPMFA questionnaire and template, as well as the process undertaken to conduct the audit. Section 3 details the results of the audit. Section 4 provides a discussion on the results and offers recommendations. Section 5 concludes with an overview of the work.

2. Methods

2.1. MPMFA Matrix Template

The project management knowledge, skills, tools, and techniques that comprise the MPMFA template are informed by PMI's PMBOK 5th Edition. Utilizing the best practice document as a loose blueprint, a series of questions and sub-questions, extending at times as far as the eighth degree, are put forth under the overall envelope of 'Project Plans', which are further compartmentalized into 11 specific 'Subsidiary Plans'. The Project Plan envelope and subsequent Subsidiary Plans are positioned along the y-axis of the MPMFA template. All questions under the Subsidiary Plans compartment pertain to activities initiated, coordinated, or controlled by the project manager (PM) and associated project management team in relation to a particular aspect of the project (e.g. cost, schedule, scope, etc.). A separate compartment from Project Plans entitled 'Organizational Management' runs along the y-axis just beneath Project Plans.

Questions under the Organizational Management envelope pertain to organizational resources attributed to the project either by the PM, or the project sponsor in obtaining a PM, which are not specifically related to any Subsidiary Plan. Finally, the MPMFA questions put forth under both the Project Plans and Organizational Management envelopes demonstrate a temporal characteristic along the lifecycle of a project, which is organized along the x-axis as 'Project Phases'. The individual phases of the project are drawn from the five project management phases put forth in PMBOK [6], with a pre-project phase heading entitled 'Project Selection' placed first chronologically. The questions put forth by the MPMFA questionnaire used to develop the matrix template were assessed against The Project's project management practices via a review of The Project's organizational material as well as a series of interviews conducted with the PM [8]. The MPMFA methodology template and questionnaire are provided as supplementary material to this paper.

2.2. Scoring, Weighting, and Ranking

Solutions to questions were evaluated as either Yes – full points, No – no points, As Required (A/R) – half points, or Not Applicable (N/A) – not included in the scoring, weighting, or ranking (Figure 1). After each question was attributed with the above designations, individual questions were then given a weight of their worth within the overall context of the MPMFA matrix based on their location within the overall degree of sub-questions on a linear progression, ranging from 64 to 1. The exception to the linear relation is question 5a, "Does the plan distinguish between distinct subsidiary plans?" – while the envelope component of Project Plans receives a score of 64, and subsidiary plans themselves attributed with a halved weight of 32, Subsidiary Plan is attributed a weight of 48, in between its envelope and sub-component as question 5a itself acts as a bridge between the actual PMP and its subsidiary plans (Table 1).

Assessment Key:
Yes
No
N/A (not applicable)
A/R (as required)

Figure 1: Evaluation assessment key.

Table 1: Questionnaire weightings.

Questionnaire Hierarchy	Weighting
5. Is a project plan developed?	63
5a. Does the project plan distinguish between distinct subsidiary plans?	48
11. Is a procurement management plan developed?	32
11c. Has a capital procurement, evaluation, and control model been developed?	16
11cv. Is general capital analysis undertaken?	8
11cv2. Assessing the cost of capital	4
11cv2c. Revenue stream analysis	2
11cv2ciii. Net present value	1

Questions that are grouped in the matrix within an intersect of either of the two y-axis envelopes of Project Plans or Organizational Management with the x-axis envelope of Project Phases were then tallied, expressed as a percentage ranking obtained from dividing the sum of their evaluation score according to the assessment key and weighted according to their position in the questionnaire hierarchy by the sum of all weightings within the intersect. Ranking percentiles are then compartmentalized for further analysis into a ranking table where coloured designations are attributed for every 10 percent increments (Figure 2). The Project Plans – Project Phases combination occurs 30 times, while the Organizational Management – Project Phases combination occurs three times, totaling 33 distinct x/y-axis intersects. The appropriate rankings for all 33 matrix intersects are attributed even relative weightings.

Ranking Key (%):
0-0.9
10-19.9
20-29.9
30-39.9
40-49.9
50-59.9
60-69.9
70-79.9
80-89.9
90-100

Figure 2: Ranking percentile key.

In order to provide a ranking for the direct sub-components of the three primary envelope categories – Project Plans, Organizational Management, Project Phases – the sums of each of the rankings for the x/y-axis intersects are each individually attributed an even weighting on par with the individual envelope sub-component question. For example, in order to attribute a ranking to CMP, the x/y-intersect rankings relevant to CMP (CMP/Project Initiation, CMP/Project Planning, CMP/Project Execution,

CMP/Monitoring and Control) are individually attributed even weightings (_/32) amongst one another and in relation to question 6, “Is a cost management plan developed?”. The reasoning behind this methodology is to dilute the overall impact that specific tools, which are typically at a lower degree of the weighting hierarchy, and processes, which compose much of the x/y-axis intersect ranking, have on the valuation of the totality of the project management output. This is done as PMI states that PMBOK is a guideline document, not to be interpreted prescriptively [6]. Therefore, if a PM has conceived, developed, and implemented a RMP, this is done so to their own penchant, and while it should be in-tune with the international standard of PMBOK, whether or not the PM chooses to, for example, quantify the sponsor organization’s risk attitude, it is not the intention of this model to suggest that this holds much importance within a project manager’s overall strategic approach.

Envelope sub-components use this same approach when determining the three envelope rankings. The exceptions apparent are that Project Plan is further diluted by the Subsidiary Plan envelop sub-component in conjunction with the 11 actual subsidiary plans, and Organizational Management is not diluted by any hierarchically weighted questions at an envelope or envelop sub-component level, as there is no question surrounding the existence of Organizational Management as this must be implied in any business case. Finally, the overall ranking of the MPMFA matrix is determined by taking the rankings of each of the three envelopes and applying weightings to each that are in accordance with the number of envelop sub-components feeding in to the envelope category, which is as follows:

- Project Plan, 12 sub-components/21 in total = 57.1%
- Organizational Management, 3 sub-components/21 in total = 14.3%
- Project Phases, 6 sub-components/21 in total = 28.6%

3. Results

3.1. MPMFA Overall Evaluation

Overall, the project management knowledge, skills, tools, and techniques applied to The Project achieved a 61.7% ranking in conformity with the MPMFA criterion. Of the three major envelopes, Project Plans contributed to the greatest percentage of the evaluation, with its ranking of 56.4% accounting for a weighting of 57. 1% of the total evaluation, thereby contributing to 32.2% of the overall ranking. Project Phases contributed the

second greatest percentage of the evaluation, with its ranking of 66. 1% accounting for a weighting of 28.6% of the total evaluation, thereby contributing to 18.9% of the overall ranking. Organizational Management contributed the least percentage of the evaluation, with its ranking of 74% accounting for a weighting of 14.3% of the total evaluation, thereby contributing to 10.6% of the overall ranking. While individually, envelopes have ranked in a contrasting order in terms of their adherence to the criteria applied in the MPMFA, the process of developing concrete project planning is far more impactful towards the success of a project than any other envelope, and ,therefore, in order to achieve a higher overall ranking against the MPMFA criteria, it is suggested that the PM focuses strongly on the development, implementation, and monitoring of project plans beginning from project selection through to project closing.

Table 2: MPMFA overall ranking methodology.

Envelope Name	Envelope Ranking (%)	Overall Weighting (%)	Overall Ranking (%)
Project Plans	56.4	57.1	32.2
Organizational Management	74	14.3	10.6
Project Phases	66.1	28.6	18.9
TOTAL:		100	**61.7**

3.1.1. Project Plans

The project plans envelope received a ranking of 56.4%, making it the lowest scoring envelope although most impactful in relation to the MPMFA criteria. The Project Plans envelop consists of 12 sub-components, one being a transition element between the development of a PMP towards the remaining 11 subsidiary plans. Since the only formally distinct subsidiary plan identified in The Project's PMP was a RMP, with other subsidiary plans containing several elements that would suggest their presence, although not formally referred to as such, while other plans seem to be virtually non-existent, notably HRMP, PrMP, and ChMP, the sub-component 5a Subsidiary Plan received a ranking of 0%. ChMP is the only subsidiary plan category to receive a ranking of 0%, as a literature review and PM interviews suggest no evidence of change management planning. The highest ranking sub-components to Project Plans positioned in the top percentile include RqMP, ranking 100%, and SpMP, ranking 91.6%, suggesting that sufficient resources have been applied by the project team to determine what is required of them throughout the process of managing The Project in order to maintain accountability and ensure that deliverables contain only the necessary information agreed upon from project planning through to monitoring and controlling deliverables. The following subsections detail the key findings of the MPMFA matrix from a subsidiary plan lens.

Table 3: Hierarchical ranking of project plans envelope sub-components – high to low.

Project Plans Envelop Sub-Component	Ranking (%)
14. Requirements Management Plan	100
8. Scope Management Plan	91.6
13. Quality Management Plan	79.1
16. Stakeholder Management Plan	74.2
9. Communications Management Plan	61.8
15. Risk Management Plan	60.2
10. Human Resources Management Plan	55.5
6. Cost Management Plan	52.2
7. Schedule Management Plan	33.8
11. Procurement Management Plan	24.7
12. Change Management Plan	0
5a. Subsidiary Plan	0

3.1.1.1. Cost Management Plan

CMP achieved a ranking of 52.2% in total, positioned eighth of out the 11 subsidiary plans. CMP ranged from the project initiation aspect of the project lifecycle through to project planning, execution, and monitoring and control. The CMP demonstrates the highest ranking in relation to the project initiation phase at 90.9%, where various forms of estimation, including parametric, analogous, and phased estimation techniques, amongst others, have been utilized in order to develop the initial budget for project partners based on the set amount contributed by the EU. Vendor bid analysis has been marked as N/A, while iterative budget estimation was not used. Iterative budget estimation is the process of applying both a top-down and bottom-up approach to organizing financial resources within a budget, whereby the PM consults subject matter experts (SMEs) within the project team on the costs of various elements of the project, and vice versa, in an iterative fashion until a mutually agreeable budget is developed. The idea behind the iterative estimation process is that management estimates tend to stretch the available resources while SME estimates often suggest that more resources are required than are available. By continuing this back and forth communication during project initiation, a transparent dialogue that breeds trust between the PM and the project team is formed, which may prompt the team to provide lower estimates for project activities due to their buy-in into the project [9].

The CMP demonstrates the second highest ranking in relation to the project planning phase at 70%, where costs have been allocated into various categories as applicable, with resource sheets detailing characteristics of the cost components, thereby providing for greater accountability of project team members and allowing for tracking of the budget as the project progresses throughout its lifecycle. However, a contingency reserve dedicated to identified risks emanating from the EU funding, as well as a

management reserve dedicated to unidentified risk emanating from the PM organization's budget, have not been estimated and no monies have been set aside. If built into the budget during the project planning phase, such financial reserves will allow for the PM to deal with risks if they surface at any point in the project, thereby providing legitimacy to the RMP. Furthermore, the budget has not been inputted into a project management software during the project planning phase, which would allow for dynamic tracking of deliverables against allotted financial resources to SMEs, project team members, the PM, and associated services as delineated within specified cost categories through to the project execution and monitoring and controlling phases [10].

The CMP demonstrates 0% rankings in the remaining project execution and monitoring and controlling phases. While the absence and associated deficiencies emanating from the lack of utilization of a project management software has been touched upon in the previous paragraph, it should also be noted that the earned value reporting (EVR) technique is not employed. EVR utilizes a series of calculations (Table 4) in order to combine cost data with schedule data so that an enhanced understanding of the status of the project can be obtained [11]. EVR visually represents whether the project is (Figure 3):

a) ahead of schedule and under budget;
b) ahead of schedule and over budget;
c) behind schedule and under budget;
d) ahead of schedule and over budget.

The utilization of EVR provides a simple representation of time and cost data which is beneficial for SMEs, project team members, senior management, and stakeholders who may not be directly involved in project management aspects of deliverables. EVR is also beneficial to the PM so that the status of deliverables can be readily tracked, identify additional float and finances, and/or determine whether decisions have to be made on which aspects of the triple constraint of time, cost, and scope and quality need to be adjusted in order to successfully achieve the projects vision.

Table 4: Earned value reporting methods.

Variable	Abbreviation	Calculation
Planned Value	PV	N/A
Actual Cost	AC	N/A
Earned Value	EV	N/A
Planned Duration	PD	N/A
Budget at Completion	BAC	N/A
Schedule Variance	SV	EV-PV
Cost Variance	CV	EV-AC
Schedule Performance Index	SPI	EV/PV
Cost Performance Index	CPI	EV/AC
Estimate at Completion	EAC	BAC/CPI
To Complete Performance Index	TPCI	BAC-EV/BAC-AC

Figure 3: Earned value reporting graphics. Red = planned costs, blue = actual costs, green = earned value.

3.1.1.2. Schedule Management Plan

SMP achieved a ranking of 33.8% in total, positioned ninth of out the 11 subsidiary plans. SMP ranged from the project planning aspect of the project lifecycle through to project execution, and monitoring and control. The SMP demonstrates the highest ranking in relation to the project planning phase at a dismal 35.3%. While resources, concurrency, and duration of tasks, as well as milestone deliverables are identified, the formulation of a formal precedents table which organizes all of the task relationships above as start to finish, start to start, finish to start, and finish to finish has not been developed (Table 5). This task organization emanating from the precedents table can then be inputted into a network diagram which utilizes a forwards-backwards pass inclusive of all tasks in order to determine the float days available to the completion of certain tasks, as well as the critical path of the project, whereby the interdependencies between tasks can experience no float days without delaying the output of the project (Figure 4) [6]. To this end, the information emanating from the precedents table and network diagram can be inputted into a project management software which would allow for dynamic tracking of deliverables against resources [9]. However, no project management software has been utilized and, therefore, the project execution and monitoring and controlling phases have received a 0% ranking.

Table 5: Precedents table.

WBS #	Description	ID	Precedent	Relationship	Duration	Owner	Resource
1.1.1.	<Activity>	A	None	N/A	5 days	<Team Member>	£50/hr
1.1.2.	<Activity>	B	A	Fin-Start	3 days	<Team Member>	£50/hr
1.1.3.	<Activity>	C	B	Fin-Start	5 days	<Team Member>	£25/hr
1.1.4.	<Activity>	D	A	Fin-Start	20 days	<Team Member>	£30/hr
n…	<Activity>	E	C, D	Start-Start	10 days	<Team Member>	£30/hr

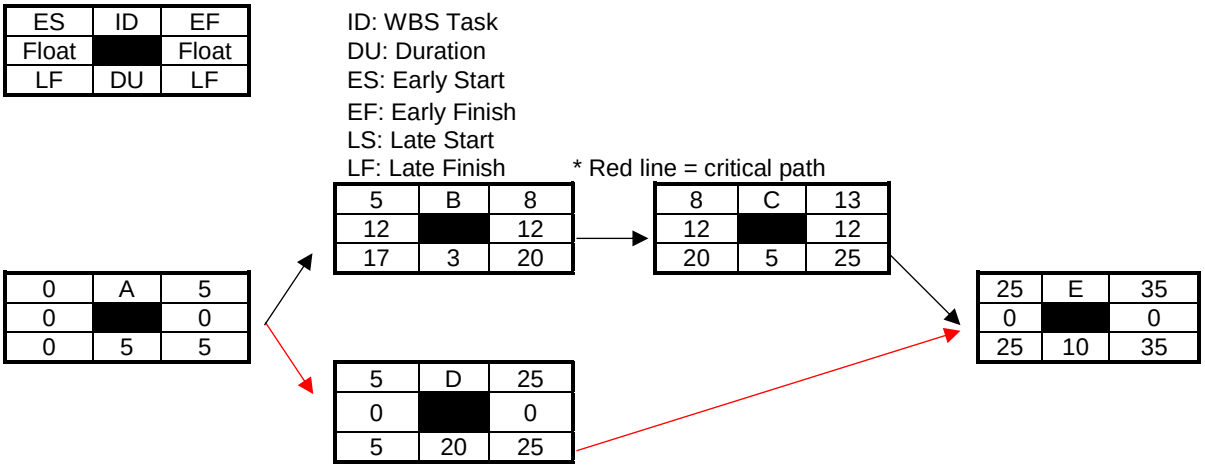

Figure 4: Network diagram.

3.1.1.3. Scope Management Plan

SpMP achieved a ranking of 91.6% in total, positioned second of out the 11 subsidiary plans. SpMP ranged from the project planning aspect of the project lifecycle through to project execution, and monitoring and control. The SpMP demonstrates a 66.2% ranking in relation to the project planning phase, where the PM worked with project partners to develop a scope statement for the Grant Agreement inclusive of project summary, justification, major in-scope deliverables which follow the SMART (specific, measurable, attainable, relevant, time-bound) principal, timeline, and a budget [8]. However, in order to provide for enhanced quality specifications pertaining to the formulation, verification, and validation of project scope, it is suggested that the PM work with project partners to determine and clearly articulate and record the assumptions and constraints of the project, as well as out-of-scope deliverables which help to minimize scope creep and subsequent issues effecting the budget, schedule, and/or ability for project partners to meet the organizational objectives of the EU [12].

Furthermore, there has been no clear development of a work breakdown structure (WBS) which details all the tasks required to meet stated milestone deliverables (Figure 5), nor a WBS dictionary which details the scheduling information for each WBS component. The utilization of a WBS and associated WBS dictionary are beneficial in that they provide substance to determine if the deliverables of the project can be realistically achieved given the resources available, while attributing responsibility to a project team member for each task, allowing for an accounting system of the workload delegated to team members [6]. A WBS is also often utilized in project management to develop a detailed project budget and schedule as the duration and costs associated with each task can be quantified [13]. With regards to the project planning and execution phases, the SpMP achieved a ranking of 100% respectively as the PM has established processes to validate and control the scope of work primarily through monthly status updates help by the PM to steer the outputs of milestone deliverables for all partners in relation to all concurrently running work packages (WPs).

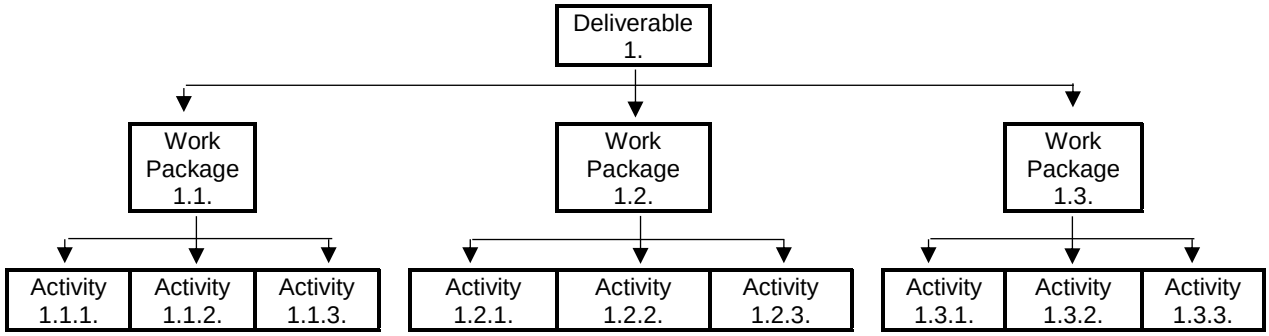

Figure 5: Work breakdown structure.

3.1.1.4. Communications Management Plan

CoMP achieved a ranking of 61.8% in total, positioned fifth of out the 11 subsidiary plans. CoMP ranged from the project initiation aspect of the project lifecycle through to project planning, execution, and monitoring and control. The CoMP demonstrates the highest ranking in relation to the project initiation phase at 66.7%, where a communications strategy matrix inclusive of stakeholder name, position within their organization, and what information they require in order to be engaged with the project has been developed. However, there has been no explicit documentation on the frequency and medium of communication, which are beneficial to determine at the onset of a project in order to establish a baseline of contact that is tailored to each stakeholder [9]. For example, certain stakeholders may have high power but low interest, and,

therefore, should be communicated with between longer time intervals and less personalized mediums (e.g. email, social media) than a stakeholder who is of high power and high interest, which require more frequent updates through more formal mediums (e.g. in-person meetings, workshops).

The remaining MPMFA questions pertaining to the project planning, execution, and monitoring and controlling phases of the CoMP are all similar, and, therefore, they receive a ranking of 47.4% respectively. Project status reports have been developed which are disseminated to project partners detailing the names and positions of partners/stakeholders, the status period dates, milestones achieved, issues identified as requiring attention, and planned accomplishments next period. However, the inclusion of such categories can benefit from being transferred onto a standardized template which also includes section headings for cost and schedule performance, and change requests and approved changes, rather than handling the later categories on an A/R basis. The development of such a standardized status reporting template at the onset of the project planning phase can help track progress and challenges throughout the execution and monitoring and controlling phases of the project, as well as organize and retain records for the PM to refer to if an identified risk emerges and requires mitigative, avoidance, acceptance, and/or transfer procedures [14]. Furthermore, the PM should develop specific project status tracking forms consisting of the WBS number, task owner, baseline start and finish, percent complete, and days remaining, and disseminate the form to project team members to complete and return to the PM in order to formally delegate accountability to all WP leaders and associated staff, while helping track progress towards milestone deliverables from a time and cost perspective (table 6).

Table 6: Project status tracking form.

WBS #	Status Date: mm_dd_yyyy	Task Owner	Baseline Start	Baseline Finish	% Complete	Days Remaining
1.1.						
1.2.						
n…						

3.1.1.5. Human Resources Management Plan

HRMP achieved a ranking of 55.5% in total, positioned seventh of out the 11 subsidiary plans. HRMP ranged from the project initiation aspect of the project lifecycle through to project planning, execution, and monitoring and control. The HRMP demonstrates a 60% ranking in relation to project initiation. There is no formal HRMP for The Project, and, therefore, it cannot be confirmed whether the human resources (HR) team is aligned to the strategy of the organization. The benefits of developing a formal HRMP in relation to a large multi-national project, initiated either by an individual project partner for their own organization, by the PMs organization for administrative oversight of all project partner organizations, or by the EU as the overarching governing body and project sponsor, materialize in a team delegated with authority to develop, implement, and enforce clear protocols, procedures, and policies in relation to how partners are expected to conduct themselves and the consequences of not doing so, while ensuring that said protocols, procedures, and policies are developed in a manner consistent with the strategy of the organization/s involved [15].

The HRMP demonstrates the highest ranking in relation to the project planning phase at 66.8%. A staffing plan has been developed whereby staffing tables are maintained within a master stakeholder list. However, the names attached to this list and any staffing gaps that require attention are done so on an ad hoc basis, whereby employees are matched to positions on a designated work grade system and informal internal knowledge of employee performance, as opposed to utilizing trend analysis, which quantifies decisions made on who to employ predicated on a set of parameters, or Markov analysis, which tracks patterns of employee movements. The benefits of these later techniques are that they provide justification for the selection of employee positioning within a staffing plan, while upholding organizational objectives pertaining to ethics, equality, and equity [6].

While the PM has planned for staffing requirements for The Project and obtains and disseminates job information to employees, a strategic recruitment process is not followed whereby the identification of current and potential future positions should ideally be mapped out which would allow the application of a recruitment strategy to draw from a pool of qualified applicants that are maintained in a database. Furthermore, it has been demonstrated that a strategic selection process is followed, consisting of completion of an application, submission of a resume, pre-screening, employment tests, interviews, and reference checks. However, this process is not

applied to all internal and external applicants for a new and/or upgraded position. The utilization of a strategic selection process for all position openings related to The Project would promote transparency and demonstrate adherence to organizational objectives pertaining to ethics, equality, and equity [16].

The remaining MPMFA questions pertaining to the project planning phase of the HRMP are also extended to the project execution and monitoring and controlling phases, which achieved the highest rankings of the HRMP at 75.4% respectively, and will, therefore, be discussed uniformly. The PM organization utilizes job analysis techniques for purposes of job design primarily through the outputs of steering groups that identify knowledge gaps in specific disciplines and define the type of work to be performed within a position in order to address these knowledge gaps. Performance management process are also employed whereby work objectives to be accomplished are clarified by line mangers and a performance plan is set with specific goals to be accomplished, acting as indicators of performance. However, while the PM organization promotes coaching, performance review, and recognition and reward of performance, this is all done on an A/R basis. The benefit of utilizing such HR management techniques may further develop team cohesion as coaching should be frequent and irrespective of good or bad performance which would demonstrate to project team members that superiors/PMs recognize their work throughout the project lifecycle as opposed to only on a disciplinary basis [16].

Concerning performance management methods employed by the PM organization, results methods are prevalent, whereas trait methods – where the extent of an employee to possess certain characteristics is quantified by testing performance against a set of indicators, and behavioral methods – where behavioural themes in an employee's performance are distinguished to identify strengths and weaknesses, are absent. The benefits of utilizing the latter two methods provide greater justification of performance reviews, while accounting for an employee's impact (positive and negative) on team dynamics which may not be as apparent in analyzing results methods alone. The PM organization employs an orientation process for members filling new positions whereby training needs assessment, design, training delivery, and evaluation is administered [17]. However, in tandem with the performance management process, this process is undertaken on an A/R basis, as opposed to maintaining a register which continuously updates the training process while periodically training existing staff. Finally, the PM organization implements a structured disciplinary process based on an

organizational disciplinary policy consisting of investigation, progressive discipline, due process, just cause, and discharge.

3.1.1.6. Procurement Management Plan

PrMP received a dismal ranking of 24.7% in total, positioned tenth of out the 11 subsidiary plans. The PrMP has the farthest reach of any subsidiary plan, beginning with project selection through to project closing. However, given the minuscule procurement expenses associated with The Project, the necessity for a strategic procurement process inclusive of market assessment, developing a supplier selection model, developing a sourcing strategy, and soliciting and evaluating bids through a RFx model during the project planning and execution phases has been classified as N/A, and, therefore, the contract closeout process administered during the monitoring and controlling and project closing phases has also become redundant and classified as N/A. The elements of the PrMP portion of the MPMFA questionnaire which were relevant to The Project ranged from project selection through to project initiation, planning, and execution. The PrMP demonstrates a 12.5% ranking in relation to the project selection. Despite procurement playing a limited role in The Project, a PrMP has not been developed. The basis of techniques that comprise a procurement process begin by determining if a project is worth engaging with based on the ability of the project to fulfill both financial and non-financial key performance indicators (KPIs) that fit within the resource planning model developed by an organization [18]. While the PM organization has developed a resource planning model, there is no proper project selection methodology utilized which would provide justification for undertaking a project in relation to other potential projects in an effort to maximize the efficiency in which the PM organization's vision and strategic aims are to be achieved.

The PrMP demonstrates the highest ranking in relation to the project initiation phase at 57.9%, where a strategic plan is implemented in order to decipher the allocation of capital via discussions emanating from senior management steering groups, which may lead to the submission of appropriation requests through a structured process if desired, although capital and operational forecasting does not undergo a more formal or complex system than this. Furthermore, while general capital analysis is undertaken, a structured process of how to produce estimates utilizing past, present, and future spend data has not been established, the development and implementation of which would provide more concise estimations in relation to the project budget [18]. Examples of tools and techniques which are typical of general capital analysis included determining

the discount rate through solving the weighted average cost of capital (WACC), which is fed in to the return on invested capital (ROIC) by dividing operating income before tax and interest by total liabilities, followed by solving for financial return utilizing either the average rate of return (ARR), payback period (PP), and/or net present value (NPV) (table 7).

Table 7: Capital analysis techniques.

Formula	Key		
WACC = E/V*Re+D/V*Rd*(1-R)	**E** – equity	**TFI** – total fixed investment	**CL** – current liability
ROIC = TFI/(TL+E-CL-A-Rv)	**V** – total company value		**A** – accruals
ARR = P/TFI	**Re** – cost of equity	**R** – interest rate	**Rv** – reserves
PP = TFI/TCF	**D** – debt	**n** – year	**P** – profit
NPV = TCF/(1+R)n	**Rd** – cost of debt	**TCF** – total cash flow	**TL** – total liability

The PM organization does conduct an internal assessment consisting of defining its KPIs against baseline information of procurement practices, although baseline information is currently validated on an A/R basis rather than periodically which would allow the PM to organize stakeholders related to internal procurement activities through power, proximity, and urgency criterion. By establishing a framework for internal assessment, criterion could be further built out which would help decipher what contracting strategy, form, and type to utilize for what scenario during the project planning and execution phases, rather than on an A/R basis, which has contributed to the PrMP receiving a 26.6% ranking for the two later project phases. Finally, while the PM is currently utilizing identified existing suppliers for procurement purposes related to The Project, the PM organization could benefit from developing a strategic negotiation framework comprised of a planning grid detailing the ranking of all negotiable items in relation to established KPIs in terms of high, midpoint, and bottom line scenarios [6].

3.1.1.7. Change Management Plan

ChMP achieved a ranking of 0% in total, demonstrating no adherence to the MPMFA criteria throughout the project execution and monitoring and controlling phases, thereby positioning itself as poorest subsidiary plan of all 11. No reference is made to the development, implementation, and monitoring of a ChMP and the processes, tools, and techniques which it typically comprises. The benefits of developing, utilizing, and updating changes to the original scope of work on a change request form, change log, and issues log (Table 8) consisting of the date, request, submission, description, impact, and decision attaches responsibility to project team members while the impacts

of the projects triple constraint can be monitored and planned for in accordance with the RMP [6].

Table 8: Change request form.

Change Request Form			
Change name			
Date submitted		Change request #	
Requested by			
Submitted by			
Description of Change			
Impact Analysis			
Schedule			
Cost			
Scope			
Quality			
Decision and Rationale			
Approved by			
Approval date			

3.1.1.8. Quality Management Plan

QMP achieved a ranking of 79.1% in total, positioned third out of the 11 subsidiary plans. QMP dealt specifically with the project initiation phase, which obtained a ranking of 58.1%, where the PM defined quality indicators in consultation with project partners according to SMART principals through the use of brainstorming and benchmarking techniques. An additional two techniques that could be employed to quantitatively define quality indicators include cost/benefit analysis, whereby benefits emanating from additions to quality are weighed against baseline indicators, and cost of quality analysis, which monetizes the enhancement of quality components [19]. Quality indicators are validated from the onset of project initiation throughout the execution of the project while employing quality assurance through periodic meetings via quality audits. An additional two tools that can be utilized for the benefit of strengthening quality assurance procedures in order to uncover potential deficiencies and solutions include cause and effect diagrams and process decision program charts. However, there is an absence of sufficient processes to undertake quality control measures which monitor the scope of quality deliverables. Q7 tools which are typically employed by PMs for quality control measures include cause and effect diagrams, flow charts, check sheets, histograms, Pareto diagrams, control charts, and scatter diagrams [6].

3.1.1.9. Requirements Management Plan

RqMP achieved a ranking of 100% in total, positioned the highest out of the 11 subsidiary plans. RqMR dealt specifically with the project initiation phase, where stakeholders were identified and consulted with in order to obtain requirements for the scope and quality of deliverables emanating from the output of The Project by utilizing strategic solicitation techniques including interviews, focus groups, workshops, questionnaires, and brainstorming [9]. Furthermore, strategic decision-making techniques were employed in order to come to a consensus regarding the scope and quality of deliverables including unanimity, plurality, and majority consensus. These characteristics of the RqMP suggest that the PM has developed and undertaken a structured requirements gathering process which ensures to the greatest extent possible that the sponsors and users of the result of The Project were clear on their vision and need for the project and therefore should be satisfied with the outputs.

3.1.1.10. Risk Management Plan

RMP achieved a ranking of 60.2% in total, positioned sixth out of the 11 subsidiary plans. RMP ranged from the project planning aspect of the project lifecycle through to project execution and monitoring and control. The RMP demonstrates the poorest ranking in relation to the project planning phase at a dismal 17.8%. While a RMP is the only subsidiary plan explicitly characterized within the PMP, activity specific risks are not identified and categorized in terms of their attributes – whether they are known or unknown, positive or negative, and/or internal or external [6]. It is beneficial to identify the attributes of risks during the project planning phase in order to appropriately account for risk responses that avoid, transfer, mitigate, or except negative risks, and/or exploit, enhance, share, or except positive risks, while planning what financial reserve to establish and draw from depending on whether the risks are known and can be prevented or unknown and cannot be accounted for within a reasonable limit. Only mitigation has been identified as a risk response within the RMP.

Furthermore, risks have not been categorized in terms of the function and/or processes they may impact. Examples include:

- Project team risk;
- Executive support risk;
- Stakeholder risk;
- Scope risk;

- Cost risk;
- Schedule risk;
- Technology risk;
- Procurement risk;
- Legal risk;
- Business risk;
- Commercial risk;
- Other.

It is beneficial to identify the function and processes that risks will effect in order to determine the impact such risks may have on the triple constraint. This identification and impact analysis can be further built out by undertaking qualitative risk analysis measures, whereby risks are prioritized according to their probability and impact (Figure 6), as well as quantitative risk analysis measures, whereby an organization's risk attitude can be characterized (Figure 7) using a number of techniques including a decision tree diagram, three-point decision estimate, probability distribution, sensitivity analysis, and modelling and simulation.

Table 9a: Risk probability matrix.

Risk Probability Matrix			
Risk #	Low = 1	Moderate = 2	High = 3
Probability	< 30%	30 – 60%	60 – 90%
Risk Description	<justification>	<justification>	<justification>

Table 9b: Risk impact assessment matrix.

Risk Impact Assessment Matrix			
Project Constraint	Low = 1	Moderate = 2	High = 3
Cost	< 10% cost increase	10 – 30 % cost increase	> 30% cost increase
	<justification>	<justification>	<justification>
Time	< 5% time increase	5 – 15% time increase	> 15% time increase
	<justification>	<justification>	<justification>
Scope	Minimal scope change	Moderate scope change	Significant scope change
	<justification>	<justification>	<justification>
Quality	Minimal quality degradation	Moderate quality degradation	Significant quality degradation
	<justification>	<justification>	<justification>

Table 9c: Risk priority matrix.

Risk Priority Matrix				
Risk #	Risk Description	Probability	Impact	Risk Priority Score (PxI)
Risk #1	…	2	3	6
Risk #2	…	2	3	6
Risk n..	…	2	2	4

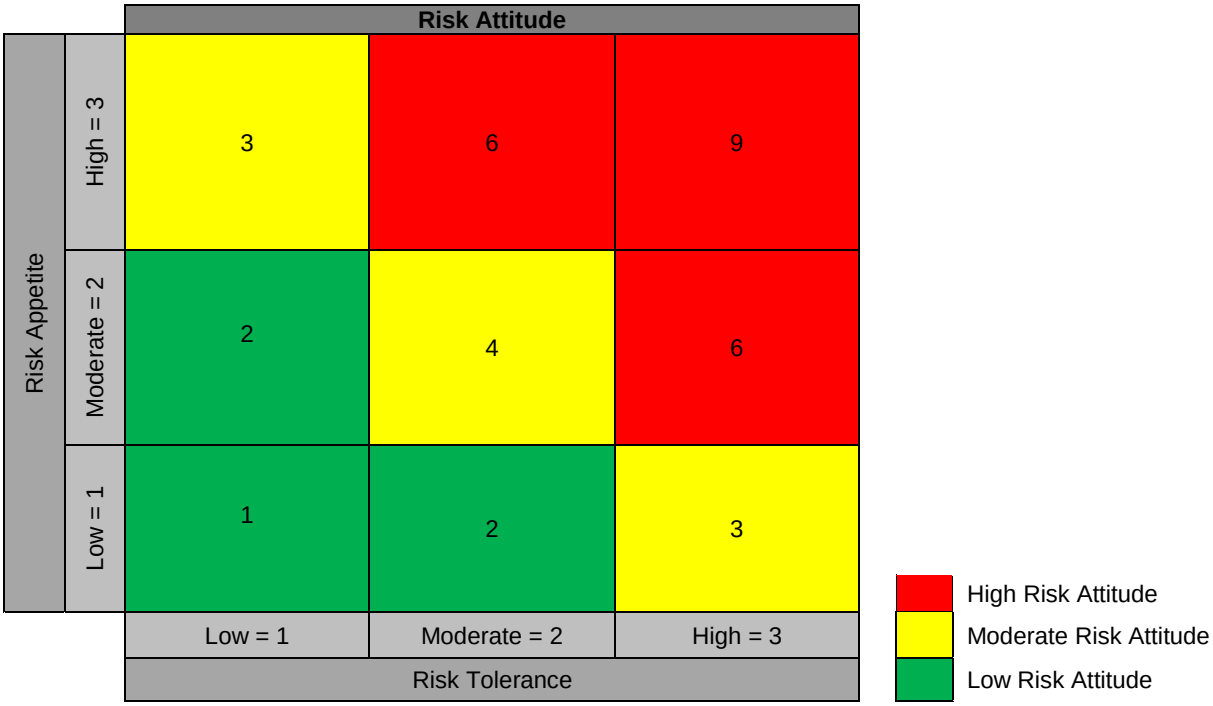

Figure 6: Risk attitude.

The RMP demonstrates 61.5% ranking in relation to the project execution and monitoring and controlling phases, both of which share identical MPMFA questions, are, therefore, overviewed in conjunction with one another. A risk control protocol has been implemented whereby identified risks are inputted into a continuously updated risk register which is reviewed by project partners during every milestone meeting. The risk register includes the risk ID, description, WP#, and response strategy. The PM can elaborate on the risk register by including the risk priority score and its impact on the triple constraint emanating from the application of qualitative risk analysis, the owner of the risk, date of occurrence, and status (Figure 6). The addition of such fields establishes a live document which highlights what function and processes of the project are being jeopardized and to what extent, which risks should organizational resources

be applied and in what quantity, who is responsible for overseeing the implementation of the response strategy, for how long has the risk been a live issue, and if and when the risk has been negated [6].

Table 10: Risk register.

Risk Register: mm_dd_yyyy								
Risk ID	Description	Priority Score	Owner	WBS #	Response Strategy	Impact	Date Occurred	Status

3.1.1.11. Stakeholder Management Plan

SkMP achieved a ranking of 74.2% in total, positioned forth of out the 11 subsidiary plans. The SkMP dealt specifically with the project initiation phase, which obtained a 48.3% ranking. All of the stakeholders related to The Project have been defined and organized into a stakeholder analysis matrix which lists each stakeholder's name, position, organization, designation, and requirements. However, in order to enhance ease of reference, stakeholders should be categorized with regards to their relationship to the inputs, process, and outputs of the project and organized in terms of their power over and interest in The Project, thereby allowing for the development of a communication plan tailored to each stakeholder (Figure 7) [6]. Finally, while the PM has identified who is responsible for completing a given task, those who are accountable for approving that the quality and scope of the deliverable is to specifications, who should be consulted during the planning and execution of a deliverable, and who should be informed regarding decisions made pertaining to a deliverable, should be organized into a responsibility matrix for ease of reference (Table 11).

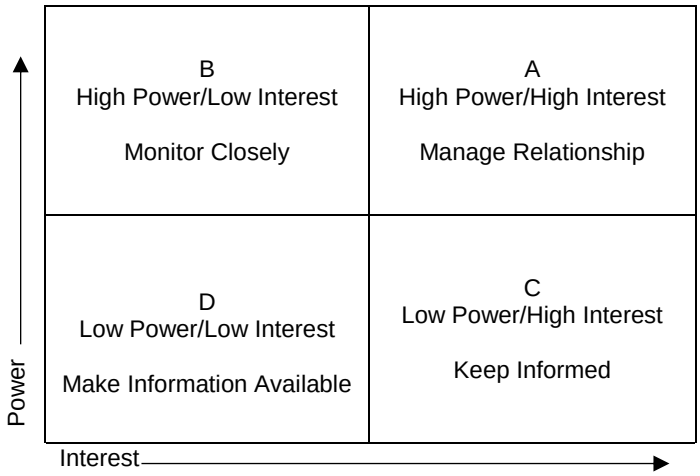

Figure 7: Power/interest stakeholder grid.

3.1.2. Organizational Management

The Organizational Management envelope received a ranking of 74%, making it the highest scoring envelope although least impactful in relation to the MPMFA criteria. The Organizational Management envelope is comprised of the actions that must be carried out either by the project sponsor in order to retain the PM, the project sponsor if the PM has yet to be selected, and/or the PM if the PM has already been chosen. The Organizational Management envelope consists of three sub-components spanning across three project phases. The three components include portfolio project selection, contract development, and project closing and transfer. The following subsections detail the key findings of the MPMFA matrix from an Organizational Management lens.

Table 11: Hierarchical ranking of organizational management envelope sub-components – high to low.

Organizational Management Envelop Sub-Component	Ranking (%)
3&4. Contract development	98.1
17. Project Closing and Transfer	66.7
1. Portfolio Project Selection	57.1

3.1.2.1. Portfolio Project Selection

Prior to engaging with a project, and often times before a PM is retained, an organization will utilize a strategic selection process in order to choose projects which align with the greater vision of the organization's portfolio/s, which contain a diverse

array of programs developed to achieve objectives, which subsume projects that contribute to the targets required to meet objectives and ultimately fulfill the vision of the organization [6]. Portfolio project selection received the poorest ranking of the three organizational management envelop sub-components at 57.1%. A strategic project selection process is utilized by the PM organization whereby senior management staff that lead steering groups of different programs created to achieve objectives of the organization's vision congregate in order to determine what knowledge gaps exists and subsequently decide where resources should be applied in regards to undertaking a project. However, the use of numeric models, such as PP, ARR, and weighted factor models (Table 12), and non-numeric models can help establish a criterion which current and future projects are evaluated against in terms of their capacity to achieve established organizational KPIs.

Table 12: Weighted factor model

Factor	Weight	Plan 1	Plan 2	Plan n…
KPI 1	20%	1/3	3/3	2/3
KPI 2	50%	1/3	3/3	1/3
KPI n…	30%	2/3	1/3	0/3
Total:	100%	13	24	9

3.1.2.2. Contract Development

Contract development received the greatest ranking of the three organizational management envelop sub-components at 98.1%. Prior to engaging the PM, the project sponsor, the EU, drafted a statement of work (SoW) detailing the high-level results that are to be delivered by the project including description of the background and business needs, the objective of the project, WPs, and a base schedule and budget [8].
Following the initial development of the SoW, the EU drafted a project charter (PC) in the form of a Grant Agreement delegating the PM with the power to apply organizational resources to the project. The PC detailed the initial description of The Project, major in-scope deliverables, a rough budget estimate, project milestones dates, risks and risk responses, names and position of key internal stakeholders, and all partner signatures. The only missing field which the PM should have insisted that the EU provide prior to signing the PC is the inclusion of out-of-scope deliverables that are required in order to complete the project, however, they constitute work that has to be completed by an entity other than the project partners. The benefit of including out-of-scope deliverables ensures that scope creep is maintained and the sponsor and PM retain similar clarity on what project success looks like [12].
3.1.2.3. Project Closing and Transfer

Project closing and transfer received an intermediate ranking of the three organizational management envelop sub-components at 66.7%. When closing The Project in October 2018, the PM will seek to obtain written consent from the EU stating that project deliverables have met scope and quality requirements, at which point the PM will provide guidance on how the data produced by the output of the project can be used to the benefit of the EU and all project partners [8]. However, the PM organization has not stated in any document that they will draft a lessons learned report and store it into a file retention system. The benefit of developing and disseminating a lessons learned document is that the learning rate can be expedited significantly for future projects that encounter similar issues, whereby risk management techniques that had to be developed ad hoc on a previous project can be incorporated into the project planning phase of the PMP of the next project, ultimately reducing the impact that such risks would have on the triple constraint had it not been incorporated into the PMP [6].

3.1.3. Project Phases

The Project Phases envelope received a 66.1% ranking, making it the intermediate ranking envelope with intermediate importance in relation to other envelopes as well as the MPMFA criteria. The Project Phases envelop consists of six sub-components, the first of which, project selection, occurs before the formal commencement of the project lifecycle according to PMI, and the remaining five forming the typical PMBOK project lifecycle. The project initiation and execution phases demonstrate the greatest integration of various subsidiary plans and organizational management, tallied at eight each, while monitoring and controlling would have rivaled that tally had all of the MPMFA PrMP questions not been designated as N/A in relation to The Project given the absence of necessity for complex equipment and service acquisition contracts.

The project closing phase demonstrated the poorest integration, being only applicable to organizational management, although a similar scenario with monitoring and controlling was present in that all of the same questions emanating from the PrMP were designated as N/A in relation to The Project, although this would have made project closing on par with project selection in terms of minimal subsidiary plan integration. The following subsections detail the key findings of the MPMFA matrix from the lens of the lifecycle of a project. Given that all the MPMFA questions associated to subsidiary plans are identical for the project execution and monitoring and controlling phases, with the exception of the PrMP, said two phases will be covered together in one section, with

reference to the PrMP in relation to project execution clarified when necessary. Furthermore, given the lack of applicable subsidiary plans, the project closing phase has been covered previously in Section 3.1.2.3., and, therefore, will not be repeated.

Table 13: Hierarchical ranking of project phases envelope sub-components – high to low.

Project Phases Envelop Sub-Component	Ranking (%)
2e. Project Closing	83.4
2a. Project Initiation	75.6
1. Project Selection	56.5
2b. Project Planning	53.8
2d. Monitoring & Controlling	48
2c. Project Execution	45.7

3.1.3.1. Project Selection

Project selection received a ranking of 56.5% in total, positioned third of out the six project phases. Project selection encompassed the PrMP of the Project Plans envelope, as well as the Organizational Management envelop. The PrMP demonstrates the lower ranking at 12.5%, with Organizational Management ranking 57.1%. In order to strengthen the project selection phase, the PM should focus their effort on utilizing strategic procurement practices which can result in an established criterion that quantifies the ability of a project to meet organizational KPIs of various programs within the organization's portfolio/s [18].

3.1.3.2. Project Initiation

Project initiation achieved a ranking of 75.6% in total, positioned second of out the six project phases. Project selection encompassed the CMP, CoMP, HRMP, PrMP, QMP, RqMP, and the SkMP of the Project Plans envelope, as well as the Organizational Management envelop. The RqMP, CMP, and Organizational Management all rank in the >90% range, followed by the HRMP and CoMP ranked in the 60% range. The primary areas in which the PM would have to focus on developing further in order to strengthen the project initiation phase include the QMP, PrMP, and SkMP. For the QMP, financial analysis techniques should be applied when defining quality indicators in order to determine what level of quality is worth building into deliverables from an investment perspective, while the list of tools and techniques utilized in quality assurance and control procedures should be expanded in order to better track the

adherence of deliverables to quality indicators [19]. For the PrMP, the utilization of various methods to undertake general capital analysis would help determine the extent of financial resources secured for the project, thereby informing how to strategically allocate such resources during the project planning phase, while stakeholders pertaining specifically to the procurement process should be categorized to determine their influence as suppliers and what purchasing leverage the PM may have over them, resulting in more funding available for dispersal to other aspects of the project during the project planning phase [20]. For the SkMP, all stakeholders should be categorized according to their relationship to and influence over the project, thereby allowing the PMs to establish an effective communication regime at the onset of the project securing buy-in as soon as possible [6].

3.1.3.3. Project Planning

Project planning achieved a 53.8% ranking in total, positioned fourth of out the six project phases. Project selection encompassed the CMP, SMP, SpMP, CoMP, HRMP, PrMP, the RMP of the Project Plans envelope. CMP ranked the highest within the 70% range, while SpMP and HRMP trailed closely, ranking within the 60% range. The primary areas in which the PM would have to focus on developing further in order to strengthen the project planning phase include the PrMP, CoMP, SMP, and RMP. For the PrMP, strategic negotiation and selection framework should be developed and implemented with any purchases regardless of their quantity and/or value, thereby mitigating the potential for over-expenditures to exacerbate the impact on the triple constraint in case risks materialize during the project execution and monitoring and controlling phases [18]. For the CoMP, project status tracking forms should be developed and disseminated to project team members in order to document and trace responsibility to individual team members throughout the project [14]. For the SMP, a network diagram should be developed to decipher float days and the critical path in order to identify and more effectively manage tasks that have no slack by crashing them with resources as needed, meanwhile creating a schedule reserve when crashing is no longer an option, all of which should be inputted into a project management software in order to dynamically track the trade-offs and subsequent repercussions occurring due to schedule delays throughout the project lifecycle [6]. For the RMP, identified risks should be categorized in terms of their attributes and functions and processes, while qualitative and quantitative risk analysis techniques should be employed in order to decipher the tolerance for and probability and impact of risks, leading to the

development of specific risk response strategies which are attached to an accountable employee and tracked in a live risk register throughout the project lifecycle.

3.1.3.4. Project Execution and Monitoring and Controlling

Project execution and monitoring and controlling achieved a ranking of 45.7% and 48% respectively, positioning them as the poorest out the six project phases. Project execution and monitoring and controlling encompassed the same MPMFA questions subsumed within the CMP, SMP, SpMP, CoMP, HRMP, ChMP, and the RMP of the Project Plans envelope, with project execution also additionally encompassing PrMP. SpMP ranked the highest within the 90% range, followed by HRMP at 75.4% and RMP at 61.5%. The primary areas in which the PM would have to focus on developing further in order to strengthen the project execution and monitoring and controlling phases include the CoMP, ranked at 47.4%, although of great concern are the CMP, SMP, and ChMP, all of which ranked 0%. For the CoMP, the questions emanating from the MPMFA for project execution and monitoring and controlling phases are the same as those put forth in the planning phase, and, therefore, the same issue of introducing project status tracking forms in order to document and trace responsibility to individual team members persist throughout the lifecycle [6].

For the CMP, the employment of EVR can be used to both monitor and display cost data in relation to milestone dates by the PMs for both the project team and interested stakeholders [11], while inputting EVR related data into a proper project management software allows for such data to be monitored in real time, allowing for rapid stakeholder decisions to be made in relation to unstable spending trends by pinpointing where such trends are occurring [9]. The use of a proper project management software extends to action required for the SMP project execution and monitoring and controlling phases as delays in schedule can be pinpointed in real time to certain activities within WPs, as well as the project team member who is responsible for producing the deliverable, which allows the PM to undertake performance review processes established in the HRMP [17]. For the ChMP, change request forms, change logs, and issues logs should be developed and maintained in order to track changes in scope during the project execution and monitoring and controlling phases so that deliverables can be validated prior to presentation to the EU and project partners for final approval during the transition to the project closing phase [6]. Finally, specific to the project execution phase, the questions emanating from the PrMP of the MPMFA for project execution are the same as those put forth in the project planning phase, whereby the development of

a strategic negotiation and selection framework should be undertaken by the PM in order to monitor for over-expenditures as new suppliers are identified and additional equipment and services are required [18].

4. Discussion and Recommendations

Overall, the project management operations applied to The Project achieved a 61.7% ranking in conformity with the MPMFA. While it is important to develop a scoring, weighting, and ranking system, as detailed in Section 2.3., in order to convey results within a specified context, Section 3., the outline of the ranking system utilized for the MPMFA could have been adjusted in several different fashions depending on the purpose for which the system was developed. The author employed the ranking methodology presented in this paper with the intent of placing greater significance on the high-level aims and processes of a PMs individual project management framework, as there is no single approach that works best for all PMs across all projects [6]. Having disclaimed this, it is important to note that the results of the MPMFA questionnaire would remain the same regardless of the ranking system utilized. The MPMFA model acts primarily as a guideline informed by PMBOK which can draw the attention of PMs to a suite of processes, tools, and techniques that can positively impacts various aspects of their management regime.

Section 3. analyzed the findings from the application of the MPMFA questionnaire to the Project Plans, Organizational Management, and Project Phases envelops, envelop sub-components, and x/y-axis intersects, producing recommendations where gaps were apparent. Table 14 provides high-level recommendations emanating from the MPMFA for project management practices related to The Project that apply to processes, tools, and techniques across several subsidiary plans, envelops, and phases. Annex A provides a complete list of detailed recommendations.

Table 14: MPMFA high-level recommendations.

Recommendations		Application		
		Project Plans	Organizational Management	Project Phases
1	It is recommended that the PM formally develop subsidiary plans within their PMP against delineated project phases in order to enhance organizational practices and provide for ease of reference throughout the project	All	All	All
2	It is recommended that the PM utilize EVR in order to combine cost and schedule data to better track progress and periodically present the status of deliverables to stakeholders	CMP, SMP, SpMP, CoMP, PrMP, QMP, RMP, SkMP	Closing & Transfer	Execution, Monitoring & Controlling
3	It is recommended that the PM develop a network diagram from a WBS to work in tandem with capital analysis techniques in order to provide iterative budget estimates which attribute resources to deliverables inputted into a dynamic project management software	CMP, SMP, SpMP, PrMP, QMP, RMP	Contract Development	Initiation, Planning, Execution, Monitoring & Controlling
4	It is recommended that the PM categorize risks by attribute, function and processes and analyze their potential impacts via qualitative and quantitative methods in order to develop appropriate responses in the risk register, assign responsibility to an individual, and determine the amount to set aside in a contingency fund	CMP, SMP, SpMP, CoMP, PrMP, ChMP, QMP, RMP, SkMP	Contract Development	Initiation, Planning, Execution, Monitoring & Controlling
5	It is recommended that the PM employ analytical techniques to develop a staffing plan inclusive of structured recruitment and selection processes, while periodically performing employee performance reviews utilizing diverse review methods	CoMP, HRMP	Portfolio Project Selection, Contract Development	All
6	It is recommended that the PM develop and incorporate change request forms, change logs, and issue logs to allows for the impact of a driver for change to be estimated, documented, monitored, and assigned to a project team members in order to lessen the effect changes have on the triple constraint	CMP, SMP, SpMP, CoMP, PrMP, ChMP, QMP, RMP, SkMP	Contract Development	Initiation, Planning, Execution, Monitoring & Controlling
7	It is recommended that the PM employ financial analysis techniques in order to justify the degree of quality specified for deliverables, while a suite of tools and techniques should be utilized for quality assurance and control procedures in order to monitor the adherence of deliverables to quality indicators	CMP, SMP, ScMP, CoMP, PrMP, ChMP, QMP, RqMP, RMP, SkMP	All	Initiation, Planning, Execution, Monitoring & Controlling, Closing
8	It is recommended that the PM utilize analytical techniques to further categorize stakeholders in order to tailor engagement with different organizations and/or individuals, thereby allowing for the efficient use of project resources	All	All	All
9	It is recommended that the PM utilize financial and non-financial analysis techniques in project selection against financial and non-financial KPIs in accordance with the defined scope of a project, whereby out-of-scope deliverables are already identified and excluded from the analysis	All	Portfolio Project Selection, Contract Development	Project Selection
10	It is recommended that the PM produce a lessons learned document detailing the successes and failures of The Project from a project management perspective and store it in a file retention system for future reference in order to expedite the learning rate for similar future projects	CMP, SMP, ScMP, CoMP, PrMP, ChMP, QMP, RqMP, RMP, SkMP	All	All

5. Conclusion

This paper detailed the results of applying project management practices currently being employed for an EU MSP Project against the MPMFA criteria, which was informed by PMI's PMBOK 5th Edition best practice guide. Overall, the project management knowledge, skills, tools, and techniques applied to The Project achieved a 61.7% ranking in conformity with the criterion set on in the MPMFA. The Project Plans envelop contributed to the greatest percentage of the evaluation, although it received the lowest ranking, while Project Phases contributed the second greatest percentage of the evaluation, achieving a moderate ranking, and Organizational Management contributed the least percentage of the evaluation, although it achieved the highest ranking. ChMP and PrMP ranked the poorest of the subsidiary plans while project execution and monitoring and controlling ranked the poorest of the project phases. This paper has provided an analysis of the results and proposed recommendations from a multitude of integrated lenses on various scales with the intention of providing a suite of processes, tools, and techniques that EU member states can draw from in the future in order to solidify their project management framework with regards to both multi-national and national, regional, and local projects.

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Acronyms & Abbreviations

A/R – As Required
ARR – Average Rate of Return
ChMP – Change Management Plan
CMP – Costs Management Plan
CoMP – Communication Management Plan
EPA – Ecosystem Protection Agenda
EVR – Earned Value Reporting
HR – Human Resources
HRPM – Human Resources Management Plan
KPI – Key Performance Indicator
MDA – Marine Development Agenda
MPMFA – Multi-National Project Management Framework Audit
MSP – Marine Spatial Planning
N/A – Not Applicable
NPV – Net Present Value
PC – Project Charter
PM – Project Manager
PMBOK – Project Management Body of Knowledge
PMI – Project Management Institute
PMP – Project Management Plan
PP – Payback Period
PrMP – Procurement Management Plan
QMP – Quality Management Plan
RMP – Risk Management Plan
ROIC – Return on Invested Capital
RqMP – Requirements Management Plan
SkMP – Stakeholder Management Plan
SMART – Specific, Measurable, Attainable, Relevant,
SoW – Statement of Work
Time-bound
SME – Subject Matter Expert
SMP – Schedule Management Plan
SpMP – Scope Management Plan
WACC – Weighted Average Cost of Capital
WBS – Work Breakdown Structure

Annex A – MPMFA Detailed Recommendations

Project Selection

1. It is recommended that MS utilize numeric and non-numeric project selection models in order to prioritize which potential projects fulfill their organizational goals and objectives.
2. It is recommended that MS formally develop subsidiary plans within their project management plan (PMP) in order to better track various elements of a project and provide for ease of reference.
3. It is recommended that MS develop a capital procurement, evaluation, and control model inclusive of capital and operational forecasting and analysis through the establishment of a hurdle rate and assess of the costs of capital through various evaluation techniques (e.g. Weighted average cost of capital, return on investment capital, revenue stream analysis – net present value, payback period, average rate of return, etc.).
4. It is recommended that MS employ a project evaluation process from a procurement perspective inclusive of the establishment of a hurdle rate and evaluation methodology in order to factor in material and skills acquisition costs into the budget of a potential project.

Project Initiation

5. It is recommended that MS clearly define out-of-scope deliberates at the onset of a project in order to establish liability and avoid scope creep.
6. It is recommended that MS ensure that a human resource management plan is developed and ensure that a human resource team is aligned to the goals and objectives of the organization.
7. It is recommended that MS determine the frequency and medium of communication tailored to specific stakeholders for various deliverables and activities occurring throughout the project lifecycle.
8. It is recommended that MS conduct an internal assessment by validating baseline internal budget/funding information through a ‘what if’ financial analysis in order to determine the financial viability of undertaking various projects where procurement of skills and/or materials is necessary.
9. It is recommended that MS identify stakeholders related to the procurement process by developing a stakeholder analysis matrix which categorizes

stakeholders in terms of the power, proximity, and urgency to the procurement process.

10. It is recommended that MS establish a formal organizational contracting strategy and contract selection criteria for external expertise required for a project.
11. It is recommended that MS utilized cost/benefit and cost of quality quantitative evaluation techniques in order to determine the financial viability of including a specified degree of quality in deliverables.
12. It is recommended that MS employ quality assurance techniques in order to audit the quality of the processes utilized to achieve deliverables (e.g. quality audits, cause and effect diagrams, process decision programme charts).
13. It is recommended that MS employ quality control techniques in order to audit the quality of the resulting deliverables (e.g. cause and effect diagrams, flow charts, check sheets, histograms, Pareto diagrams, control charts, scatter diagrams).
14. It is recommended that MS categorize identified stakeholders with regards to their relationship to the project (e.g. project sponsor, project manager, project team member, subject matter expert, external authority, client, end user).
15. It is recommended that MS place all identified stakeholders on a power/interest grid in order to determine their influence on a project and attribute a tailored communication strategy to each stakeholder.
16. It is recommended that MS place all stakeholders on a RACI matrix in order to determine which stakeholder is responsible for completing, accountable for approving, should be consulted on, and should be informed for each project activity.

Project Planning

17. It is recommended that MS utilize an iterative budget estimation technique in order to develop a mutually agreed upon budget between senior management and project team members, thereby securing project team buy-in.
18. It is recommended that MS build a contingency reserve into the budget for identified, known, internal, negative risks between 5-15% of the total costs required to undertake and complete the project.
19. It is recommended that MS maintain a management reserve for unknown, external, negative risks between 5-15% of the total project budget.
20. It is recommended that MS build a schedule reserve into various tasks between 5-15% of the total duration required to undertake and complete the project.

21. It is recommended that MS input the project budget and schedule into a project management software in order to dynamically track project costs against milestones.
22. It is recommended that MS build a work breakdown structure (WBS) of all tasks required to complete deliverables.
23. It is recommended that MS maintain a WBS dictionary detailing all deliverables, activities, and scheduling information for each WBS component for ease of reference and tracking purposes.
24. It is recommended that MS identify and formally document assumptions and constraints within their scope statement in order to plan for the budget and schedule of a project.
25. It is recommended that MS input deliverable/work package tasks into a precedence table which distinguishes the relationship between such tasks in order to build a project budget.
26. It is recommended that MS input information from the precedents table into a network diagram in order to determine the critical path of a project and any float days associated with various tasks.
27. It is recommended that MS utilize project status tracking forms to be disseminated and retrieved from project team members inclusive of the WBS number, task owner, baseline start and completion dates, percent complete, and days remaining.
28. It is recommended that MS include trend analysis and Markov analysis techniques in developing a staffing plan for projects.
29. It is recommended that MS maintain a skills inventory of the competencies obtained and to be developed for employees of the organization in order to expand MSs core competencies.
30. It is recommended that MS develop a recruitment strategy whereby a pool of qualified applicants can be produced for projects requiring additional and/or external resources.
31. It is recommended that MS establish a strategic project team member selection process ranging from a standardized application process to pre-screening, employee tests (cognitive ability, personality, job sample tests, etc.), interview, reference checks, and hiring decisions.
32. It is recommended that MS management employ a performance management process inclusive of regular and frequent coaching and review, and reward performance.

33. It is recommended that MS utilize trait and behavioral methods in their performance management methods.
34. It is recommended that MS develop a training process for additional and/or external project team members inclusive of training needs assessment, design, delivery, and evaluation.
35. It is recommended that MS develop a negotiation and selection framework for material and/or skills acquisition by drafting a planning grid whereby various negation criteria are ranked in terms of importance and aim high, bottom line, and mid-point scenarios are determined.
36. It is recommended that MS identify and categorize activity specific risks in terms of the function and processes they may impact (e.g. project team risk, executive support risk, stakeholder risk, budget risk, scope risk, etc.).
37. It is recommended that MS perform qualitative risk analysis in order to prioritize risks according to their probability and impact.
38. It is recommended that MS perform quantitative risk analysis in order to measure the effect of specific risks on a project by calculating the organizations risk attitude and utilizing decision tree diagrams, three-point decision estimates, probability distribution, sensitivity analysis, and modelling and simulations
39. It is recommended that MS develop risk response strategies for specific risks which are both positive (exploit, enhance, share, accept) and negative (avoid, transfer, mitigate, accept).
40. It is recommended that MS develop and continuously update risk register inclusive of risk ID, description, priority score, owner, WBS #, response strategy, impact on cost, schedule, scope, and quality, date of occurrence, and status

Project Execution and Monitoring and Controlling

41. It is recommended that MS utilize earned value reporting (EVR) in order to visually represent cost and schedule updates to project staff, project officers/sponsors, and applicable external stakeholders.
42. It is recommended that MS develop a change management plan whereby all changes to the initially agreed upon budget, schedule, scope and quality can be tracked via a change request form inclusive of the name of the responsible project team member, date requested, who requested the change, who submitted the form, when the form was, a description of the impact of the change, who approved the change and their reason for approval.

43. It is recommended that MS maintain a change log where all proposed changes are tracked.
44. It is recommended that MS maintain an issues log where all issues are tracked.
45. It is recommended that MS identify specific risks and categorize them in terms of their attributes (known vs unknown; positive vs negative; internal vs external) in order to properly plan for such risks.

Project Closing

46. It is recommended that MS document lesson learned for each completed project and store them in a file retention system in order for future project managers to refer to, thereby minimizing future risk and develop the competency of the organization.

Annex B – MPMFA Matrix Template

<table>
<tr><td rowspan="11">5 Project Plans</td><td colspan="11">2 Project Phases</td></tr>
<tr><td>5a Subsidiary Plans</td><td>1 Project Selection</td><td colspan="3">2a Project Initiation</td><td colspan="4">2b Project Planning</td><td>2c Project Execution</td><td>2d Monitoring & Controlling</td><td>2e Project Closing</td></tr>
<tr><td rowspan="10">6 Cost Mgmt. Plan</td><td rowspan="10"></td><td colspan="3" rowspan="8">6a</td><td rowspan="8">6d</td><td>6da</td><td rowspan="8">6k</td><td rowspan="10"></td></tr>
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<tr><td>6diii</td></tr>
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<tr><td>6dvi</td></tr>
<tr><td>6dvii</td></tr>
<tr><td>6dviii</td></tr>
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<tr><td>6biii</td><td colspan="3">6h</td></tr>
<tr><td rowspan="4">6c</td><td rowspan="2">6ci</td><td rowspan="4">6i</td><td>6ii</td></tr>
<tr><td>6iii</td></tr>
<tr><td>6cii</td><td>6iiii</td></tr>
<tr><td>6ciii</td><td>6iiv</td></tr>
<tr><td colspan="4">6j</td></tr>
<tr><td rowspan="8">7 Schedule Mgmt. Plan</td><td rowspan="8"></td><td colspan="3" rowspan="8"></td><td rowspan="4">7a</td><td>7ai</td><td rowspan="8"></td><td rowspan="8"></td></tr>
<tr><td>7aii</td></tr>
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<tr><td>7aiv</td></tr>
<tr><td rowspan="3">7b</td><td>7bi</td></tr>
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<tr><td colspan="2">7e</td></tr>
<tr><td rowspan="4">8 Scope Mgmt. Plan</td><td rowspan="4"></td><td colspan="3" rowspan="4"></td><td rowspan="4">8a</td><td colspan="3">8ai</td><td rowspan="4"></td><td rowspan="4"></td></tr>
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	9 Communications Mgmt. Plan		9a	9ai	9b	9bi			
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	10 Human Resources Mgmt. Plan		10a		10c	10ci			
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	12 Change Mgmt. Plan									12a	12ai			
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		1f			4avii					17d
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Annex C – MPMFA Questionnaire Template

Questions
PROJECT SELECTION
1. Is a project selection process utilized?
a. Are organizational goals clearly established and defined?
b. Is a dedicated management council established in order to undertake project selection?
c. Are criteria established in in relation to their perceived capability of fulfilling organizational goals?
d. Are models developed in order to ascertain the likelihood of potential projects fulfilling organizational goals?
i. Numeric models
ii. Non-numeric models
e. Are projects prioritized in relation to their capability of fulfilling organizational goals?
f. Is a dedicated management council or individual delegated with the authority to choose projects for the organization?
PROJECT PHASES
2. Are project phases formally distinguished?
a. Project initiation
b. Project planning
c. Project execution
d. Monitoring and control
e. Project closing
STATEMENT OF WORK
3. Is a statement of work (SoW) detailing at a high-level the results that are to be delivered by the project developed by the project sponsor?
a. Description of background/business needs requiring the project
b. Project objective
c. Brief description of the SoW
d. Timeline and budget (if known)
PROJECT MANAGER
4. Is an individual formally delegated as the project manager? (initiation)
a. Is the formal delegation of a project manager (PM) by the project sponsor authorizing PM with authority to apply organizational resources documented in a Project Charter (PC)?
i. Does the PC contain an initial description of project objectives;
ii. Project deliverables;
1. In scope
2. Out of scope
iii. A rough budget estimate

iv. Project milestones and dates
v. Risks and risk responses
vi. Names and positions of key stakeholders
vii. Signatures
PROJECT PLANNING
5. Is a project plan developed?
a. Does the project plan distinguish between distinct subsidiary plans?
COST MANAGEMENT PLAN
6. Is a cost mgmt. plan developed?
a. Are ball park estimations utilized?
b. Are order of magnitude estimations utilized?
i. Analogous
ii. Parametric
iii. Apportioning
c. Are detailed estimations utilized
i. Phased estimation
ii. Vendor bid analysis
iii. Iterative estimation process
d. Are costs allocated into different categories?
i. Labor cost estimates
ii. Materials and supplies
iii. Equipment
iv. Facilities
v. Licenses and permits
vi. Vendor bids
vii. Overhead costs
viii. Other
e. Is a contingency reserve kept for identified risks?
f. Is a management reserve kept for unidentified risks?
g. Is there a distinct capital budget?
h. Is there a distinct operational budget?
i. Are resource sheets developed for the project budget?
i. Resource
ii. Description
iii. Type
iv. Cost

j. Is the budget inputted and updated using a project management software?
k. Is the budget baseline updated throughout the project?
l. Is Earned Value Reporting utilized?
SCHEDULE MANAGEMENT PLAN
7. Is a schedule mgmt. plan developed?
a. Is a precedents table developed to discern the project schedule?
i. Predecessor and successor tasks
ii. Finish to start, start to start, finish to finish, start to finish
iii. Concurrent tasks
iv. Duration
b. Is a network diagram developed?
i. Milestones
ii. Float
iii. Critical path
c. Are resources assigned to each task throughout the schedule?
d. Is a schedule reserve accounted for in the project schedule as a buffer against the materialization of risks?
e. Is the schedule inputted and updated using a project management software?
SCOPE MANAGEMENT PLAN
8. Is a scope mgmt. plan developed?
a. Is a scope baseline developed within a scope statement?
i. Project justification
ii. Project summary
iii. Major deliverables
1. In scope - defined using SMART principals:
a. Specific
b. Measurable
c. Attainable
d. Relevant
e. Time-specific
2. Out of scope
iv. Assumptions
v. Constraints
vi. Timeline
vii. Budget
b. Is a work breakdown structure (WBS) comprised of all the tasks required to meet the deliverables developed?
c. Is a WBS dictionary detailing all deliverables, activities, and scheduling information for each WBS component developed?

d. Are there processes in place to validate the scope?
e. Are there processes in place to control the scope?
COMMUNICATIONS MANAGEMENT PLAN
9. Is a communications mgmt. plan developed?
a. Is a stakeholder communication strategy matrix developed?
i. Stakeholder (name and position)
ii. What is needed
iii. Frequency of communication
iv. Communication medium
b. Are project status reports developed and disseminated with varying degrees of frequency and content detail, through specific mediums dependent on stakeholder requirements?
i. Project Name
ii. Status period (dates from and to)
iii. Cost Performance
iv. Schedule Performance
v. Major accomplishments this period
vi. Issues identified this period requiring attention
vii. Change requests this period
viii. Approved changes this period
ix. Planned accomplishments next period
c. Are project status tracking forms developed and disseminated to project team members for completion and retrieval?
i. WBS #
ii. Task owner
iii. Baseline start
iv. Baseline finish
v. Percent complete
vi. Days remaining
HUMAN RESOURCES MANAGEMENT PLAN
10. Is a human resources mgmt. plan developed?
a. Is human resources (HR) team aligned to the strategy of the organization?
b. Does the organization employ a specific organizational structure for projects?
i. Operational organizational structure
ii. Project organizational structure
iii. Matrix organizational structure
c. Does the HR department develop a staffing plan?
i. Is trend analysis utilized in HR planning?

ii. Is Markov analysis utilized in HR planning?
iii. Are staffing tables maintained?
iv. Does the HR department maintain a skills inventory?
d. Does the HR department follow a strategic recruitment process?
i. Planning for staffing needs
ii. Identification of current/future openings
iii. Obtaining individual job information
iv. Determining recruitment strategy
v. Building pool of qualified applicants
e. Does the HR department follow a strategic selection process?
i. Completion of application for/submission of resume
ii. Prescreening
iii. Employment tests
1. Cognitive ability tests (general intelligence, numerical, etc.)
2. Personality and interest inventories
3. Emotional intelligence
4. Physical ability tests (must be relevant to job)
5. Job sample tests (performing tasks relevant to job)
6. Substance abuse
iv. Interview
v. Reference checks
vi. Hiring decision
f. Are job analysis techniques employed for job design?
g. Is a performance management process employed?
i. Clarify work/objectives to be accomplished
ii. Set goals and plan performance
iii. Regular and frequent coaching
iv. Review performance
v. Recognize and reward performance
h. Are performance management methods employed?
i. Trait methods
ii. Behavioral methods
iii. Results methods
i. Is an orientation process initiated?
j. Is a training process developed and implemented?
i. Training needs assessment

ii. Training design
iii. Training delivery
iv. Evaluation
k. Is a structured disciplinary process implemented?
i. Organizational disciplinary policy
ii. Definition of discipline
iii. Violation of organizational rules
iv. Investigation of employee offence
v. Disciplinary interview
vi. Progressive discipline
vii. Due process
viii. Just cause
ix. Discharge
PROCUREMENT MANAGEMENT PLAN
11. Is a procurement mgmt. plan developed?
a. Is there a project evaluation process in place from a procurement standpoint?
i. Establish a Hurdle Rate
ii. Determine the evaluation technique to be used
iii. Rank the available projects
iv. Make the decision that will make the project evaluation meaningful
v. Complete a capital request for transfer from forecast to capital budge making process
vi. Set the criteria and timing for post completion audits and determine audit criteria
b. Has an organizational resource planning model been developed?
c. Has a capital procurement, evaluation, and control model been developed?
i. Has a strategic plan been developed?
ii. Is capital forecasting undertaken?
iii. Is operational forecasting undertaken?
iv. Is there a process for submitting appropriation requests?
v. Is general capital analysis undertaken?
1. Establishment of a hurdle rate
2. Assessing the cost of capital
a. Weighted average cost of capital (WACC)
b. Return of invested capital (ROIC)
c. Revenue stream analysis
i. Average rate of return (ARR)

ii. Payback period
iii. Net present value (NPV)
d. Is an internal assessment conducted?
i. Are organizational objectives aligned to the outcome of the procurement process?
1. Financial key performance indicators (KPIs)
2. Non-financial KPIs
ii. Is baseline information validated?
1. What if analysis
iii. Are stakeholders related to the procurement process identified?
1. Are stakeholders ranked according to their importance and inputted into a stakeholder matrix?
a. Power
b. Proximity
c. Urgency
iv. Are existing suppliers identified?
v. Is a total cost of ownership (TCO) analysis conducted?
1. Price analysis
2. Cost analysis
e. Is a market analysis conducted?
i. Analyze market dynamics and trends
ii. Make/buy analysis
f. Is supplier information collected?
i. Develop supplier strategy
ii. Develop evaluation criteria
iii. Verify spend data
iv. Develop a supplier selection model (SSM) criteria
1. Organization
2. Cost
3. Schedule
4. Quality
5. Engineering
6. Supply chain/procurement
7. Operations/manufacturing
8. Continuous improvement
9. Sustainment
10. Other
g. Is a sourcing strategy developed?

i. Develop specifications
ii. Determine potential supplier approaches
iii. Complete SSM
iv. Complete an action plan for the SSM
h. Is a bid solicitation and evaluation framework developed and implemented?
i. Non-disclosure agreement (NDA)
1. Purpose; limitation of scope
2. Confidentiality Obligation
3. Term or Duration
4. Exclusions
5. Equitable Relief
ii. Establish contracting strategy
1. Turnkey organizational strategy
2. General contractor organizational strategy
3. Construction management organizational strategy
iii. RFx
1. Request for information (RFI)
2. Request for proposal (RFP)
3. Request for quotation (RFQ)
iv. Score and rank bids
v. Shortlist suppliers
vi. Propose a best and final offer (BAFO)
vii. Contract selection
1. Contract form
a. Letter contract
b. Purchase order
c. Blanket purchase order
d. Memorandum of agreement (MoA)
2. Contract type
a. Fixed price
b. Cost based
c. Time and material
i. Is a negotiation and selection framework developed and implemented?
i. Develop a planning grid
1. List all negotiable items
2. Rank in order of importance

3. Aim High
4. Bottom Line
5. Midpoint
j. Is there a process in place to manage contracts to completion?
i. Develop Contract Abstract
ii. Supplier Kickoff Meeting
iii. Manage Contract Amendments
iv. Is there a contract breech management procedure in place?
1. Mediation
2. Arbitration
3. Termination
v. Is there a contract closeout process in place?
CHANGE MANAGEMENT PLAN
12. Is a change mgmt. plan developed?
a. Are proposed changes documented in a change request form?
i. Name
ii. Date
iii. Requested by
iv. Submitted by
v. Description of change
vi. Impact analysis
vii. Decision and rationale
viii. Signatures
b. Are all proposed changes tracked in a change log?
c. Are all issues tracked in an issues log?
QUALITY MANAGEMENT PLAN
13. Is a quality mgmt. plan developed?
a. Are quality indicators defined in consultation with SMEs using SMART principals?
i. Specific
ii. Measurable
iii. Attainable
iv. Relevant
v. Time-specific
b. Are specific tools and techniques formally utilized in order to define quality indicators?
i. Brainstorming
ii. Cost/benefit analysis

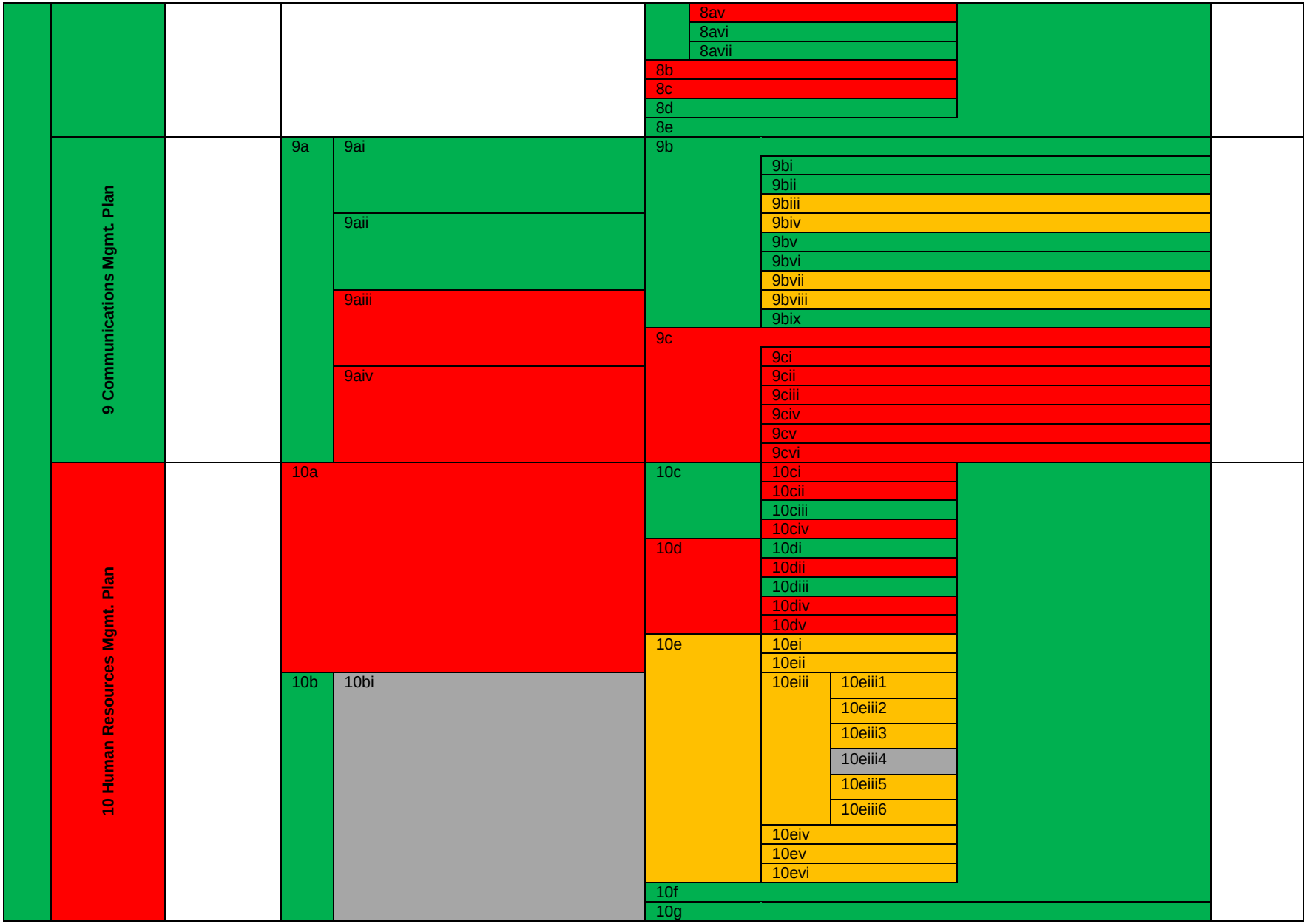
iii. Cost of quality
iv. Benchmarking
c. Are quality indicators validated during project initiation in order to confirm that business objectives will be achieved?
d. Are quality indicators validated during project execution in order to confirm that the processes being utilized are being implemented according to specifications?
e. Are quality assurance procedures employed using quality assurance tools and techniques?
i. Quality audit
ii. Cause and effect diagram
iii. Process decision program chart
f. Are quality control measures implemented using the seven quality management tools?
i. Cause and effect diagram
ii. Flow chart
iii. Check sheet
iv. Histogram
v. Pareto diagram
vi. Control chart
vii. Scatter diagram
REQUIREMENTS MANAGEMENT PLAN
14. Is a requirements mgmt. plan developed?
a. Are identified stakeholders consulted with in order to obtain requirements for the scope and quality of deliverables emanating from the output of the project utilizing strategic solicitation techniques?
i. Interviews
ii. Focus groups
iii. Workshops
iv. Questionnaires
v. Brainstorming
b. Are strategic decision-making techniques established in order to come to a consensus regarding the scope and quality of deliverables emanating from the output of the project?
i. Unanimity
ii. Majority
iii. Plurality
iv. Dictatorship
RISK MANAGEMENT PLAN
15. Is a risk mgmt. plan developed?
a. Are activity specific risks identified and categorized in terms of their attributes?
i. Known risk

ii. Unknown risk
iii. Positive risk
iv. Negative risk
v. Internal risk
vi. External risk
b. Are activity specific risks identified and categorized in terms of the function and processes they may impact?
i. Project team risk
ii. Executive support risk
iii. Stakeholder risk
iv. Scope risk
v. Cost risk
vi. Schedule risk
vii. Technology risk
viii. Procurement risk
ix. Legal risk
x. Business risk
xi. Commercial risk
xii. Other
c. Is qualitative risk analysis performed in order to prioritize risks according to their probability and impact?
d. Is quantitative risk analysis performed in order to measure their effect on a project?
i. Is the organization's risk attitude calculated?
ii. Decision tree diagram
iii. Three-point decision estimate
iv. Probability distribution
v. Sensitivity analysis
vi. Modeling and simulation
e. Are risk response strategies developed taking into consideration the resources required to implement such strategies?
i. Avoid
ii. Transfer
iii. Mitigate
iv. Accept (negative)
v. Exploit
vi. Enhance
vii. Share
viii. Accept (positive)
f. Is a risk control protocol in place?

i. Is a risk register created and updated continuously?
1. Risk ID
2. Description
3. Priority Score
4. Owner
5. WBS #
6. Response strategy
7. Impact on triple constraint
8. Date of occurrence
9. Status
ii. Are new risks identified and updated accordingly at project milestone meetings?
STAKEHOLDER MANAGEMENT PLAN
16. Is a stakeholder mgmt. plan developed?
a. Are all stakeholders related to the project identified?
i. Are stakeholders categorized?
1. Project sponsor
2. Project manager
3. Project team members
4. Subject matter experts (SMEs)
5. External authorities
6. Client
7. End users
ii. Are identified stakeholders organized into a power/interest (P/I) grid?
iii. Are identified stakeholders organized into a stakeholder analysis matrix?
1. Stakeholder (name and position)
2. Organization
3. Stakeholder category
4. P/I grid designation
5. Key stakeholder requirements
6. Strategies for communication
iv. Are identified stakeholders organized into a responsibility matrix?
1. Responsible for completing task
2. Accountable (approves) work has been properly performed/delivered (can only be one person)
3. Consult during planning/execution of deliverable
4. Inform on decisions being made pertaining to deliverable

PROJECT CLOSING
17. a. Is written consent obtained from the client that project deliverables have met scope and quality requirements?
b. Are documentation and training service undertaken by the project team as required in order to transfer the project deliverable over to the client?
c. Are future iterations and/or phases of the project suggested to the client as required upon transferring the deliverables over to the client?
d. Are lessons learned documented and stored in a files retention system?

Annex D – MPMFA Matrix Scoring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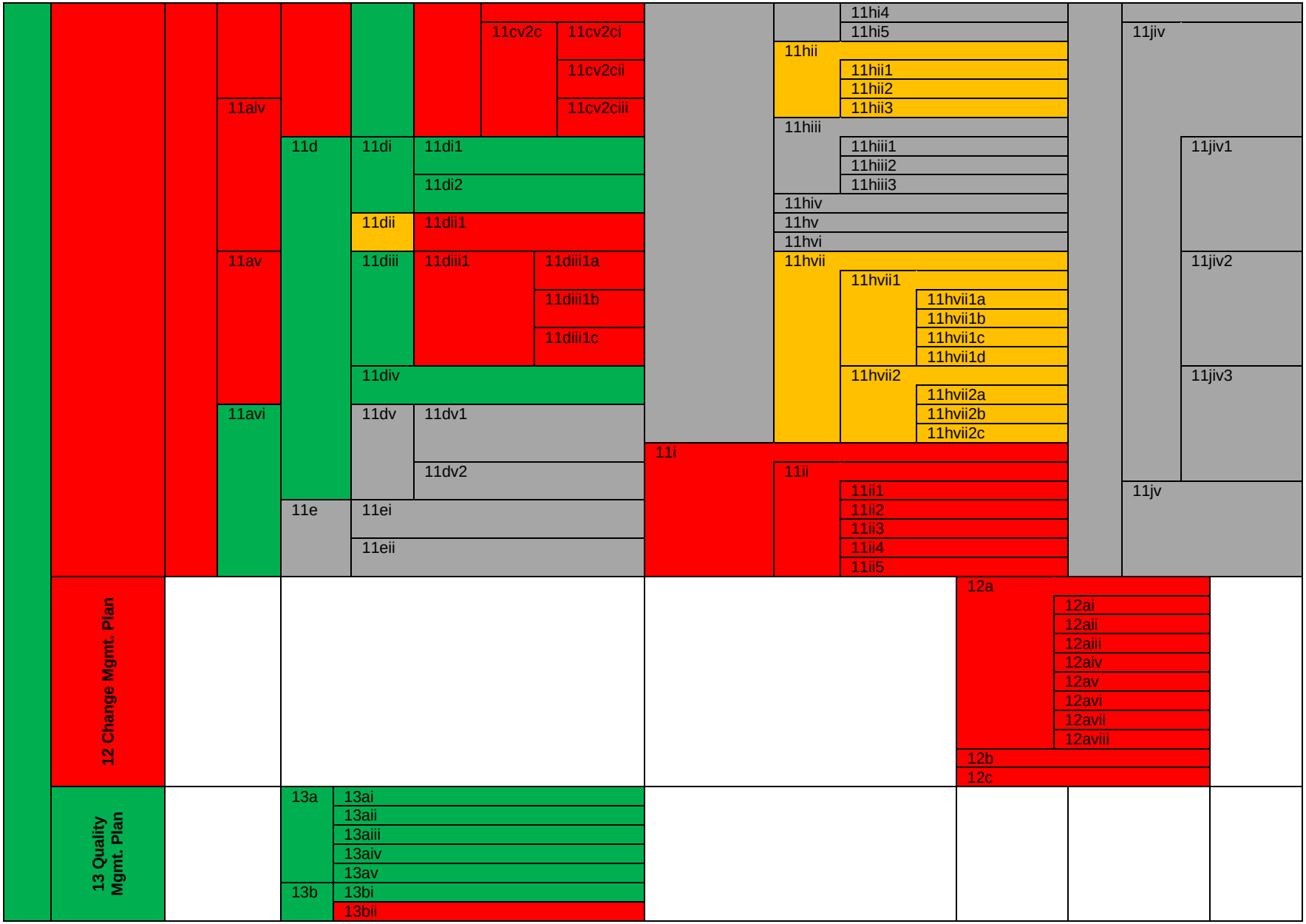
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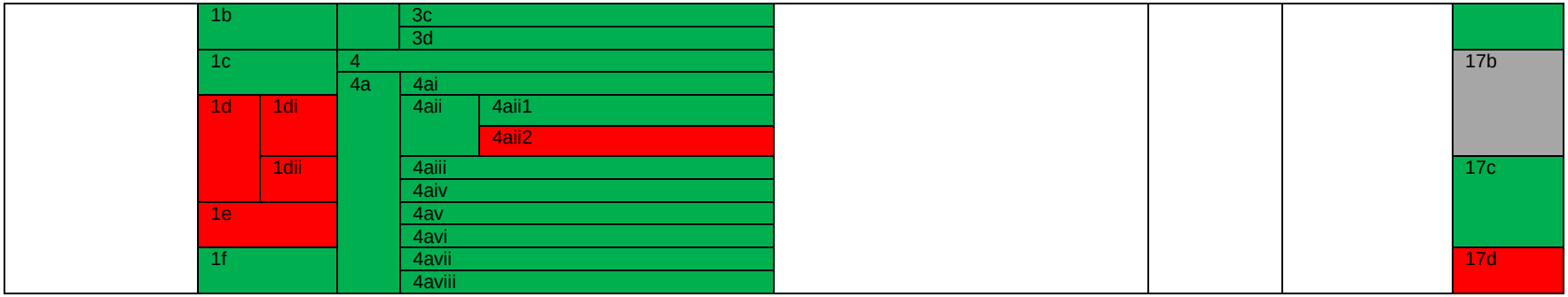


Assessment Key:
Yes
No
N/A (not applicable)
A/R (as required)

Annex E – MPMFA Questionnaire Scoring

Score	Questions
	PROJECT SELECTION
	1. Is a project selection process utilized?
	a. Are organizational goals clearly established and defined?
	b. Is a dedicated management council established in order to undertake project selection?
	c. Are criteria established in in relation to their perceived capability of fulfilling organizational goals?
	d. Are models developed in order to ascertain the likelihood of potential projects fulfilling organizational goals?
	i. Numeric models
	ii. Non-numeric models
	e. Are projects prioritized in relation to their capability of fulfilling organizational goals?
	f. Is a dedicated management council or individual delegated with the authority to choose projects for the organization?
	PROJECT PHASES
	2. Are project phases formally distinguished?
	a. Project initiation
	b. Project planning
	c. Project execution
	d. Monitoring and control
	e. Project closing
	STATEMENT OF WORK
	3. Is a statement of work (SoW) detailing at a high-level the results that are to be delivered by the project developed by the project sponsor?
	a. Description of background/business needs requiring the project
	b. Project objective
	c. Brief description of the SoW
	d. Timeline and budget (if known)
	PROJECT MANAGER
	4. Is an individual formally delegated as the project manager? (initiation)
	a. Is the formal delegation of a project manager (PM) by the project sponsor authorizing PM with authority to apply organizational resources documented in a Project Charter (PC)?
	i. Does the PC contain an initial description of project objectives;
	ii. Project deliverables;
	1. In scope
	2. Out of scope
	iii. A rough budget estimate

	iv. Project milestones and dates
	v. Risks and risk responses
	vi. Names and positions of key stakeholders
	vii. Signatures
	PROJECT PLANNING
	5. Is a project plan developed?
	a. Does the project plan distinguish between distinct subsidiary plans?
	COST MANAGEMENT PLAN
	6. Is a cost mgmt. plan developed?
	a. Are ball park estimations utilized?
	b. Are order of magnitude estimations utilized?
	i. Analogous
	ii. Parametric
	iii. Apportioning
	c. Are detailed estimations utilized
	i. Phased estimation
	ii. Vendor bid analysis
	iii. Iterative estimation process
	d. Are costs allocated into different categories?
	i. Labor cost estimates
	ii. Materials and supplies
	iii. Equipment
	iv. Facilities
	v. Licenses and permits
	vi. Vendor bids
	vii. Overhead costs
	viii. Other
	e. Is a contingency reserve kept for identified risks?
	f. Is a management reserve kept for unidentified risks?
	g. Is there a distinct capital budget?
	h. Is there a distinct operational budget?
	i. Are resource sheets developed for the project budget?
	i. Resource
	ii. Description
	iii. Type
	iv. Cost

	j. Is the budget inputted and updated using a project management software?
	k. Is the budget baseline updated throughout the project?
	l. Is Earned Value Reporting utilized?
	SCHEDULE MANAGEMENT PLAN
	7. Is a schedule mgmt. plan developed?
	a. Is a precedents table developed to discern the project schedule?
	i. Predecessor and successor tasks
	ii. Finish to start, start to start, finish to finish, start to finish
	iii. Concurrent tasks
	iv. Duration
	b. Is a network diagram developed?
	i. Milestones
	ii. Float
	iii. Critical path
	c. Are resources assigned to each task throughout the schedule?
	d. Is a schedule reserve accounted for in the project schedule as a buffer against the materialization of risks?
	e. Is the schedule inputted and updated using a project management software?
	SCOPE MANAGEMENT PLAN
	8. Is a scope mgmt. plan developed?
	a. Is a scope baseline developed within a scope statement?
	i. Project justification
	ii. Project summary
	iii. Major deliverables
	1. In scope - defined using SMART principals:
	a. Specific
	b. Measurable
	c. Attainable
	d. Relevant
	e. Time-specific
	2. Out of scope
	iv. Assumptions
	v. Constraints
	vi. Timeline
	vii. Budget
	b. Is a work breakdown structure (WBS) comprised of all the tasks required to meet the deliverables developed?
	c. Is a WBS dictionary detailing all deliverables, activities, and

	scheduling information for each WBS component developed?
	d. Are there processes in place to validate the scope?
	e. Are there processes in place to control the scope?
	COMMUNICATIONS MANAGEMENT PLAN
	9. Is a communications mgmt. plan developed?
	a. Is a stakeholder communication strategy matrix developed?
	i. Stakeholder (name and position)
	ii. What is needed
	iii. Frequency of communication
	iv. Communication medium
	b. Are project status reports developed and disseminated with varying degrees of frequency and content detail, through specific mediums dependent on stakeholder requirements?
	i. Project Name
	ii. Status period (dates from and to)
	iii. Cost Performance
	iv. Schedule Performance
	v. Major accomplishments this period
	vi. Issues identified this period requiring attention
	vii. Change requests this period
	viii. Approved changes this period
	ix. Planned accomplishments next period
	c. Are project status tracking forms developed and disseminated to project team members for completion and retrieval?
	i. WBS #
	ii. Task owner
	iii. Baseline start
	iv. Baseline finish
	v. Percent complete
	vi. Days remaining
	HUMAN RESOURCES MANAGEMENT PLAN
	10. Is a human resources mgmt. plan developed?
	a. Is human resources (HR) team aligned to the strategy of the organization?
	b. Does the organization employ a specific organizational structure for projects?
	i. Operational organizational structure
	ii. Project organizational structure
	iii. Matrix organizational structure
	c. Does the HR department develop a staffing plan?

	i. Is trend analysis utilized in HR planning?
	ii. Is Markov analysis utilized in HR planning?
	iii. Are staffing tables maintained?
	iv. Does the HR department maintain a skills inventory?
	d. Does the HR department follow a strategic recruitment process?
	i. Planning for staffing needs
	ii. Identification of current/future openings
	iii. Obtaining individual job information
	iv. Determining recruitment strategy
	v. Building pool of qualified applicants
	e. Does the HR department follow a strategic selection process?
	i. Completion of application for/submission of resume
	ii. Prescreening
	iii. Employment tests
	1. Cognitive ability tests (general intelligence, numerical, etc.)
	2. Personality and interest inventories
	3. Emotional intelligence
	4. Physical ability tests (must be relevant to job)
	5. Job sample tests (performing tasks relevant to job)
	6. Substance abuse
	iv. Interview
	v. Reference checks
	vi. Hiring decision
	f. Are job analysis techniques employed for job design?
	g. Is a performance management process employed?
	i. Clarify work/objectives to be accomplished
	ii. Set goals and plan performance
	iii. Regular and frequent coaching
	iv. Review performance
	v. Recognize and reward performance
	h. Are performance management methods employed?
	i. Trait methods
	ii. Behavioral methods
	iii. Results methods
	i. Is an orientation process initiated?
	j. Is a training process developed and implemented?

	i. Training needs assessment
	ii. Training design
	iii. Training delivery
	iv. Evaluation
	k. Is a structured disciplinary process implemented?
	i. Organizational disciplinary policy
	ii. Definition of discipline
	iii. Violation of organizational rules
	iv. Investigation of employee offence
	v. Disciplinary interview
	vi. Progressive discipline
	vii. Due process
	viii. Just cause
	ix. Discharge
	PROCUREMENT MANAGEMENT PLAN
	11. Is a procurement mgmt. plan developed?
	a. Is there a project evaluation process in place from a procurement standpoint?
	i. Establish a Hurdle Rate
	ii. Determine the evaluation technique to be used
	iii. Rank the available projects
	iv. Make the decision that will make the project evaluation meaningful
	v. Complete a capital request for transfer from forecast to capital budge making process
	vi. Set the criteria and timing for post completion audits and determine audit criteria
	b. Has an organizational resource planning model been developed?
	c. Has a capital procurement, evaluation, and control model been developed?
	i. Has a strategic plan been developed?
	ii. Is capital forecasting undertaken?
	iii. Is operational forecasting undertaken?
	iv. Is there a process for submitting appropriation requests?
	v. Is general capital analysis undertaken?
	1. Establishment of a hurdle rate
	2. Assessing the cost of capital
	a. Weighted average cost of capital (WACC)
	b. Return of invested capital (ROIC)
	c. Revenue stream analysis

	i. Average rate of return(ARR)
	ii. Payback period
	iii. Net present value (NPV)
	d. Is an internal assessment conducted?
	i. Are organizational objectives aligned to the outcome of the procurement process?
	1. Financial key performance indicators (KPIs)
	2. Non-financial KPIs
	ii. Is baseline information validated?
	1. What if analysis
	iii. Are stakeholders related to the procurement process identified?
	1. Are stakeholders ranked according to their importance and inputted into a stakeholder matrix?
	a. Power
	b. Proximity
	c. Urgency
	iv. Are existing suppliers identified?
	v. Is a total cost of ownership (TCO) analysis conducted?
	1. Price analysis
	2. Cost analysis
	e. Is a market analysis conducted?
	i. Analyze market dynamics and trends
	ii. Make/buy analysis
	f. Is supplier information collected?
	i. Develop supplier strategy
	ii. Develop evaluation criteria
	iii. Verify spend data
	iv. Develop a supplier selection model (SSM) criteria
	1. Organization
	2. Cost
	3. Schedule
	4. Quality
	5. Engineering
	6. Supply chain/procurement
	7. Operations/manufacturing
	8. Continuous improvement
	9. Sustainment
	10. Other

	g. Is a sourcing strategy developed?
	i. Develop specifications
	ii. Determine potential supplier approaches
	iii. Complete SSM
	iv. Complete an action plan for the SSM
	h. Is a bid solicitation and evaluation framework developed and implemented?
	i. Non-disclosure agreement (NDA)
	1. Purpose; limitation of scope
	2. Confidentiality Obligation
	3. Term or Duration
	4. Exclusions
	5. Equitable Relief
	ii. Establish contracting strategy
	1. Turnkey organizational strategy
	2. General contractor organizational strategy
	3. Construction management organizational strategy
	iii. RFx
	1. Request for information (RFI)
	2. Request for proposal (RFP)
	3. Request for quotation (RFQ)
	iv. Score and rank bids
	v. Shortlist suppliers
	vi. Propose a best and final offer (BAFO)
	vii. Contract selection
	1. Contract form
	a. Letter contract
	b. Purchase order
	c. Blanket purchase order
	d. Memorandum of agreement (MoA)
	2. Contract type
	a. Fixed price
	b. Cost based
	c. Time and material
	i. Is a negotiation and selection framework developed and implemented?
	i. Develop a planning grid
	1. List all negotiable items

	2. Rank in order of importance
	3. Aim High
	4. Bottom Line
	5. Midpoint
	j. Is there a process in place to manage contracts to completion?
	i. Develop Contract Abstract
	ii. Supplier Kickoff Meeting
	iii. Manage Contract Amendments
	iv. Is there a contract breech management procedure in place?
	1. Mediation
	2. Arbitration
	3. Termination
	v. Is there a contract closeout process in place?
	CHANGE MANAGEMENT PLAN
	12. Is a change mgmt. plan developed?
	a. Are proposed changes documented in a change request form?
	i. Name
	ii. Date
	iii. Requested by
	iv. Submitted by
	v. Description of change
	vi. Impact analysis
	vii. Decision and rationale
	viii. Signatures
	b. Are all proposed changes tracked in a change log?
	c. Are all issues tracked in an issues log?
	QUALITY MANAGEMENT PLAN
	13. Is a quality mgmt. plan developed?
	a. Are quality indicators defined in consultation with SMEs using SMART principals?
	i. Specific
	ii. Measurable
	iii. Attainable
	iv. Relevant
	v. Time-specific
	b. Are specific tools and techniques formally utilized in order to define quality indicators?
	i. Brainstorming

	ii. Cost/benefit analysis
	iii. Cost of quality
	iv. Benchmarking
	c. Are quality indicators validated during project initiation in order to confirm that business objectives will be achieved?
	d. Are quality indicators validated during project execution in order to confirm that the processes being utilized are being implemented according to specifications?
	e. Are quality assurance procedures employed using quality assurance tools and techniques?
	i. Quality audit
	ii. Cause and effect diagram
	iii. Process decision program chart
	f. Are quality control measures implemented using the seven quality management tools?
	i. Cause and effect diagram
	ii. Flow chart
	iii. Check sheet
	iv. Histogram
	v. Pareto diagram
	vi. Control chart
	vii. Scatter diagram
	REQUIREMENTS MANAGEMENT PLAN
	14. Is a requirements mgmt. plan developed?
	a. Are identified stakeholders consulted with in order to obtain requirements for the scope and quality of deliverables emanating from the output of the project utilizing strategic solicitation techniques?
	i. Interviews
	ii. Focus groups
	iii. Workshops
	iv. Questionnaires
	v. Brainstorming
	b. Are strategic decision-making techniques established in order to come to a consensus regarding the scope and quality of deliverables emanating from the output of the project?
	i. Unanimity
	ii. Majority
	iii. Plurality
	iv. Dictatorship
	RISK MANAGEMENT PLAN
	15. Is a risk mgmt. plan developed?
	a. Are activity specific risks identified and categorized in terms of their attributes?

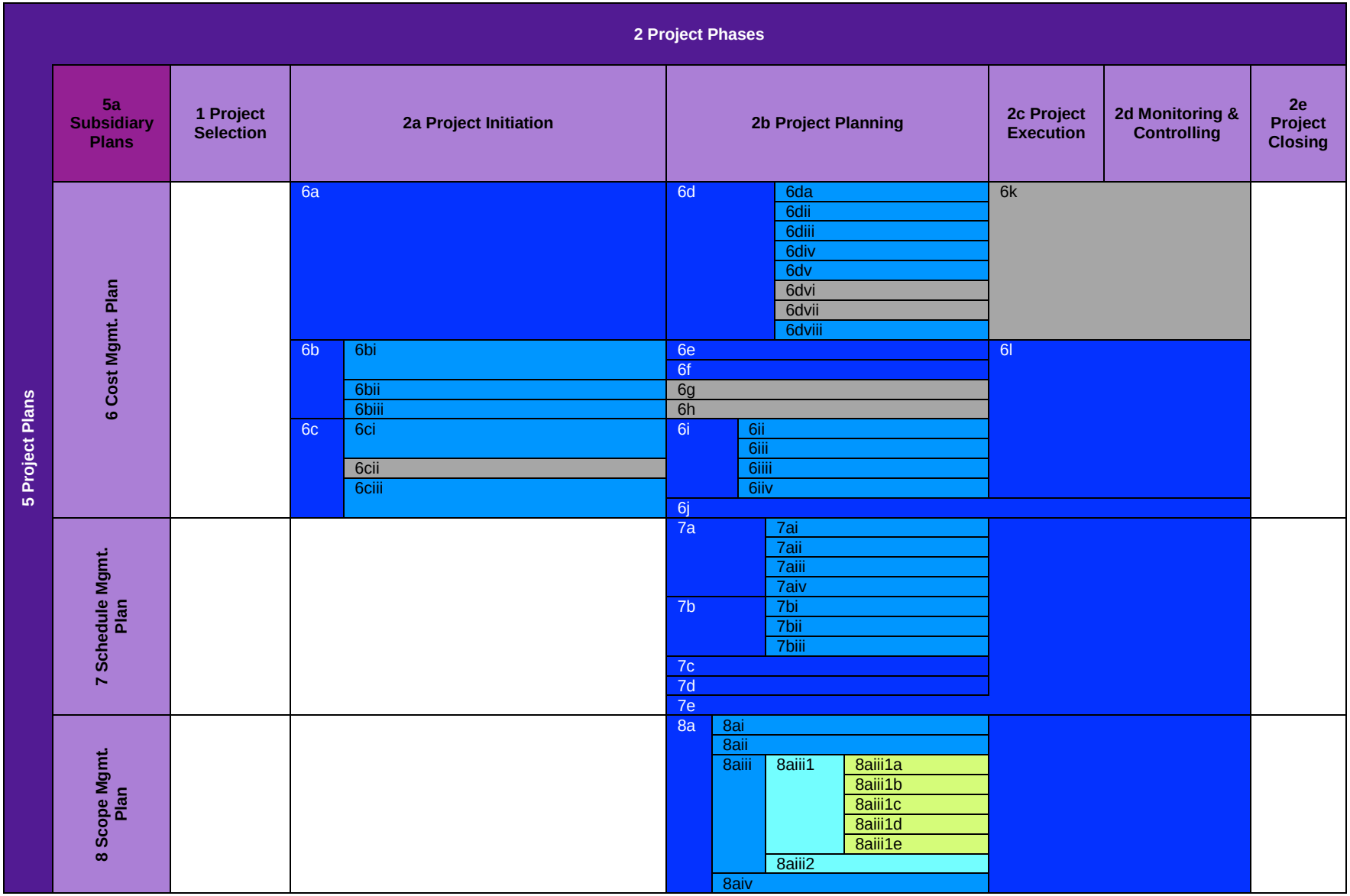
	i. Known risk
	ii. Unknown risk
	iii. Positive risk
	iv. Negative risk
	v. Internal risk
	vi. External risk
	b. Are activity specific risks identified and categorized in terms of the function and processes they may impact?
	i. Project team risk
	ii. Executive support risk
	iii. Stakeholder risk
	iv. Scope risk
	v. Cost risk
	vi. Schedule risk
	vii. Technology risk
	viii. Procurement risk
	ix. Legal risk
	x. Business risk
	xi. Commercial risk
	xii. Other
	c. Is qualitative risk analysis performed in order to prioritize risks according to their probability and impact?
	d. Is quantitative risk analysis performed in order to measure their effect on a project?
	i. Is the organization's risk attitude calculated?
	ii. Decision tree diagram
	iii. Three-point decision estimate
	iv. Probability distribution
	v. Sensitivity analysis
	vi. Modeling and simulation
	e. Are risk response strategies developed taking into consideration the resources required to implement such strategies?
	i. Avoid
	ii. Transfer
	iii. Mitigate
	iv. Accept (negative)
	v. Exploit
	vi. Enhance
	vii. Share
	viii. Accept (positive)

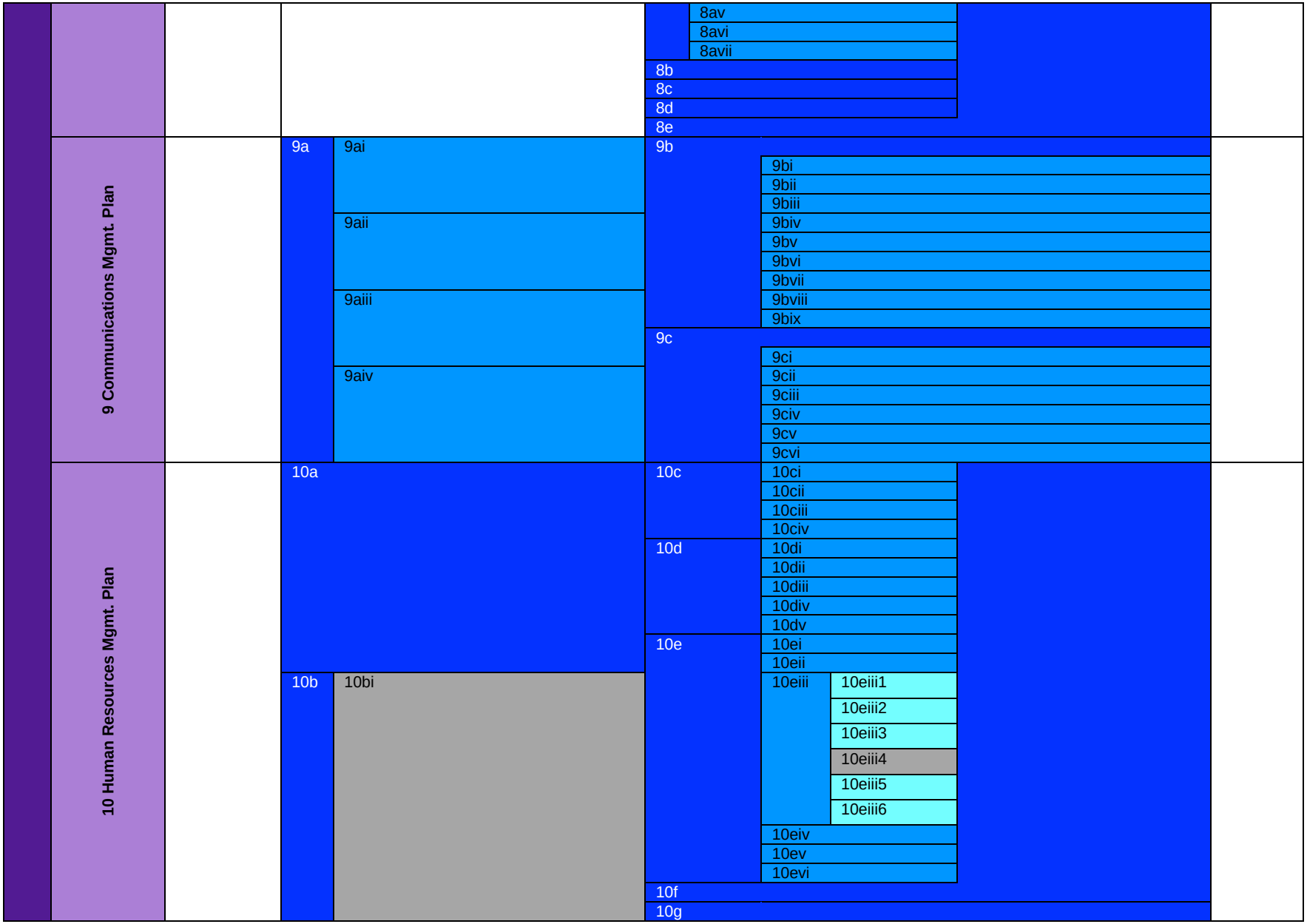
	f. Is a risk control protocol in place?
	i. Is a risk register created and updated continuously?
	1. Risk ID
	2. Description
	3. Priority Score
	4. Owner
	5. WBS #
	6. Response strategy
	7. Impact on triple constraint
	8. Date of occurrence
	9. Status
	ii. Are new risks identified and updated accordingly at project milestone meetings?
	STAKEHOLDER MANAGEMENT PLAN
	16. Is a stakeholder mgmt. plan developed?
	a. Are all stakeholders related to the project identified?
	i. Are stakeholders categorized?
	1. Project sponsor
	2. Project manager
	3. Project team members
	4. Subject matter experts (SMEs)
	5. External authorities
	6. Client
	7. End users
	ii. Are identified stakeholders organized into a power/interest (P/I) grid?
	iii. Are identified stakeholders organized into a stakeholder analysis matrix?
	1. Stakeholder (name and position)
	2. Organization
	3. Stakeholder designation
	4. P/I grid designation
	5. Key stakeholder requirements
	6. Strategies for communication
	iv. Are identified stakeholders organized into a responsibility matrix?
	1. Responsible for completing task
	2. Accountable (approves) work has been properly performed/delivered (can only be one person)
	3. Consult during planning/execution of deliverable

	4. Inform on decisions being made pertaining to deliverable
	PROJECT CLOSING
	17. a. Is written consent obtained from the client that project deliverables have met scope and quality requirements?
	b. Are documentation and training service undertaken by the project team as required in order to transfer the project deliverable over to the client?
	c. Are future iterations and/or phases of the project suggested to the client as required upon transferring the deliverables over to the client?
	d. Are lessons learned documented and stored in a files retention system?

Assessment Key:
Yes
No
N/A (not applicable)
A/R (as required)

Annex F – MPMFA Matrix Weighting

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9 Communications Mgmt. Plan
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9bi
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9biv
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9cv
9cvi
10 Human Resources Mgmt. Plan
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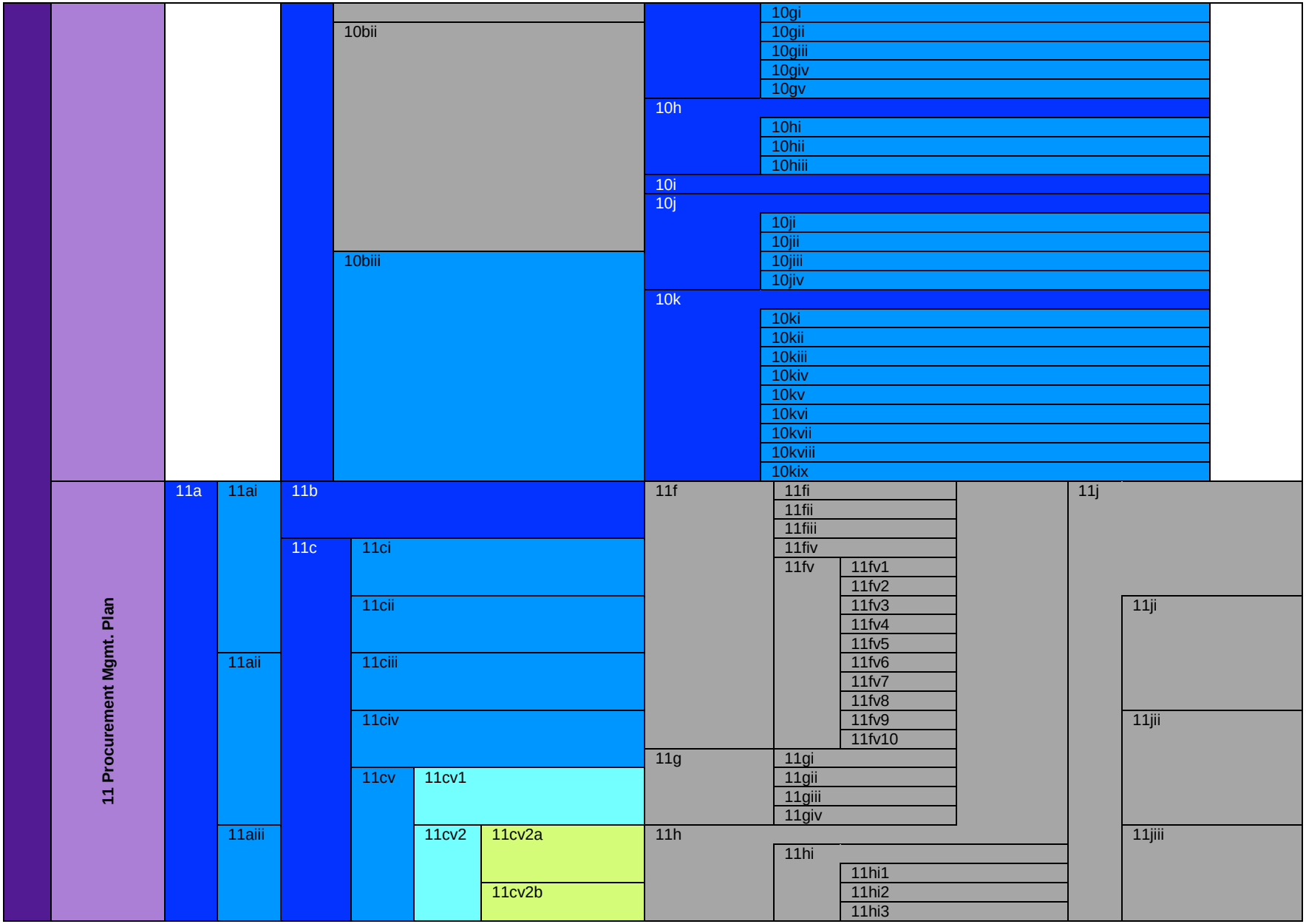
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11 Procurement Mgmt. Plan
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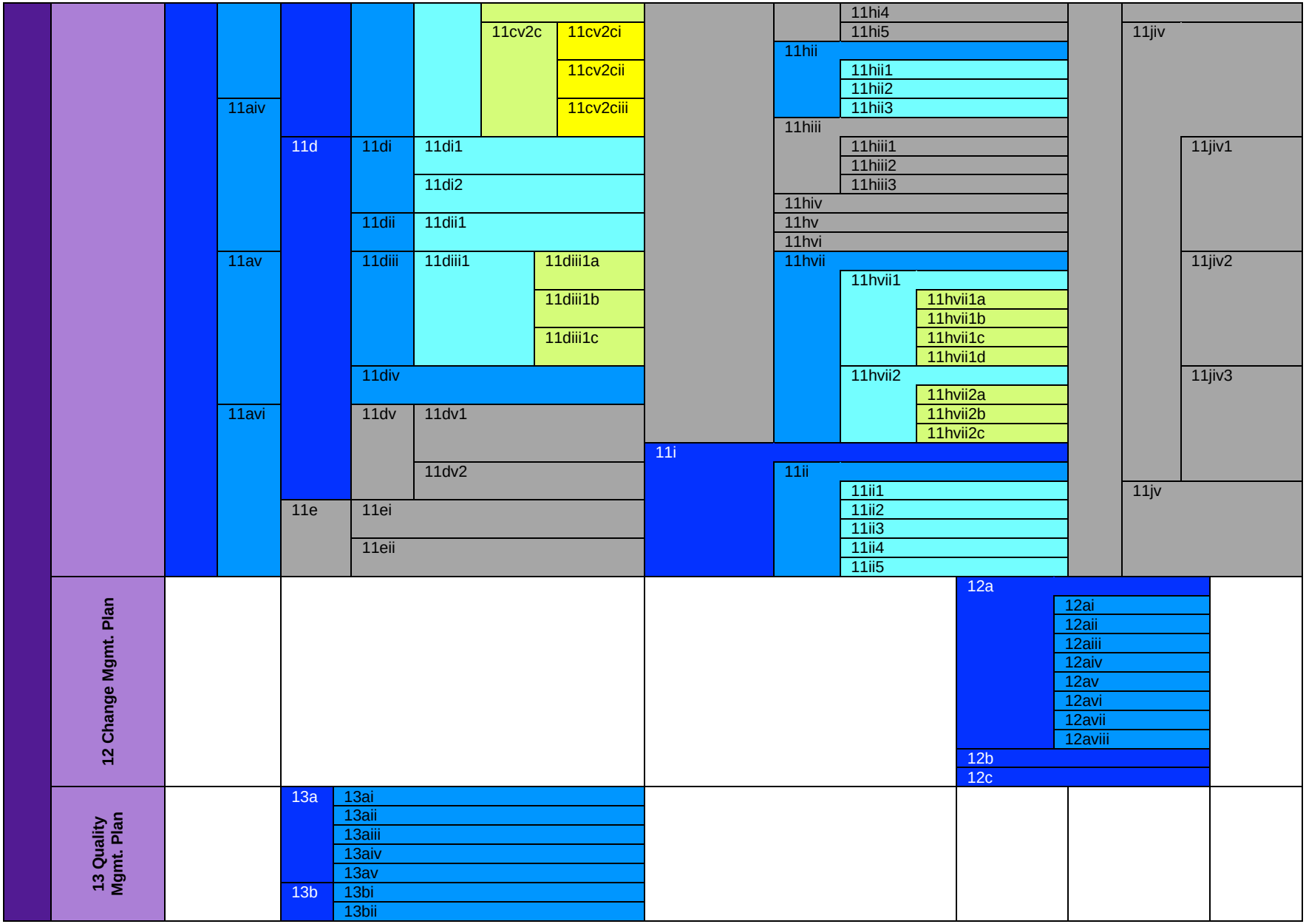
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12 Change Mgmt. Plan
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12aviii
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13 Quality Mgmt. Plan
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				14biii				
				14biv				
	15 Risk Mgmt. Plan				15a	15ai		
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						15aiv		
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						15avi		
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						15bii		
						15biii		
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16 Stakeholder Mgmt. Plan
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3a
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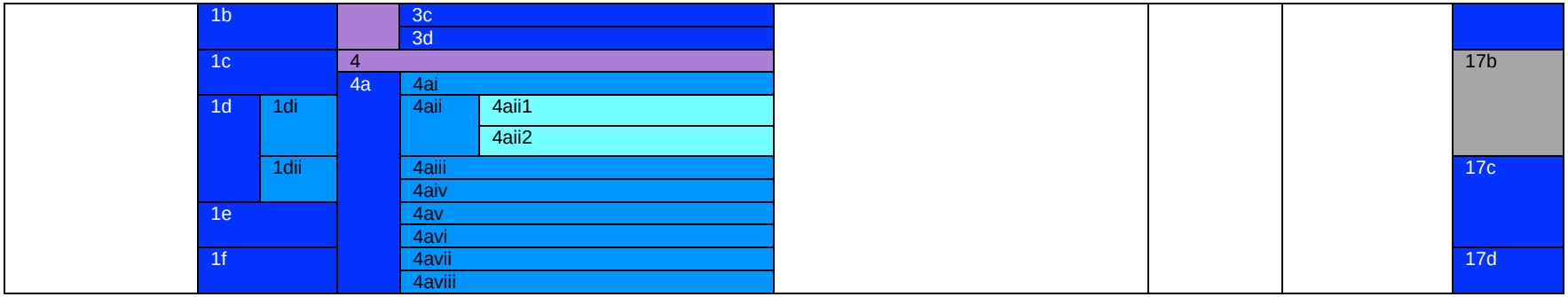

Weighting Key:
64
48
32
16
8
4
2
1
N/A

Annex G – MPMFA Questionnaire Weighting

Weight	Questions
	PROJECT SELECTION
	1. Is a project selection process utilized?
	a. Are organizational goals clearly established and defined?
	b. Is a dedicated management council established in order to undertake project selection?
	c. Are criteria established in in relation to their perceived capability of fulfilling organizational goals?
	d. Are models developed in order to ascertain the likelihood of potential projects fulfilling organizational goals?
	i. Numeric models
	ii. Non-numeric models
	e. Are projects prioritized in relation to their capability of fulfilling organizational goals?
	f. Is a dedicated management council or individual delegated with the authority to choose projects for the organization?
	PROJECT PHASES
	2. Are project phases formally distinguished?
	a. Project initiation
	b. Project planning
	c. Project execution
	d. Monitoring and control
	e. Project closing
	STATEMENT OF WORK
	3. Is a statement of work (SoW) detailing at a high-level the results that are to be delivered by the project developed by the project sponsor?
	a. Description of background/business needs requiring the project
	b. Project objective
	c. Brief description of the SoW
	d. Timeline and budget (if known)
	PROJECT MANAGER
	4. Is an individual formally delegated as the project manager? (initiation)
	a. Is the formal delegation of a project manager (PM) by the project sponsor authorizing PM with authority to apply organizational resources documented in a Project Charter (PC)?
	i. Does the PC contain an initial description of project objectives;
	ii. Project deliverables;
	1. In scope
	2. Out of scope
	iii. A rough budget estimate

	iv. Project milestones and dates
	v. Risks and risk responses
	vi. Names and positions of key stakeholders
	vii. Signatures
	PROJECT PLANNING
	5. Is a project plan developed?
	a. Does the project plan distinguish between distinct subsidiary plans?
	COST MANAGEMENT PLAN
	6. Is a cost mgmt. plan developed?
	a. Are ball park estimations utilized?
	b. Are order of magnitude estimations utilized?
	i. Analogous
	ii. Parametric
	iii. Apportioning
	c. Are detailed estimations utilized
	i. Phased estimation
	ii. Vendor bid analysis
	iii. Iterative estimation process
	d. Are costs allocated into different categories?
	i. Labor cost estimates
	ii. Materials and supplies
	iii. Equipment
	iv. Facilities
	v. Licenses and permits
	vi. Vendor bids
	vii. Overhead costs
	viii. Other
	e. Is a contingency reserve kept for identified risks?
	f. Is a management reserve kept for unidentified risks?
	g. Is there a distinct capital budget?
	h. Is there a distinct operational budget?
	i. Are resource sheets developed for the project budget?
	i. Resource
	ii. Description
	iii. Type
	iv. Cost

	j. Is the budget inputted and updated using a project management software?
	k. Is the budget baseline updated throughout the project?
	l. Is Earned Value Reporting utilized?
	SCHEDULE MANAGEMENT PLAN
	7. Is a schedule mgmt. plan developed?
	a. Is a precedents table developed to discern the project schedule?
	i. Predecessor and successor tasks
	ii. Finish to start, start to start, finish to finish, start to finish
	iii. Concurrent tasks
	iv. Duration
	b. Is a network diagram developed?
	i. Milestones
	ii. Float
	iii. Critical path
	c. Are resources assigned to each task throughout the schedule?
	d. Is a schedule reserve accounted for in the project schedule as a buffer against the materialization of risks?
	e. Is the schedule inputted and updated using a project management software?
	SCOPE MANAGEMENT PLAN
	8. Is a scope mgmt. plan developed?
	a. Is a scope baseline developed within a scope statement?
	i. Project justification
	ii. Project summary
	iii. Major deliverables
	1. In scope - defined using SMART principals:
	a. Specific
	b. Measurable
	c. Attainable
	d. Relevant
	e. Time-specific
	2. Out of scope
	iv. Assumptions
	v. Constraints
	vi. Timeline
	vii. Budget
	b. Is a work breakdown structure (WBS) comprised of all the tasks required to meet the deliverables developed?

	c. Is a WBS dictionary detailing all deliverables, activities, and scheduling information for each WBS component developed?
	d. Are there processes in place to validate the scope?
	e. Are there processes in place to control the scope?
	COMMUNICATIONS MANAGEMENT PLAN
	9. Is a communications mgmt. plan developed?
	a. Is a stakeholder communication strategy matrix developed?
	i. Stakeholder (name and position)
	ii. What is needed
	iii. Frequency of communication
	iv. Communication medium
	b. Are project status reports developed and disseminated with varying degrees of frequency and content detail, through specific mediums dependent on stakeholder requirements?
	i. Project Name
	ii. Status period (dates from and to)
	iii. Cost Performance
	iv. Schedule Performance
	v. Major accomplishments this period
	vi. Issues identified this period requiring attention
	vii. Change requests this period
	viii. Approved changes this period
	ix. Planned accomplishments next period
	c. Are project status tracking forms developed and disseminated to project team members for completion and retrieval?
	i. WBS #
	ii. Task owner
	iii. Baseline start
	iv. Baseline finish
	v. Percent complete
	vi. Days remaining
	HUMAN RESOURCES MANAGEMENT PLAN
	10. Is a human resources mgmt. plan developed?
	a. Is human resources (HR) team aligned to the strategy of the organization?
	b. Does the organization employ a specific organizational structure for projects?
	i. Operational organizational structure
	ii. Project organizational structure
	iii. Matrix organizational structure
	c. Does the HR department develop a staffing plan?

	i. Is trend analysis utilized in HR planning?
	ii. Is Markov analysis utilized in HR planning?
	iii. Are staffing tables maintained?
	iv. Does the HR department maintain a skills inventory?
	d. Does the HR department follow a strategic recruitment process?
	i. Planning for staffing needs
	ii. Identification of current/future openings
	iii. Obtaining individual job information
	iv. Determining recruitment strategy
	v. Building pool of qualified applicants
	e. Does the HR department follow a strategic selection process?
	i. Completion of application for/submission of resume
	ii. Prescreening
	iii. Employment tests
	1. Cognitive ability tests (general intelligence, numerical, etc.)
	2. Personality and interest inventories
	3. Emotional intelligence
	4. Physical ability tests (must be relevant to job)
	5. Job sample tests (performing tasks relevant to job)
	6. Substance abuse
	iv. Interview
	v. Reference checks
	vi. Hiring decision
	f. Are job analysis techniques employed for job design?
	g. Is a performance management process employed?
	i. Clarify work/objectives to be accomplished
	ii. Set goals and plan performance
	iii. Regular and frequent coaching
	iv. Review performance
	v. Recognize and reward performance
	h. Are performance management methods employed?
	i. Trait methods
	ii. Behavioral methods
	iii. Results methods
	i. Is an orientation process initiated?
	j. Is a training process developed and implemented?

	i. Training needs assessment
	ii. Training design
	iii. Training delivery
	iv. Evaluation
	k. Is a structured disciplinary process implemented?
	i. Organizational disciplinary policy
	ii. Definition of discipline
	iii. Violation of organizational rules
	iv. Investigation of employee offence
	v. Disciplinary interview
	vi. Progressive discipline
	vii. Due process
	viii. Just cause
	ix. Discharge
	PROCUREMENT MANAGEMENT PLAN
	11. Is a procurement mgmt. plan developed?
	a. Is there a project evaluation process in place from a procurement standpoint?
	i. Establish a Hurdle Rate
	ii. Determine the evaluation technique to be used
	iii. Rank the available projects
	iv. Make the decision that will make the project evaluation meaningful
	v. Complete a capital request for transfer from forecast to capital budge making process
	vi. Set the criteria and timing for post completion audits and determine audit criteria
	b. Has an organizational resource planning model been developed?
	c. Has a capital procurement, evaluation, and control model been developed?
	i. Has a strategic plan been developed?
	ii. Is capital forecasting undertaken?
	iii. Is operational forecasting undertaken?
	iv. Is there a process for submitting appropriation requests?
	v. Is general capital analysis undertaken?
	1. Establishment of a hurdle rate
	2. Assessing the cost of capital
	a. Weighted average cost of capital (WACC)
	b. Return of invested capital (ROIC)
	c. Revenue stream analysis

	i. Average rate of return (ARR)
	ii. Payback period
	iii. Net present value (NPV)
	d. Is an internal assessment conducted?
	i. Are organizational objectives aligned to the outcome of the procurement process?
	1. Financial key performance indicators (KPIs)
	2. Non-financial KPIs
	ii. Is baseline information validated?
	1. What if analysis
	iii. Are stakeholders related to the procurement process identified?
	1. Are stakeholders ranked according to their importance and inputted into a stakeholder matrix?
	a. Power
	b. Proximity
	c. Urgency
	iv. Are existing suppliers identified?
	v. Is a total cost of ownership (TCO) analysis conducted?
	1. Price analysis
	2. Cost analysis
	e. Is a market analysis conducted?
	i. Analyze market dynamics and trends
	ii. Make/buy analysis
	f. Is supplier information collected?
	i. Develop supplier strategy
	ii. Develop evaluation criteria
	iii. Verify spend data
	iv. Develop a supplier selection model (SSM) criteria
	1. Organization
	2. Cost
	3. Schedule
	4. Quality
	5. Engineering
	6. Supply chain/procurement
	7. Operations/manufacturing
	8. Continuous improvement
	9. Sustainment
	10. Other

	g. Is a sourcing strategy developed?
	i. Develop specifications
	ii. Determine potential supplier approaches
	iii. Complete SSM
	iv. Complete an action plan for the SSM
	h. Is a bid solicitation and evaluation framework developed and implemented?
	i. Non-disclosure agreement (NDA)
	1. Purpose; limitation of scope
	2. Confidentiality Obligation
	3. Term or Duration
	4. Exclusions
	5. Equitable Relief
	ii. Establish contracting strategy
	1. Turnkey organizational strategy
	2. General contractor organizational strategy
	3. Construction management organizational strategy
	iii. RFx
	1. Request for information (RFI)
	2. Request for proposal (RFP)
	3. Request for quotation (RFQ)
	iv. Score and rank bids
	v. Shortlist suppliers
	vi. Propose a best and final offer (BAFO)
	vii. Contract selection
	1. Contract form
	a. Letter contract
	b. Purchase order
	c. Blanket purchase order
	d. Memorandum of agreement (MoA)
	2. Contract type
	a. Fixed price
	b. Cost based
	c. Time and material
	i. Is a negotiation and selection framework developed and implemented?
	i. Develop a planning grid
	1. List all negotiable items

	2. Rank in order of importance
	3. Aim High
	4. Bottom Line
	5. Midpoint
	j. Is there a process in place to manage contracts to completion?
	i. Develop Contract Abstract
	ii. Supplier Kickoff Meeting
	iii. Manage Contract Amendments
	iv. Is there a contract breech management procedure in place?
	1. Mediation
	2. Arbitration
	3. Termination
	v. Is there a contract closeout process in place?
	CHANGE MANAGEMENT PLAN
	12. Is a change mgmt. plan developed?
	a. Are proposed changes documented in a change request form?
	i. Name
	ii. Date
	iii. Requested by
	iv. Submitted by
	v. Description of change
	vi. Impact analysis
	vii. Decision and rationale
	viii. Signatures
	b. Are all proposed changes tracked in a change log?
	c. Are all issues tracked in an issues log?
	QUALITY MANAGEMENT PLAN
	13. Is a quality mgmt. plan developed?
	a. Are quality indicators defined in consultation with SMEs using SMART principals?
	i. Specific
	ii. Measurable
	iii. Attainable
	iv. Relevant
	v. Time-specific
	b. Are specific tools and techniques formally utilized in order to define quality indicators?
	i. Brainstorming

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	vi. Schedule risk
	vii. Technology risk
	viii. Procurement risk
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	x. Business risk
	xi. Commercial risk
	xii. Other
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	ii. Decision tree diagram
	iii. Three-point decision estimate
	iv. Probability distribution
	v. Sensitivity analysis
	vi. Modeling and simulation
	e. Are risk response strategies developed taking into consideration the resources required to implement such strategies?
	i. Avoid
	ii. Transfer
	iii. Mitigate
	iv. Accept (negative)
	v. Exploit
	vi. Enhance
	vii. Share

	viii. Accept (positive)
	f. Is a risk control protocol in place?
	i. Is a risk register created and updated continuously?
	1. Risk ID
	2. Description
	3. Priority Score
	4. Owner
	5. WBS #
	6. Response strategy
	7. Impact on triple constraint
	8. Date of occurrence
	9. Status
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	16. Is a stakeholder mgmt. plan developed?
	a. Are all stakeholders related to the project identified?
	i. Are stakeholders categorized?
	1. Project sponsor
	2. Project manager
	3. Project team members
	4. Subject matter experts (SMEs)
	5. External authorities
	6. Client
	7. End users
	ii. Are identified stakeholders organized into a power/interest (P/I) grid?
	iii. Are identified stakeholders organized into a stakeholder analysis matrix?
	1. Stakeholder (name and position)
	2. Organization
	3. Stakeholder category
	4. P/I grid designation
	5. Key stakeholder requirements
	6. Strategies for communication
	iv. Are identified stakeholders organized into a responsibility matrix?
	1. Responsible for completing task
	2. Accountable (approves) work has been properly performed/delivered (can only be one person)

	3. Consult during planning/execution of deliverable
	4. Inform on decisions being made pertaining to deliverable
	PROJECT CLOSING
	17. a. Is written consent obtained from the client that project deliverables have met scope and quality requirements?
	b. Are documentation and training service undertaken by the project team as required in order to transfer the project deliverable over to the client?
	c. Are future iterations and/or phases of the project suggested to the client as required upon transferring the deliverables over to the client?
	d. Are lessons learned documented and stored in a files retention system?

Weighting Key:
64
48
32
16
8
4
2
1
N/A

Annex H – MPMFA Matrix Ranking

5 Project Plans = (64/64) = 100% + 0 + 52.2 + 33.8 + 91.6 + 61.8 + 55.5 + 24.7 + 0 + 79.1 + 100 + 60.2 + 74.2 = 733.1/1300 = 56.4%	**2 Project Phases** = (64/64) = 100% + 56.5 + 75.6 + 53.8 + 45.7 + 48 + 83.4 = 463/700 = 66.1%					
5a Subsidiary Plans = (0/48) = **0%**	**1 Project Selection** = (32/32) = 100% + 12.5 + 57.1 = 169.6/300 = **56.5%**	**2a Project Initiation** = (32/32) = 100% + 90.9 + 66.7 + 60 + 57.9 + 58.1 + 100 + 48.3 + 98.1 = 680.6/900 = **75.6%**	**2b Project Planning** = (32/32) = 100% + 70 + 35.3 + 66.2 + 47.4 + 66.8 + 26.6 + 17.8 = 430.1/800 = **53.8%**	**2c Project Execution** = (32/32) = 100% + 0 + 0 + 100 + 47.4 + 75.4 + 26.6 + 0 + 61.5 = 410.9/900 = **45.7%**	**2d Monitoring & Controlling** = (32/32) = 100% + 0 + 0 + 100 + 47.4 + 75.4 + 0 + 61.5 = 384.3/800 = **48%**	**2e Project Closing** = (32/32) = 100% + 66.7 = 166.7/200 = **83.4%**
6 Cost Mgmt. Plan = (32/32) = 100% + 90.9 + 70 + 0 + 0 = 260.9/500 = **52.2%**		(80/88) = **90.9%**	(112/160) = **70%**	(0/32) = **0%**	(0/32) = **0%**	
7 Schedule Mgmt. Plan = (32/32) = 100% + 35.3 + 0 + 0 = 135.3/400 = **33.8%**			(48/136) = **35.3%**	(0/16) = **0%**	(0/16) = **0%**	
8 Scope Mgmt. Plan = (32/32) = 100% + 66.2 + 100 + 100 = 366.2/400 = **91.6%**			(102/154) = **66.2%**	(32/32) = **100%**	(32/32) = **100%**	
9 Communications Mgmt. Plan = (32/32) = 100% + 66.7 + 47.4 + 47.4 + 47.4 = 308.9/500 = **61.8%**		(32/48) = **66.7%**	(72/152) = **47.4%**	(72/152) = **47.4%**	(72/152) = **47.4%**	

	10 Human Resources Mgmt. Plan = (0/32) = 0% + 60 + 66.8 + 75.4 + 75.4 = 277.6/500 = **55.5%**		(24/40) = **60%**	(302/452) = **66.8%**	(199/264) = **75.4%**	(199/264) = **75.4%**	
	11 Procurement Mgmt. Plan = (0/32) = 0% + 12.5 + 57.9 + 26.6 + 26.6 = 123.6/500 = **24.7%**	(8/64) = **12.5%**	(92/159) = **57.9%**	(25/94) = **26.6%**	(25/94) = **26.6%**		
	12 Change Mgmt. Plan = (0/32) = 0% + 0 + 0 = 0/300 = **0%**				(0/112) = **0%**	(0/112) = **0%**	
	13 Quality Mgmt. Plan = (32/32) = 100% + 58.1 = 158.1/200 = **79.1%**		(144/248) = **58.1%**				
	14 Requirements Mgmt. Plan = (32/32) = 100% + 100 = 200/200 = **100%**		(96/96) = **100%**				

	15 Risk Mgmt. Plan = (32/32) = 100% + 17.8 + 61.5 + 61.5 = 240.8/400 = **60.2%**			(72/404) = **17.8%**	(64/104) = **61.5%**	(64/104) = **61.5%**	
	16 Stakeholder Mgmt. Plan = (32/32) = 100% + 48.3 = 148.3/200 = **74.2%**		(56/116) = **48.3%**				
Organizational Management = 57.1 + 98.1 + 66.7 = 221.9/300 = **74%**		(64/112) = **57.1%**	(212/216) = **98.1%**				(32/48) = **66.7%**

Ranking Key (%):
0-0.9
10-19.9
20-29.9
30-39.9
40-49.9
50-59.9
60-69.9
70-79.9
80-89.9
90-100

Marine Scotland Science
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

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