The Development of a Quality Management System for a Service and Manufacturing Organization.

by

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I. ABSTRACT

The Development of a Quality Management System for a Service and Manufacturing Organization.

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South African Organizations are constantly searching for a perfect tool that may help them to effectively manage every aspect of their operations. While the search for this tool has proved to be fruitless for many organizations, various models have been implemented to ensure that organizations have control over their processes. However the consistency of good quality products and services still remain uncertain. The willingness of organizations wishing to choose a tool that ensures processes are in control with consistent products and services that ultimately fulfill customer requirements is a risk that currently faces South Africa. The ISO 9001:2008 Standard and the implementation of a Quality Management System has become the certification of assurance for organizations. The question however arises to whether Quality Management System has an effect on the organization processes and customer satisfaction?

The Study considers two Organizations. A tangible product based Organization in the Civil Engineering field building roads and buildings (KPMMM Construction) and a more less tangible service based organization, specializing in Project Management (ISF Services). The study of understanding the current process controls and client satisfaction and whether the development and implementation of a Quality Management System is the solution for organizations to have greater control over their processes and in turn a more gratified client.

The ISO 9001:2008 standard describes the basic activities that are required for a quality focused organization in developing and implementing a system to ensure product and service that satisfy customer needs and expectations. The requirements of the standard are such that they affect everyone in the organization.

It has been identified from previous sources as mentioned by *Anand, K. B., Laxmi, A. B., & Maruti, S. P. (2012). An expert advisory system for ISO 9001*

based QMS of manufacturing environment. Paper presented at the 2012 International Conference on Communication, Information & Computing Technology (ICCICT), Mumbai, India and by ***and*** *Chi-Hsiang, W., & Dwen-Ren, T. (2009). Integrated installation of ISO 9000 and ISO 27000 management systems in an organization. Paper presented at the 43rd Annual 2009 International Carnahan Conference on Security Technology, 2009,* that the problem Organizations have today is understanding the benefit of ISO 9001 and a Quality Management System. The study shows the design, developmenet, implementation and benifits before and after ISO 9001 implementation taking into account customer satisfaction and employee performance which in turn relates to the organizations overall process performance.

The validation of this dissertation can be justified with the South African Burea of Standards certifing ISF Services to ISO 9001:2008 and a letter from ISF Services to state that the processes followed allowed certifcation.

This thesis is submitted in fulfilment of the requirements for the degree Masters of Science (Industrial Systems) in the Faculty of Industrial Engineering, University of Pretoria, Pretoria.

DECLARATION:

I, Muhammad Abdullah Omar Ali hereby declare that this is my own work and that all sources used have been acknowledged.

SIGNED:……..……..

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SANS ISO 9000:2005 standard Third Edition 15.09.2005

QMS	Quality Management System
KPMM	KPMM Construction Roads & Earthworks
ISF	ISF Services
SABS	South African Bureau of Standards
BS	British Standard
ISO	International organization of standardizations
IAF	International accreditation forum
SANAS	South African National Accreditation Systems
MR	Management Representative
SOP	Standard Operating Procedure
WI	Work Instruction
MQR	Management Quality Representative
PDCA	"Plan-Do-Check-Act"
SMART	S - Simple; M - Measurable; A - Attainable; R - Realistic; T – Time Bound.
PL	Quality Policy
OS	Organizational Structure
SI	Sequence and Interactions
QM	Quality Manual
SLP	System Level Procedure
PM	Project Management
AD	Administration

FM	Forms
QM	Quality Manual
IR	Improvement Report
NC	Non-conformance
CEO	Chief Executive Officer
PC	Standard Operating Procedures
NCR	Non- conformance Report
CAR	Corrective Action Request
KPI	Key Performance Indicators
HR	Human Resources

Chapter 1: Introduction

1.1 General

Quality is defined as the *"degree to which a set of inherent characteristics fulfils requirements." (ISO 9000*) In achieving a platform of total quality within an organization, a quality management system is a tool that is used to establish a clear outline of assurance.

A Quality Management System (QMS) in accordance with ISO 9001:2008 will provide an organization with a set of processes that ensure a common sense approach to managing an association.

The system should ensure consistency and improvement of working practices, which in turn should provide products and services that meet customer requirements. ISO 9000 is the most commonly used international standard that provides a framework for an effective quality management system.

ISO 9001:2008 is an International Standard that is focused on assuring customers of consistent quality of service and product through the use of a system that includes: Policies, Procedures, Work Instructions (Activity List) and forms that are used by the organization.

The standard describes the basic activities that are required for a quality focused organization in developing and implementing a system to ensure product and service satisfy customer needs and expectations. The requirements of the standard are such that they affect everyone within the organization

Based on the ISO 9001:2008, the dissertation considers 2 unique companies that are in the forefront of South Africa's economy.

1. **KPMM Construction Roads & Earthworks**, a product based organization that builds roads and is in the construction industry within South Africa.
2. A service based organization, **ISF Services** a Construction Project Management Firm dealing with the management of contractors in specific technical constructions.

The thesis addresses the process of how a Quality Management System is developed for both of the organizations, with one of the two seeking certification by SABS (South African Bureau of Standards).

1.2 Historical Development and the current states of KPMM Construction and ISF Services.

1.2.1 KPMM CONSTRUCTION

KPMM CONSTRUCTION (Pty) Ltd is principally active in the areas of Civil Engineering, Earthworks and Road Construction. The company currently operates mainly in Limpopo and Mpumalanga provinces.

Bulk Earthmoving

KPMM Construction has the capacity to manage any bulk earthmoving operation as well as other road construction operations.

- **Road Construction and Rehabilitation**
  During the past 30 years, KPMM Construction personnel have built top standard roads, tunnels, freeways and interchanges, with hundreds of kilometres of road rehabilitation and road maintenance.

- **Drainage**
  KPMM Construction specializes in all forms of drainage work, including in-situ and pre-cast structures, pipe and culvert laying and kerbing.

- **Crushing**
  KPMM Construction has the capability to manage crushing plants, with varied capacities from single to four-stage crushing. Any required grading maybe specified.

- **Township Infrastructure**
  The construction of township roads and infrastructure including sewers and water services have been managed.

1.2.2 ISF SERVICES

ISF Services provide Construction Project Management Services within a technical and engineering environment.

ISF Provides Services in the following fields:

- Construction Management
- Development Management
- Programme Management
- Technical Auditing and Advisory

Chapter 2: Summary of Developing a Quality Management System (QMS)

2.1 Background on Quality Management Systems (QMS)

Quality Management Systems (QMS) have been developed from 1979 first known and followed by the British Standard (BS) 5750 then transformed into the now widely used ISO 9000. Quality Management systems have had a revolutionary experience for companies internationally by keeping the customers first at all times working on a process approach measuring various non-conformances and being both pro and reactive with respect to non-conformance by implementing corrective and preventive actions. The fundamental foundation of QMS'S is on the basis of continuous improvement and always striving to exceed customer expectations.

The global standardization requires companies to follow the recognized ISO (International organization of standardizations) standard which allows clients the confidence to trade with other companies in having international recognition with respect to quality.

The international accreditation forum (IAF) in line with ISO and the 164 representative countries gives various certification bodies the authority to certify companies on the basis of audits to ensure that they comply with the standard and follow good practice.

South Africa is represented in the (IAF) by the South African National Accreditation Systems (SANAS) which in turn allows the South African Bureau of Standards (SABS), Pricewaterhouse Coopers and various other certification bodies to issue the certificate of compliance to ISO 9001:2008.

The valued certificate allows companies to trade internationally and grow their market horizons. To be certified to ISO 9001:2008, a Quality Management System should be developed ensuring that the companies Vision, Mission and objectives are in line with policies, processes, procedures, forms and templates that allow the company direction to improve and keep their customers satisfied and always strive to exceed expectations.

2.2 Rationale of the Study

The development of QMS will be in line with ISO 9001:2008 for the two companies, primarily KPMM Construction a more manufacturing/product based organization and ISF Services a Project Management and service based organization.

A system on soft copy and hard copy by having quality manuals and following all the requirements and principles of ISO 9001:2008.

2.3 Dissertation Objectives and Questions

The Research Objectives and Questions are:

- Does the Development and Implementation of a Quality Management System benefit KPMM Construction and ISF Services?
- Can this thesis process take one of the 2 companies mentioned through ISO 9001:2008 Certification?
- To evaluate the effectiveness of a Quality Management System, by analyzing processes and customer satisfaction before ISO 9001 Certification and after ISO 9001 Certification?
- To understand whether or not the Quality Management System adds value to the organizations overall performance?

2.4 Key attributes of the desired theory and derived models or methods.

The application of this dissertation is to create the method taken to develop a QMS for KPMM Construction and ISF Services, by developing procedures in line with policies, business & strategic plans for the companies. The system can be broken down into 4 tiers as shown below:

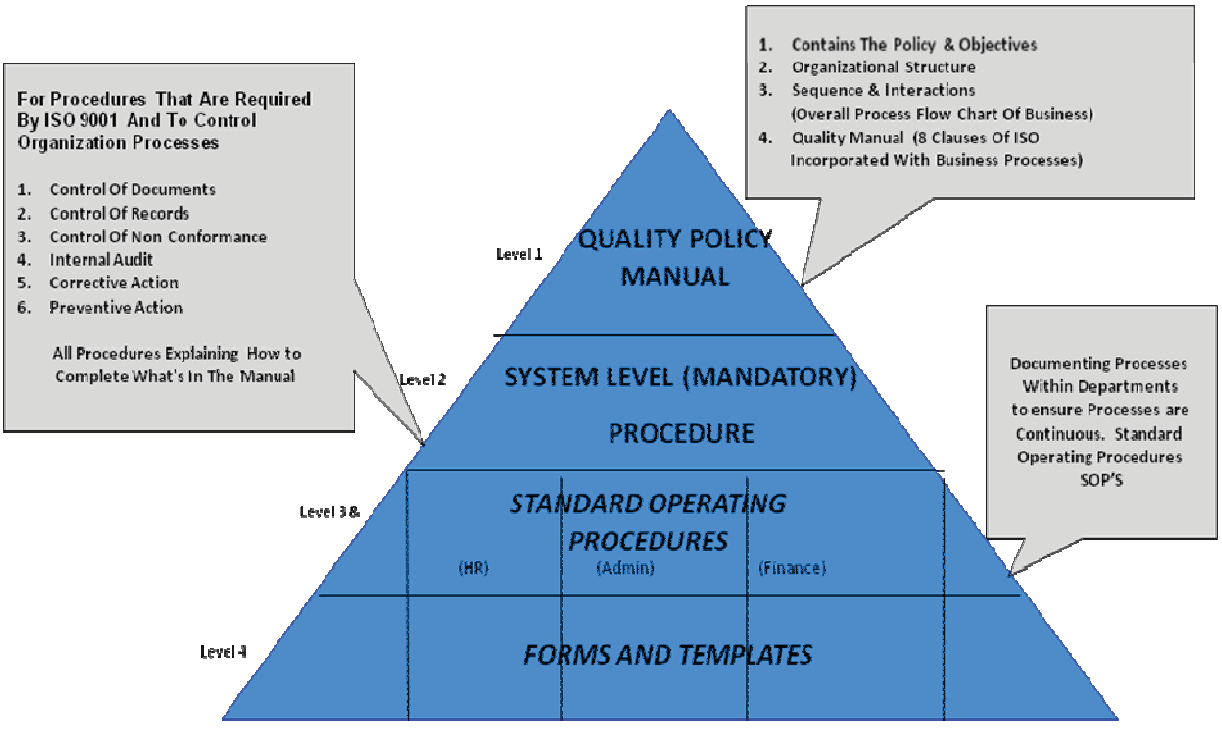


Figure 1: Showing the theory and model behind developing a Quality Management System

The diagram above is a pyramid that summarizes the requirements in ISO 9001:2008 clause 4.2.1 (general requirements).

2.4.1 Tier 1 (Level 1) contains the following:

- ***Quality Policy Statement and objectives*** – The quality policy statement in line with the companies vision statement gives a clear indication on what the company does and a commitment to delivering quality service or product in-line with the ISO 9001:2008 standard. The Quality Objectives in line with the companies Mission statement bring about a set of measurable objectives in line with the S.M.A.R.T principal. "S" (simple/specific) "M" (measurable), "A" (Attainable), "R" (Realistic).
- ***Organizational Structure*** – Showing the roles and responsibilities of employees within the company, communication and hierarchy levels.
- ***Sequence & Interaction of Processes –*** A cross functional flow chart showing a bird's eye view of how the departments from the organizational structure work with one another to fulfil the final requirement or objective of the business by means of a processes and the interaction of the processes.
- ***Quality Manual –*** Since every electronic appliance system has a user manual, the QMS manual uses all 8 clauses of ISO 9001:2008 by re-writing them and integrating the words to suit the particular business, by stating "WHAT" the system should do. Whilst references of Procedures are placed below each clause to show the "HOWS" in how these policy statements are carried out within the organization.

This process and model will be discussed in detail in the study. The completion of the documentation allows companies to have their processes defined and documented.

The System entails all policies, processes and procedures linked from one main page where employees can access various documents via the intranet or server of the organizations. Changes to the system can be made, however the verification of these changes are determined by the Management Representative (MR) and elaborated in detail in the Control of Documents Procedure.

2.4.2 Tier 2 (Level 2) contains the following:

The ISO 9001:2008 standard clearly states that there are to be "Documented Procedures" in which they become Mandatory for organizations to follow. The standard specifies 6 Mandatory Procedures which are required to be explained and followed in detail. The maintenance and continuous monitoring and evaluation of these procedures drives the QMS. The 6 mandatory procedures are:

1. ***Control of Documents*** (a procedure specifying how to issue, change, control and have revision level numbers on documents)

2. ***Control of Records*** (a procedure specifying how to identify, retrieve, store, destroy files)
3. ***Control of Non-Conformance*** (a procedure specifying how to control any non-conformance, by either deviating from a standard, specification, customer requirement or procedure)
4. ***Corrective Action*** (a procedure specifying how to deal with a non-conformance to ensure an investigation addressing the root cause of the problem by ensuring that the problem does not reoccur)
5. ***Preventive Action*** (a procedure specifying how to be pro-active in dealing with incidents and having actions in place for problems before they occur)
6. ***Internal Audit*** (a procedure specifying how to carry out several internal audits during the life cycle of the system to identify any non-conformance and opportunities of improvement internally before external certification auditors come for an audit)

The minimum requirement as per the ISO 9001:2008 standard is 6 mandatory procedures as clearly stated in NOTE 1 of clause 4.2.1.

However there may be more than 6 mandatory procedures if Top Management suggests so; however there is a minimum of 6.

2.4.3 Tier 3 (Level 3) contains the following:

Standard operating procedures are as per the departments from the organizational structure and sequence and interaction of processes from tier one, showing how the company can fulfil the commitment statement made in the quality policy and objectives. These departmental procedures guide the organization to reach its objectives.

Standard Operating Procedures are specific to how the Organization wishes their respective departments to function, by explaining each process in detail and explaining various steps in executing these tasks. Job Descriptions of employees lead to the standard operating procedure.

2.4.4 Tier 4 (Level 4) contains the following:

Documents and templates that are used within the organization for their daily use which allows procedures to be executed accordingly.

The Tiers allow a common sense approach in guiding the organization to its Vision statement. The diagram below is a schematic approach on how a typical business strategies to achieve Vision Statement and Overall Goals and Objectives.

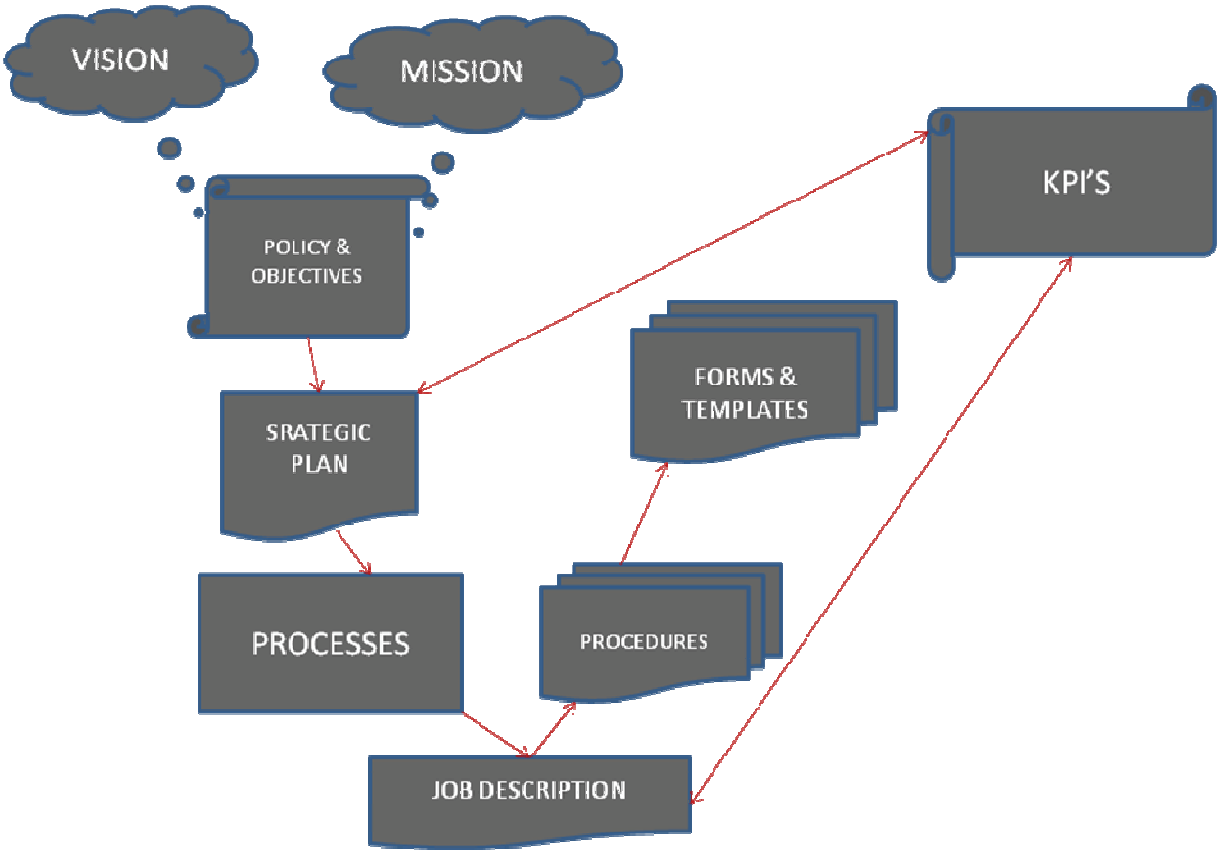


Figure 2: Basic Logical Business Process.

The diagram above shows a logical explanation on how business strategies are executed in modern theory. The ISO 9001:2008 has the concept in allowing business to add value.

Every entrepreneur, or established business has a Vision statement, a "Dream they wish to fulfil". Thereafter a Mission is generated to create short term goals to which the organization sets itself.

A policy statement, commitment or statement of intent is extracted from the Vision and Mission of the Organization.

Chapter 3: Project Planning

The ISO process model is discussed in greater detail in Chapter 5 of this study, with references guiding the development of each phase of the development of the Quality Management System. As a consultant appointed to deliver, a project plan is devised as a guide, allowing the individual a process to follow strategically, to deliver on time to the required specifications.

On completion of documentation, companies are given the system in writing. Implementing the system and ensuring that procedures are followed accordingly is the most difficult part, hence the reason for an internal audit procedure.

The system will entail all procedures and policies linked to one main page which employees may access via their intranet and can view procedures and documents. Changes can only be made by the process owner usually appointed as the Management Quality Representative (MQR)

An example of the Project Plan for ISF Services & KPMM Construction below on Figure 3.

ISO 9001:2008 QMS PROJECT PLAN

FOR ISF SERVICES & KPMM CONSTRUCTION (PTY) LTD (UPDATED 27/07/2012)

PLANNED:- ONGOING:- COMPLETED:-

	Task Description	APRIL/MAY	JUNE/ JULY	AUGUST/SEPTEMBER '12	%
1	**PHASE 1: GAP ANALYSIS**				
1.1	Gap Analysis				
1.2	Identification of processes				
1.3	Information Gathering				
1.4	Awareness Training				
2	**PHASE 2: DOC DEVELOPMENT PROCESS**				
2.1	QMS System Development				
2.2	Process Development (SOP'S and WI)				
3	**PHASE 3: IMPLEMENTATION**				
3.1	Implementation of QMS				
3.2	Auditor Training (2 employees)				
3.3	Final Awareness Training on QMS				
3.4	Internal Audit				
4.0	**PHASE 4: CERTIFICATION**				
4.1	Audit Readiness (Management Review)				
4.2	Corrective Action Request (CAR)				
4.3	Hand Over				
4.3	Desk Study (SABS 1st Stage)				
4.4	Certification Audit (SABS 2nd Stage Audit)				
4.5	Closing of CAR'S After SABS audit				
4.6	Certification by SABS				
	TOTAL	*Overall Percentage of Project Completion*			

Figure 3: Project Plan in Developing a QMS for ISF Services and KPMM Construction

3.1 Phase 1 ISO 9001:2008 Quality Management Systems Gap Analysis

3.1.1 Gap Analysis

The Gap Analysis audit of an Organization is conducted through interviews and discussions in the company of top and lower management. By this, an auditor is able to analyse standards which are currently implemented and to identify gaps and areas of improvement with respect to ISO requirements for policies, processes and procedures within the Organization.

This is an essential step to competently identify and address deficiencies and inadequacies in an Organization in accordance with the ISO 9001:20008 Standard.

3.1.2 Identification of processes

This includes gathering information on various policies, processes and procedures of the Organization, a physical inspection and tour of the Organization in order to understand the business and create an overall process flow chart (Sequence and Interactions of Process in-line with departments). The system structure includes a Quality Manual, System Level Procedures, Standard Operating Procedures and Forms & Templates.

The Quality Manual contains the policy and objectives, essentially this need not be an individual document.

System Level Procedures are commonly referred to as Mandatory Procedures, these are procedures required by ISO 9001:2008 standard which are necessary to control the basic fundamentals of processes in an Organization. Mandatory Procedures include the following:

1. Control of Documents
2. Control of Records
3. Control of Non-conforming product/service
4. Corrective Action
5. Preventive Action
6. Internal Auditing

Standard Operating Procedures are formed for each department in an Organization, these include the directives for each department.

3.1.3 Information Gathering

Gathering information required from the Organization and requirements in accordance with the ISO 9001 standard. Understanding how each employee works and documenting how they execute their daily tasks within the organization allows the completion of the Standard Operating Procedures.

The Quality Manual contains statements of the Organization's quality policy, compiled by Top Management, the Quality and Process Planning Department.

System (Mandatory) Level Procedures define activities at a departmental level and are compiled by departmental Managers or Directors.

Standard Operating Procedures (SOP's) are used to congregate employee's inputs and their job descriptions. These documents are usually written by the operator/sorter/consultant and/or trainers.

Other documentation such as Forms and Templates serve as records of information which should be stored as hardcopy and soft copy to provide a history of the Organization's products and services, customer feedback and improvements, following customer complaints.

3.1.4 Awareness Training

The Quality Awareness training of all employees in the Organization and understanding the basics of Quality and development of the Quality Management System (QMS) is essential, for all to understand their respective role and responsibility in achieving Quality.

On completion of the training, employees gain knowledge on the basic concepts and principles of Quality Management, the requirements of ISO 9001, benefits of implementation and the approach needed for implementation before commencement of the certification process.

3.1.5 Project Review and Service Level Agreement

Should the Organization decide to continue with the QMS development and certification process, a project plan is created defining various steps to be concluded, ensuring a smooth certification process. A Service Level Agreement is thereafter drafted.

3.2 Phase 2 ISO 9001:2008 Quality Management Systems Development

3.2.1 QMS System Development

The Quality Manual and System Level Procedures explain the Quality Management System and the development of a Quality Policy Statement should be referred to as the scope and objectives of the Organization.

The Quality Manual explains the QMS and entails the following:

- All activities of the company
- Policies and Objectives of the company
- Job descriptions, Job Profiles, Key Result Areas & Letters of appointments
- Organizational Structure
- Sequence and Interactions. (overall process flow chart of the Company)
- Company procedures, work activities, forms to be used and filing
- Definitions commonly used in the Company
- If a topic is not covered in the Quality Manual, the Quality Manual explains where to locate that topic

.

Documentation within the Organization is reviewed and follow a numbering system as per the registrar. All Documents comprise of a revision level number in accordance with the Control of Documents Procedure.

3.2.2 Process Development (SOP'S and WI)

In order to become certified, the core objective of the project is to develop procedures in line with ISO 9001:2008 requirements. Procedures for all departments need to be established.

Procedures are created as follows:

- By means of Standard Operating Procedures, employees are requested to share their input on the manner in which their jobs should be performed. A document may undergo several drafts before completion of a final document, employees will review all drafts for further suggestions.
- A first draft is prepared, this should entail all the necessary steps in the procedure. Lengthy steps may be shortened. A flow chart should be included in the first draft.
- The first page will include a short introduction consisting of an overview on the job. This will allow employees to become familiar with what their job entails.
- A header on the first page should be created consisting of the company name, business logo, document title, date of commencement and a specific document number assigned by the document control personnel. An issue number generated by change control should also be issued.

- A table is created at the bottom of the header which is titled “Amendment History and Approval”. The following columns should be listed: Issue date for the procedure, description of changes, signatures for the SOP originator, department manager and quality control manager.
  The description of changes should briefly summarize any revisions made to the procedure since the time it was created. Each revision must be signed by its initiator.
- The second page should entail the following: purpose of the SOP, scope, contents of the document, definitions of terms/abbreviations used in the procedure, responsibilities of personnel involved in the procedure and references to documents the SOP relies on, trade standards should be included.
- The SOP is completed by describing the procedure in short steps. Simple language is used and the repetition of multiple steps in the same sentence should be avoided. Once the task has been completed, the document is dated and is signed by the appropriate regulatory personnel. The SOP is emailed to the document control department and the manager responsible for implementing the procedure.

3.3 PHASE 3 ISO 9001:2008 Quality Management Systems Development

3.3.1 Implementation of QMS

In order to implement the Quality Management System, one should understand the Sequence and Interactions and be able to align them to processes within the Organization. This helps to successfully comply with the Quality Policy Statement and its objectives.

All System Level Procedures implemented within the Organization include:

1. **Management Responsibility**

- To ensure that management at all levels is committed and their commitment is shown to employers.
- Management should also show commitment and take practical actions.
- The Management Representative for Quality has been appointed with the responsibility of:
  a) establishing, implementing and maintaining the System.
  b) reporting to management with regard to performance of the system and highlighting any improvement needs, and
  c) promoting awareness of customer requirements throughout the Organization and amongst its suppliers.

  This Procedure enforces Top Management to hold a meeting every Quarter, with an Agenda for the ISO 9001 standard to monitor the effectiveness of the QMS.

2. **Control of Documents**
    - This is an approach to manage and control internal procedures/documents, follow instructions, taking of notes, performance criteria and other directives. This includes documents from external parties such as various acts (Skills Development and Employment Equity).
    - Requirements ensure that documents are verified and approved and that updated versions are filed at the office.
    - If an individual is not satisfied with a procedure and feels he has a better method, one may suggest this change by means of a document change request or use the corrective action request.

3. **Control of Records**
    - ISO 9001 requires filing in all departments to be made simple. Documents should be filed according to a title or number. Files folders, filing cabinets and indexes must correlate to a filing system used on a computer.
    - Records should be:
    - ➢ easily accessible and safeguarded,
    - ➢ backed up, and
    - ➢ protected against unauthorized access,
    - Documents and Information no longer in use by an Organization should be archived.
    - Information is to be filed in an orderly manner to help evaluate an individual's performance and identify areas of improvement.

4. **Control of Non-Conformances**
    - This requires that one:
    - ➢ identifies the problems,
    - ➢ isolates problems,
    - ➢ reviews the problem,
    - ➢ report on the problem, and
    - ➢ takes action to solve problems and correct the process.

5. **Internal Auditing**

    - Internal Auditing requires one to have Procedures in place, conduct audits, provide reports, issue non-conformance reports, take corrective actions and follow-up:
    - ➢ in order to identify the quality of one's services; or
    - ➢ identifying areas of improvement; or
    - ➢ by determining reasons for customer complaints.
    - Audits are tools for improvement and are not used for finding faults.
    - Audits are objective evaluations and not policies.

6. Corrective Action

- ISO requires that corrective actions should be reported to an independent person. The MQR will register the problem, thereafter forward it to the responsible team or directorate to solve. They proceed with investigation and propose corrective action. Thereafter the action is implemented, a person is assigned the responsibility of the action and a deadline is set for implementation, completion and follow up, to evaluate the effectiveness of the action taken.
- The MQR, Quality Team and originator will verify the corrective action, ensuring that the problem does not re-occur.

7. Preventive Action

- A preventive action suggests better methods to avoid recurring issues.
- Occasionally, when studying performance graphs one will find negative or positive trends.
- ISO requires an investigation to be conducted in finding the root cause and solution to the problem.

The Procedures above have guidance from the ISO 9001 standard to be able to explain each of the requirements in accordance with how the company would like to manage the process. There can be more then 6 or 7 Mandatory Procedures, Top Management decides on how many Procedures they wish to make Mandatory within the organization. Officially from the ISO 9001 standard there are only 6.

Lastly, ensuring that all Standard Operating Procedures are understood by all employees in the organization

3.3.2 Auditor Training (2 employees)

This requires training of two Internal Auditors (employees) within the Organization in fulfilling the requirements of scheduled internal audits, during the course of the year. A minimum of 2 working days are required to complete in house training. The training allows the Internal Auditors to monitor and maintain the QMS by continually improving the system.

3.3.3 Final Awareness Training on QMS

This is an overall presentation on the final Quality Management system for all employees, giving them a clear understanding of ISO 9001:2008 and a means of maintaining the Quality Management System, illustrating key benefits in the short and long run.

These benefits include:

- more involvement of individuals in the organization,
- improvement of work processes,
- written procedures which describe simultaneous work activities,
- controlled records and filing methods,
- regular Internal Audits involving all departments in the Organization,
- evaluation from an external party such as SABS(South African Bureau of Standards),
- ability to participate in the audits,
- compliance with customers who require ISO 9001,
- improvement of quality,
- competitiveness with local and International markets,
- improved supplier performance,
- reduction of unnecessary documentation,
- consistency in rendering a services,
- cost savings and improved profitability, and
- enhanced customer relations and confidence.

3.3.4 Internal Audit

An Internal audit is conducted to ensure that the Organization has all aspects in place to meet the requirements of ISO 9001:2008. This allows the organization to assess their current situation and close any gaps before commencement of the final SABS audit. The detail of internal auditing has been discussed above.

3.4 PHASE 4 ISO 9001:2008 Quality Management Systems Certification Process

3.4.1 Audit Readiness (Management Review Meeting)

This deals with preparing all employees within the organization for the final SABS audit, ensuring their job profiles are entirely understood. Their procedures should correlate with their duties and job descriptions. In addition, the organization should consign their Records control index and understand procedures such as control of non-conformances, corrective and preventive actions. Minutes of meetings should be drafted on the first Management Review meeting showing commitment of top management to the Quality Management System.

3.4.2 Corrective Action Request

From the Internal Audit there will be a few non-conformances generated in which the system will become alive. The MQR (Management Quality Representative) and Managers ensure the effective closing of corrective actions in accordance with guidance from the consultants.

3.4.3 Desk Study (SABS 1st Stage)

SABS conducts their first audit on the Organization's Quality Policy Statement, Sequence and Interactions and the Quality Manual. All documentation will be inspected to ensure that all ISO 9001:2008 requirements are met. A consultant should be present for the duration of this audit or he/she should train the MQR on how to justify and explain the purpose and functionalities of the system.

3.4.4 Closing of Corrective Actions

After the audit and management review meeting, a few observations will be prepared and a few alterations will be made to suit the needs of the Organization and add value to the QMS. All Corrective Action Requests are to be closed before commencement of the second stage audit.

3.4.5 Certification Audit (SABS 2nd Stage Audit)

SABS thereafter conducts their final stage audit ensuring that procedures generated comply with the job descriptions of all employees. Employees will be audited by auditors to gain recognition on how effective the Quality Management System is.

3..4.6 Handover

A consultant must be present to ensure that all findings from the SABS are closed. Once the Organization succeeds in obtaining ISO certification, the project will be closed and handed over to them. System users should familiarise themselves with the system for proper implementation and future maintenance of the system.

Chapter 4: Literature Review

4.1 Dissertation Aim

The aim of the project is to specify and develop a Quality Management System to be implemented in the company that is appropriate for the Civil Engineering and Project Management Industry and will be suitable for accreditation by a recognised organization, such as the South African Bureau of Standards (SABS).

It also aims to assess the current process controls within the organizations and to study whether the Implementation of the Quality Management System has any effect to the performance of the organization, through measuring processes and customer satisfaction before and after ISO 9001:2008 Certification.

The variables taken into consideration for process controls are that of Employee performance. Whilst the other is the final customer's perception on the service or product rendered by the two companies, both before and after ISO 9001 certification.

The effectiveness of the Quality Management System shall be determined by the employee's and client's overall satisfaction of services rendered by the two organizations.

The QMS will be designed to comply with the standards set out in the International Standards for quality management systems (ISO 9001:2008). *Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland.*

The QMS will provide employees with detailed procedures to follow.

It will serve to standardize operations within the various business units and allow for less rework and inadequate resource allocation. The aim is to improve standards available to employees at KPMM and ISF, to get quality to an optimal level and therefore allowing for maximum project profitability.

4.2 Dissertation Scope

The project chapters within the study show the actual project plan and scope of how a Quality Management System was developed, to ensure more control over processes and gratify customer requirements.

Research was done on the performance of the Quality Management System to determine whether the system had any positive or negative effect to the organizations overall performance.

A detailed gap analysis of current practices and the proposed system requirements was done. An implementation plan has been developed to attend to the shortcomings identified.

4.3 Dissertation Deliverables

The project intends to deliver a Quality Management System that includes the following:

- ✓ A Quality Management System consisting of the required documentation needed for implementation, as well as the policies and Procedures,
- ✓ more effective and efficient operations,
- ✓ improved employee morale and awareness,
- ✓ improved customer satisfaction,
- ✓ analysis of KPMM and ISF before and after ISO implementation their customer satisfaction
- ✓ analysis of KPMM and ISF before and after ISO implementation their process controls, taking into consideration employee performance

The above criteria is taken from the STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland, page: 2-14

4.4 Dissertation Constraints

A few constraints were encountered. These constraints will need to be managed and controlled to successfully complete the project and deliver the desired results. These constraints include:

- ✓ Budget – The project has a specified budget. This will impact the decision process and type of management system used.

- ✓ Time – The project shall not be concerned with follow up or monitoring of the quality management system. The project requires that processes and procedures carried out by the organization should be observed, analyzed and documented.

- ✓ Current Financial Environment – Due to unforeseen events and circumstances the financial environment has changed dramatically.

- ✓ The cooperation of clients to complete the feedback reports.

The developed procedures and processes were reviewed, to ensure that they accurately reflect the procedures in the organization.

Chapter 5: Research Design and Methodology

5.1 Quality Management System Design And Development

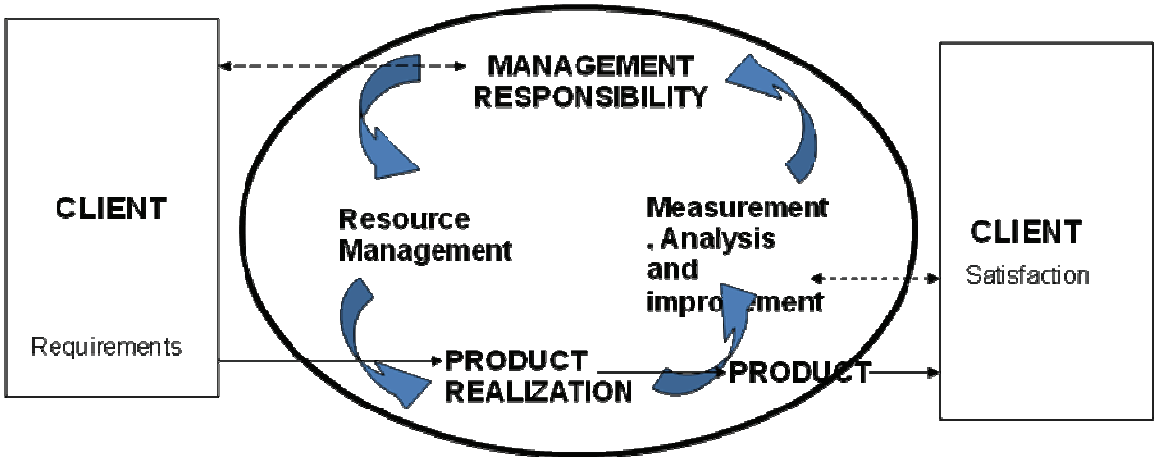
Understanding the ISO 9001:2008 Quality Management System Requirements standard is the key to ensuring that the Civil Engineering and Project Management company undergo their certification of ISO 9001:2008. Following each step of the project plan:

- Gap Analysis
- Development of the QMS
- Implementation of the QMS
- Certification of the Organization

The diagram below (Figure 3) shows the summary of requirements within the ISO 9001:2008 standard. The guideline for the Design and Methodology of the Dissertation.

Focus Of Change

The key area of change introduced into ISO 9001:2000 can best be illustrated by the Model developed for the revised requirements, shown in Figure 3



The extrapolation and interpretation of the diagram above, taken from the ISO 9001:2008 standard allows the Organizations to fulfill the requirements.
Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page vi

5.1.1 Client Requirements

Understanding the Client requirements is the fundamental aspect within the project of ensuring the certification of ISO 9001. The method used in obtaining the respective client requirements are as follows:

- Interviews with Operational Managers and Directors for Both ISF Services & KPMM Construction
- Contracts and Service Level Agreements between ISF Services, KPMM Construction and their respective clients.
- Scope of work underlined with tenders generated for ISF Services and KPMM Construction.
- Strategic, Marketing and Business Plans analyzed

The research undertaken to understand and extrapolate the specific requirements of the client are shown in Table 1:

ISF Services Client Requirements	KPMM Construction Client Requirements
Control all Projects within the specifications set forth	Control of all processes within the inception phase of the construction of a road
All projects to be managed with the Time specified, to the appropriate Quality and within the Budget of the Clients requirements	Quantity Surveyors, set costs aligned to the requirements of the Project
All phases to be monitored bi-weekly by the Project Managers to ensure contractors are working towards the specified time line and quality of work.	Parameters of Cost, Quality and Timelines setup and addressed
Assurance that all phases within the project phases are satisfactorily completed	12 Month defect free policy, where all non-conformances shall be addressed at no cost to the final client.

Table 1 summarizes the generalized Client requirements, each specific client having their own specific requirements.

5.1.2 Management Responsibility

The Standard requires top management to be committed to the development and implementation of the Quality Management System and the continuous improvement thereof.

5.1.3 Resource Management

The Standard requires that the organization effectively manages and supplies resources needed for the effective development and implementation of the Quality Management System. It is the responsibility of the organization to ensure

human resources are competent to perform work affecting product realization and that the necessary actions are implemented to ensure their competence.

5.1.4 Product Realization

The Standard requires that the necessary processes be implemented to ensure product realization. Where design and development are applicable, the sufficient design reviews, validation of design outputs against inputs and the verification of the product delivered against the needs identified need to be demonstrated.

5.1.5 Measurement Analysis and Improvements

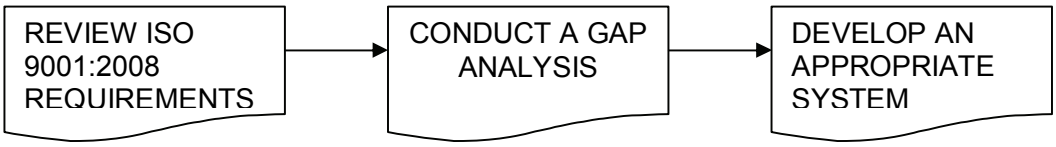
- ✓ Where the organization fails to comply with any requirement or delivering a product that does not conform to the requirements it was intended for, necessary actions to correct the non-conformance need to be implemented.
- ✓ It is recommended that effective risk management is implemented to attend to potential non-conformances that may result from unforeseen circumstances.
- ✓ The Standard also requires the organization to internally audit their Quality Management System to determine whether the system complies with the requirements of the Standard and whether the system is effectively implemented.
- ✓ For the organization to be certified by an accredited institution, sufficient records need to be established as evidence of compliance with the requirements stated in the International Standard.

5.1.6 Client Satisfaction

For the organization to understand whether or not the client requirements are met. A client feedback process in initialized to identify any gaps within each project for the client. The improvements of the organization begin thereafter on ensuring superior service delivery.

5.2 Solution Approach

The following steps were taken to effectively develop a Quality Management System that complies with the requirements of the ISO 9001 Standard.



5.3 Gap Analysis

A gap analysis was done by conducting various management meetings to determine the current processes within the organization, by comparing elements of each process to the requirements of each clause stated in the internal standard.

The development of an ISO 9001:2008-based Quality Management System is highly recommended as it would improve the overall business.

The ISO 9001:2008 Standard (Organization, International Standards, 2009) recommends implementing the "Plan-Do-Check-Act" Methodology (PDCA) to process based systems when developing the system.
The steps in PDCA are (page vi of the standard):

Step 1 - Plan: establish the objectives and processes required to deliver results in accordance with customer requirements and the organization's policies.

Step 2 - Do: implement the processes.

Step 3 - Check: monitor and measure processes and service delivered against policies, objectives and requirements for the product and report the results.

Step 4 - Act: take actions to continually improve performance.

If a Quality Management System is appropriately implemented, all of an organization's stakeholders should benefit as follows:

Customers receive products that conform to their requirements - products that are reliable, available when needed and maintainable.

The system ensures improved working conditions, job satisfaction, health and safety and an enhanced stability of employment for the organization's employees.

Top Management will experience increased returns on investments, market shares and profits.

The system ensures stability and growth for organizational suppliers and partners.

5.3.1 Gap Analysis Audit Report On ISF Service & KPMM Construction

P = Primary Responsibility (Owner)	**S** = Secondary Responsibility (User)	**X** = GAP
Green = Conforming	Yellow = Partial	Red = Nonconformity

ISO 9001:2008 QMS REQUIREMENTS

Clause	ISO 9001:2008 Requirements	ORGANIZATIONS AND THEIR CONFORMANCES					
		ISF Services			KPMM Construction		
4. Quality Management System							
4.1	General Requirements						
4.2	Documentation Requirements						
4.2.1	General						
4.2.2	Quality Manual						
4.2.3	Control of Documents						
4.2.4	Control of Records						
5. Management Responsibility							
5.1	Management Commitment						
5.2	Customer Focus						
5.3	Quality Policy						
5.4	Planning						
5.4.1	Quality Objectives						
5.4.2	Quality Management System Planning						
5.5	Responsibility, Authority, Communication						
5.5.1	Responsibility and Authority						
5.5.2	Management Representative						
5.5.3	Internal Communication						
5.6	Management Review						
5.6.1	General						
5.6.2	Review Input						
5.6.3	Review Output						
		ISF Services			KPMM Construction		
6. Resource Management							

6.1	Provision of Resources						
6.2	Human Resources						
6.2.1	General						
6.2.2	Competence, Training, and Awareness						
6.3	Infrastructure						
6.4	Work Environment						
7. Product Realization							
7.1	Planning of Product Realization						
7.2	Customer-Related Processes						
7.2.1	Determination of Product Requirements						
7.2.2	Review of Product Requirements						
7.2.3	Customer Communication						
7.3	Design and Development	N/A					
7.3.1	Design and Development Planning						
7.3.2	Design and Development Inputs						
7.3.3	Design and Development Outputs						
7.3.4	Design and Development Review						
7.3.5	Design and Development Verification						
7.3.6	Design and Development Validation						
7.3.7	Control of Design Changes						
7.4	Purchasing						
7.4.1	Purchasing Process						
7.4.2	Purchasing Information						
7.4.3	Verification of Purchased Product						
7.5	Production and Service Provision						
7.5.1	Control of Production and Service						
7.5.2	Validation of Processes						
7.5.3	Identification and Traceability						
7.5.4	Customer Property						
7.5.5	Preservation of Product						
7.6	Control of Measuring Equipment	N/A					
8. Measurement, Analysis, and Improvement							
8.1	Measurement, Analysis, Improvement						
8.2	Monitoring and Measurement						
8.2.1	Customer Satisfaction						

8.2.2	Internal Audit						
8.2.3	Process Monitoring and Measurement						
8.2.4	Product Monitoring and Measurement						
8.3	Control of Nonconforming Product						
8.4	Analysis of Data						
8.5	Improvement						
8.5.1	Continual Improvement						
8.5.2	Corrective Action						
8.5.3	Preventive Action						

The Gap Analysis Matrix shows the gaps within the two organizations and allows focus on the gaps and ensures the other processes are completely addressed.

NOTE: ISF Services have Clause 7.3 Design & Development and 7.6 Control of Monitoring and Measuring Equipment as an exclusion clause as these clauses do not apply to ISF Services and is mentioned in the Quality Manual and justified.

5.3 Review ISO 9001:2008 Requirements

The ISO 9001:2008 Standard specifies the requirements for a quality management system that can be used for internal application by organizations with the aim of applying for certification.

The Quality Management System standards and quality improvement approaches are all means of improving clients' satisfaction and the competitiveness of businesses.

Quality management systems are not a result of excessive bureaucracy, paperwork or lack of flexibility. All businesses already have a management structure and this is the basis on which the quality management system is built.

5.3.1 What is an ISO 9001 Quality Management System

An ISO 9001 Quality Management System is one which is based on the current version of the requirement standard, i.e. ISO 9001:2008

The current key documents from the ISO 9000 family of standard consists of:

- ISO 9000 which sets out the concepts, principles, fundamentals and vocabulary for quality management systems,
- ISO 9001 which sets out the requirement to be met
- ISO 9004 which provides guidance for continual improvement of an organisation's overall performance, and
- ISO 19011 which provides guidelines on auditing quality management systems (and environmental management systems as well).

5.3.2 Why have a QMS?

Clients in both private and public sectors seek confidence that can be provided by a business with an effective quality management system.

While meeting these expectations as one reason for having a quality management system, there are other reasons and some of these are:

- Improvement of business performance and productivity.
- Greater focus on business objectives and customer's expectations.
- Achievement and maintenance of the quality of product and services to meet customer's requirements and implied needs.
- Enhancement of client satisfaction.
- Confidence that the intended quality is being achieved and maintained.

- Providing evidence to clients and potential clients of what the organisation can do.
- Opening new market opportunities or maintaining market share.
- Obtaining certification/registration.
- Having the opportunity to compete on the same basis as larger organisations (e.g. ability to tender or submit price quotations).

While a quality management system can help in meeting these expectations, it is only a means to achieve the objectives set for business and is not an end in itself.

In ISO 9001:2008, there is a major requirement for continual improvement. This approach is to ensure that worthwhile and cost-effective improvements are being achieved.

5.3.3 The Clauses in the ISO 9001:2008 Standard that need to be addressed are:

0. Introduction
1. Scope
2. Normative Reference
3. Terms & Definitions
4. Quality Management System
5. Management Responsibility
6. Resource Management
7. Product/Service Realization
8. Measurement Analysis & Improvement

The first four clauses (clause 0. Introduction to - clause 3. Terms and Definitions) do not provide any requirements for a QMS. They provide background information as to the purpose; concepts and principles used in the standard (e.g. process approach; PDCA); guidance on the QMS scope; reference to related documents; and key terms and definitions used. These clauses will all be explained in detail throughout each section.

The remaining five clauses numbering 4 through 8 provide the control requirements that a QMS must implement. The following is a summary explanation of these 5 major clauses or elements of the ISO 9001:2008 standard. Each major clause has several sub-clauses. Collectively, these 5 clauses set out the requirements for the QMS.

Clause 4 - **Quality Management System**

Sets requirements to identify, plan, document, operate and control QMS processes and to continually improve QMS effectiveness.

Clause 5 - **Management Responsibility**

Sets requirements for top management to demonstrate its leadership and commitment to develop, implement and continually improve the QMS.

Clause 6 - **Resource Management** -

Sets requirements to determine, provide and control the various resources needed to operate and manage QMS processes; to continually improve QMS effectiveness; and to enhance customer satisfaction by meeting customer requirements.

Clause 7 - **Product Realization** - sets requirements to plan, operate and control the specific QMS processes that determine, design, produce and deliver an organization's product and services.

Clause 8-**Measurement, Analysis and Improvement** - sets requirements to plan, measure, analyze and improve processes that demonstrate product and QMS conformity and continually improve QMS effectiveness.

The overall objective of the QMS must be to enhance customer satisfaction by meeting their requirements. This objective can be achieved by using the ISO 9001 requirements to control QMS processes and by continually improving QMS effectiveness.

5.4 Quality Policy Manual

The first tier of the Quality Management System is to develop a Quality Policy Manual that is in line with the organizations Vision, Mission and Strategic Goals.

5.4.1 ISF Services Vision Statement:

" Is to develop ISF services to become the industry leader and preferred contractor, while applying distinction in provision of quality services to our clients, in turn seeking long term value of investments. "

5.4.2 ISF Services Mission Statement:

" Is to attain the uppermost principles of performance whilst providing inventive value-added services to our clients with a growing focus on project and technical management solutions, consequently bringing transformation and empowerment within the telecommunications sector. "

5.4.3 ISF Services Strategic Goals and Objectives

Main objectives/goals within the short-medium term for ISF Services

- Formulate a strategy to move from PM to an EPCM (Engineering, Procure, Construction, Manage) structure.
- This EPCM Structure is being benchmarked for May/June 2012 in draft.
- Retain Human resources.
- To maintain and acquire new clients.
- To be sustainable for at least 1 year.
- Technically strong.
- Flexible and adaptable.
- Client focus – services orientated – "in face approach".
- BEE compliant.
- ISO Compliant.

5.4.4 Quality Policy Statement

The Quality Policy Statement is the organizations commitment to Quality and a requirement of ISO 9001:2008 (clause 5.3). The Quality Policy Statement is the "face" of the organization where all prospective clients, suppliers, employers and visitors can visually see the statement when visiting the company or browsing its website. Its pledge to quality is taken from the Vision, Mission and Strategic Plan of the Organization.

Comprising of two paragraphs:

- The First Paragraph deals with what the company does and how it is committed to Quality
- The second Paragraph is a commitment statement in following the laws of the SIO 9001:2008 standard, continually improving and maintaining the QMS and always looking to strive for customer satisfaction.

The Quality Objectives (Clause 5.4.1) are in line with the Company's Strategic Plans, Goals and Objectives. All Objectives follow the "SMART" Principal where:

S - Simple; M - Measurable; A - Attainable; R - Realistic; T - Time Bound.

The Quality Policy and Objectives is reviewed every two years and understood by all employees and signed by the most senior functionary person within the organization.

5.4.4.1 An example of ISF Services Quality Policy Statement is as follows:

" ISF Services is a consulting engineering practice providing technical and Construction Project Management services. We specialise in Conceptual Planning, Design & Development, Procurement, Construction Management for technical and engineering projects based on the highest level of reliability, cost awareness, growth planning and performance management. Our people are committed & experienced professionals who understand complex infrastructural projects. The ways in which we will maintain a high standard is by understanding our customers' needs and requirements by providing solutions that meet those needs and by keeping ourselves updated with the latest technological developments in our field. .

We therefore commit ourselves to the implementation and maintenance of our quality management system that complies with ISO 9001: 2008 requirements which is reviewed every two years and endeavour to continually improve its effectiveness by including processes for continual improvement, with the aim of enhancing customer satisfaction.

This policy has been drafted, understood, implemented and upheld by all employees throughout the organisation.

Our Quality Policy is directed toward achieving the following goals and objectives:

- Utilize our capacity to its optimum level to maximize productivity.
- To guarantee quality by ensuring all staff gratify our Key Performances
- Maintaining an 85% and higher client satisfaction at all times.

- To deliver our projects on time, within budget, on approved specification and satisfactory quality
- Reduce internal non-conformances by 30% every year by striving to close all Corrective Actions within 14 working days, unless otherwise stipulated."

5.4.4.2 An example of KPMM Construction's Quality Policy Statement is written below:

"We, the management and staff of KPMM are committed towards being a National Construction Company which addresses the Civil Infrastructural Development demands in South Africa with efficient project delivery within budget and time constraints. The company has a well balanced asset portfolio of personnel and equipment to deliver the clients demands guided by Good Construction Practices. KPMM complies with registration requirements as per the Construction Industry Development Board.

We consequently perpetrate ourselves to the implementation and maintenance of our quality management system that complies with ISO 9001: 2008 requirements and endeavour to continually improve its effectiveness by including processes for continual improvement, with the aim of enhancing client satisfaction.

This policy has been drafted, understood, implemented and upheld by all employees throughout the organisation.

Our Quality Policy is directed toward achieving the following goals and objectives:

:

- Provide a safe and healthy working environment by eliminating any unsafe working conditions. Addressing all non-conformances with 14 days unless otherwise stipulated.
- Utilizing Company's capacity to its optimum level of productivity

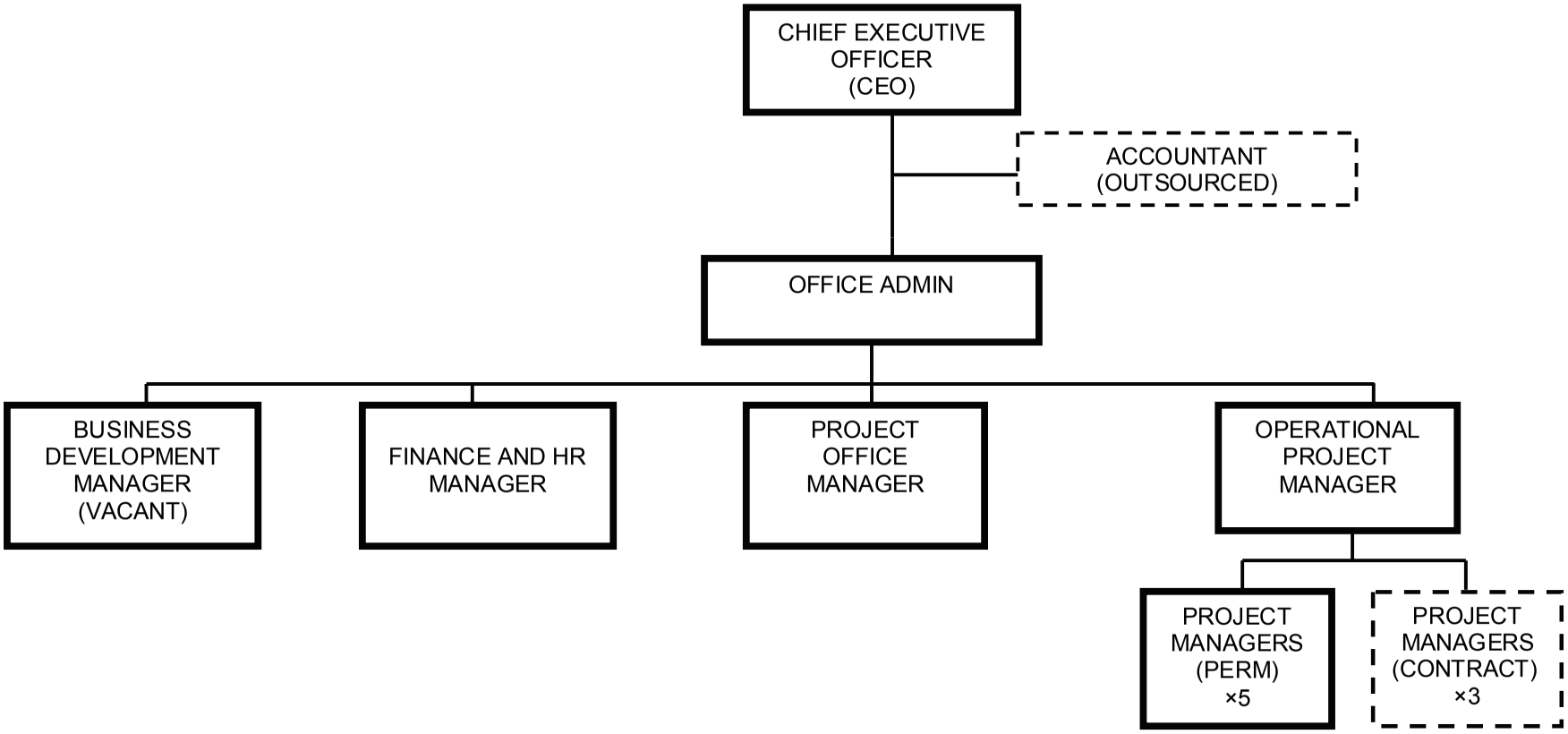
- Working on 100% conformity to the code of good construction practice by adhering to all Quality, Safety and Project Specifications required by the client.
- Maintaining an 80% and higher client satisfaction at all times.
- Delivering quality products to our clients on time and within budget."

5.5 Organizational Structure

The Organizational Structure shows all the required departments, roles, responsibilities and hierarchy of employees. The Structure gives the organization a team to fulfil its Quality Goals and Objectives.

Annexure A KPMM Construction's Organizational Structure

5.5.1 ISF Services Organizational Structure

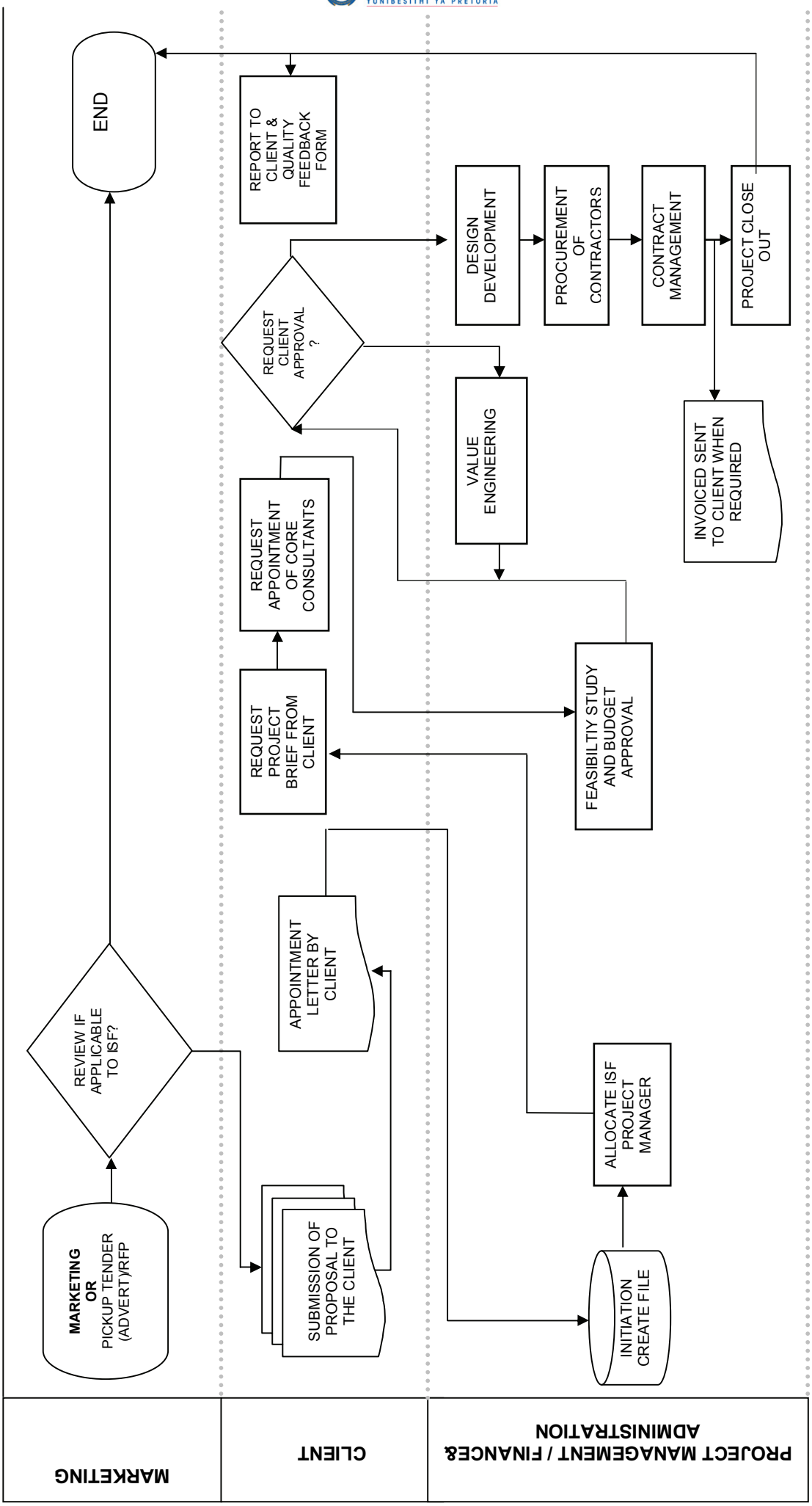


5.6 Sequence & Interaction of Processes

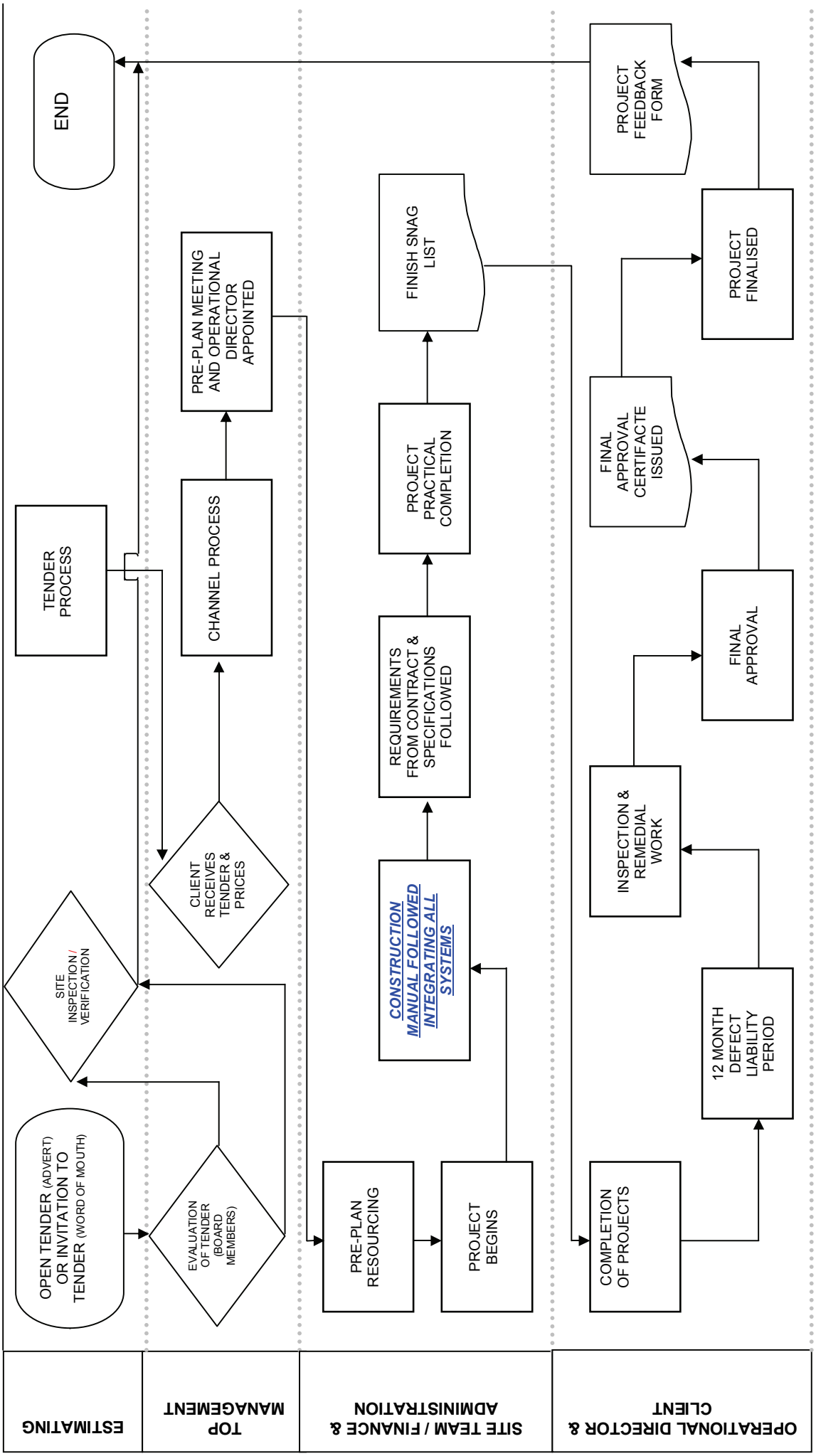
The identification of processes within KPMM Construction and ISF Services, is to understand how each department within their respective companies play a role in executing their processes to ensure client satisfaction.

The interviewing processes of multiple Top Managers to understand the flow of process and mapping them to each department allow a common sense approach to the way the business functions. This complete picture allows a "bird's eye view" of how the business functions

5.6.1 ISF Services Sequence & Interaction of Processes



5.6.2 KPMM Sequence & Interaction of Processes



5.7 Quality Policy Manual

A Quality Policy Manual is a document stating the company management's intentions for operating the quality system. It includes policies for all areas of the business affecting or affected by the quality system. These policies authorize departmental managers to implement procedures within the boundaries specified in the quality manual. They also serve to provide a measure for procedures, processes and results.

Each Clause and Sub Clause of ISO 9001:2008 is re-written and integrated with the organizations policies to state what the Organizations commitments are to each clause and sub clause of the standard. The most senior functionary person in the organization signs and dates each page to ensure commitment of the statements.

There are no guidelines given regarding the format or organization of the manual. These decisions are left to the company to determine how to structure the document to best support its objectives.

In terms of contents, as a minimum, the quality manual must include the following:

1. The company's quality policy (showing the company's commitment to quality).
2. An explanation of the company's documentation structure.
3. Policy statements demonstrating management's intention to comply with ISO9000 requirements (less any appropriate exclusions). The policies must cover all areas of the ISO 9001 standard and be traceable (reference) to them. These policies must include:
    - **How** management expects company operations to function?
    - **Who** is responsible to implement these expectations (by function or job title)?
    - **Where** and **when** the policies are applicable within the organization?
    - **What** interdependencies exist between functions and processes?
4. Reference to the "second tier" operating procedures of the company.
5. Assignment of one or more "management representatives" for quality in the organization.
6. A description of the company's organization (usually in the form of an organization chart, top level of the company only).

NOTE 1: The quality manual would normally contain no proprietary/confidential information and is usually made available to customers and third party auditors.

NOTE 2: A clear distinction should be made between the contents of the quality manual and operating procedures. The quality manual defines what management's intentions are for operation of the quality system while the operating procedures define how these intentions are implemented within the organization.

The primary uses of the quality manual are:

1. To communicate management's expectations for quality to the organization.
2. To demonstrate the company's compliance with ISO9000 requirements.
3. To serve as a measure for compliance to management's expectations for:
    - Internal audits
    - ISO Registrar audits
    - Customer audits

5.7.1 Designing and Developing a Quality Plociy Manual

The development of the quality manual follows several steps:

1. List policies to be written (note any ISO 9001:2008 requirements that do not apply).
2. List second tier operating procedures, cross-referenced to policies.
3. Draft policies based on ISO9001 requirements.
4. Circulate for input from all departments.
5. Note quality system inadequacies identified.
6. Determine format and structure of the manual.
7. Publish first draft of manual.
8. Formal review, approval and release.

5.7.2 The Quality Policy Manual developed for ISF Services follows.

ISF SERVICES

" SPREADING OUR WINGS AND SOARING HIGH WITH EAGLES"

QUALITY MANUAL

ISF -QM-001

COMPANY DETAILS:

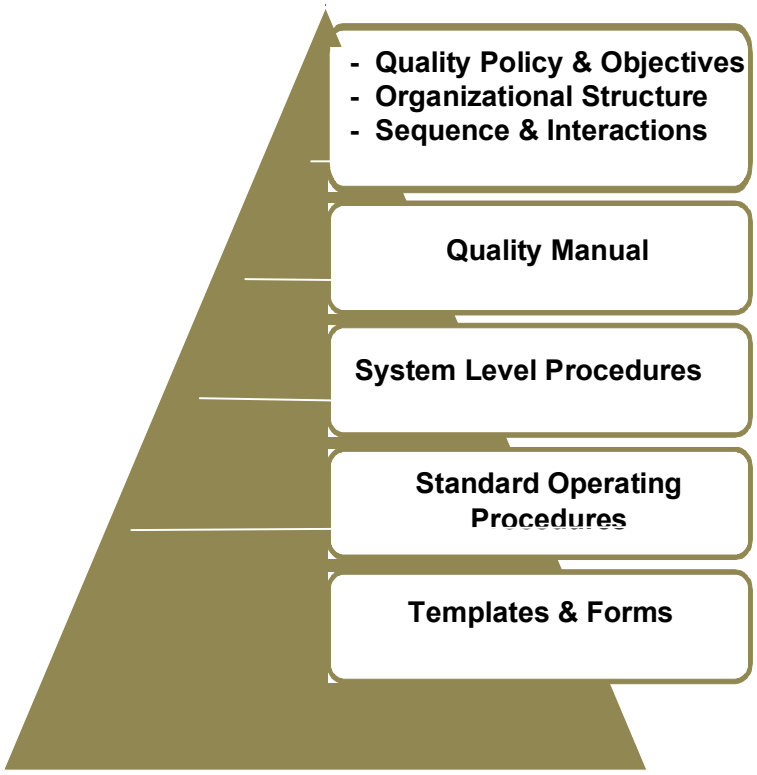
Physical & Postal Address:
53 Phillip Engelbrecht Avenue
Woodhull Office Park
Building 7
Unit 27&28
First Floor
Meyersdale

Telephone Number: **(011) 867 3090**
Fax number: **(011) 867 3095**

Website: **www.isfservices.co.za**

AMENDMENTS SCHEDULE

Rev. No.	Date	Revision Description	Reviewed by	Approved by
DRAFT 1	28/09/09	Preliminary Release	M. Ali	CEO
REVISION 1	11/01/10	First Revision	M. Ali & Shavir Maghnath	**CEO**
REVISION 2	19/04/10	Change of Scope	M. Ali & Shavir Maghnath	**CEO**



Numbering:
ISF-PL-001
ISF-OS-001
ISF-SI-001

ISF-QM-001

ISF-SLP-000
(Index page)

PM-PC-000
HR-PC-000
AD-PC-000
FIN-PC-000

PM-FM-000
AD-FM-000
HR-FM-000
QA-FM-000

IDENTIFICATION RESPONSIBLE	FIRST TIER	REVISION	
ISF -PL-001	Quality Policy & Objectives	0.1	CEO
ISF -OS-001	Organizational Structure	0.1	CEO
ISF -SI-001	Sequence & Interactions	0.1	CEO
QUALITY MANUAL			
ISF -QM-001	Quality Manual	0.1	MQR
SYSTEM LEVEL PROCEDURES			
ISF -SLP-001	Management Responsibility Procedure	0.1	MQR
ISF -SLP-002	Control of Documents Procedure	0.1	MQR
ISF -SLP-003	Control of Records Procedure	0.1	MQR
ISF -SLP-004	Control of Non-conformance Procedure	0.1	MQR
ISF -SLP-005	Internal Quality Assessment Procedure	0.1	MQR
ISF -SLP-006	Corrective Actions Procedure	0.1	MQR

ISF -SLP-007	Preventive Action Procedure	0.1	MQR
STANDARD OPERATING PROCEDURES			
PM-PC-000	Project Management Procedure Index	0.1	HOD
AD-PC-000	Administration Procedure Index	0.1	HOD
BD-PC-000	Business Development Index	0.1	HOD
FIN-PC-000	Finance Procedure Index	0.1	HOD
TEMPLATES AND FORMS			
PM-FM-000	Project Management forms Index	0.1	HOD
QA-FM-000	Quality Assurance forms Index	0.1	HOD

CONTENT

SECTION 7.0	**SERVICE REALIZATION**
7.1	Planning of Service Realization
7.2	Customer Related Processes
7.3	Design and Development
7.4	Purchasing
7.5	Service Provision
7.6	Control of Monitoring and Measuring Devices
SECTION 8.0	**MEASUREMENT, ANALYSIS, AND IMPROVEMENT**
8.1	Measurement, Analysis, and Improvement
8.2	Monitoring and Measurement
8.3	Control of Nonconforming Product
8.4	Analysis of Data
8.5	Improvement
8.5.1	Continual Improvement
8.5.2	Corrective Action
8.5.3	Preventive Action

INTRODUCTION:

ISF Services is a 100% BEE Company which was established in April 2007 with the desire to capitalize on impressive business opportunities presented in Africa as well as at a global level. We are a team of highly qualified project and technical managers. Our business is serving and inspiring our clients, which is dependent on communications and information.

You need assurance that the support infrastructure for these most critical elements are solid and unbreakable and will keep up with your business' growth and adapt with changes. We understand the demands of leading communication and data processing companies to remain abreast of new technology trends and project methodologies. Compliance with world standards as dictated by leading communications companies is a given for us.

VISION:

" Is to develop ISF services to become the industry leader and preferred contractor, while applying distinction in provision of quality services to our clients, in turn seeking long term value of investments. "

MISSION:

" Is to attain the uppermost principles of performance whilst providing inventive value-added services to our clients with a growing focus on project and technical management solutions, consequently bringing transformation and empowerment within the telecommunications sector. "

5.7.2.1 The Quality Management System General

The management of ISF Services has decided to document, implement and maintain a Quality Management System (the system) to enhance customer satisfaction, including processes for continual improvement of business operations and the assurance of conformity to customer & applicable regulatory requirements. ISF Services and its management system will comply with the appropriate requirements of the ISO 9001:2008 International Standard for Quality Management Systems.

This document (Quality Manual) forms the first layer of a three-tier documentation structure and outlines top management's intentions for operating the quality system. It includes,

- The company's quality policy (showing the company's commitment to quality).
- A description of the company's organization (in the form of an organization chart).
- The Company's Cross Functional Flow Chart in showing how the various departments link with one another to fulfil objectives.
- An explanation of the company's documentation structure.
- Policy statements demonstrating management's intention to comply with ISO 9001: 2008 requirements (less any exclusion). The policies cover all areas of the ISO standard and are traceable to them by numbered sections 4.0 to 8.0.
- Reference to the second tier System Processes and third tier Operating Processes of the company.
- The assignment of one management representative for quality in the organization.

5.7.2.2 Scope

Providing Technical and Construction Project Management services. We specialize in Conceptual Planning, Design & Development, Procurement, Construction Management for technical and engineering projects.

This quality management system is applicable to the following areas within ISF Services

- Office Administration Support
- Project Management
- Finance and HR

5.7.2.3 Exclusions and Justifications

Due to the service oriented nature of ISF Services, there is no use of measuring instruments that are used for projects; this refers to ISO 9001 requirements for:

Control of Monitoring and Measuring Equipment (Clause 7.6 – as there are no gauging equipment / instruments utilized during product (service) realization.

The above clause will therefore be excluded from this quality management system. ISF Services ability to supply service that meets customer requirements will not be affected by this exclusion.

5.7.2.4 Distribution List:

*** Master Manual will be issued to the appointed Management Representative (MQR).**

DOCUMENT NO: QM: 001 – QUALITY MANUAL				
ISSUE				**RETRIEVAL**
Name	**Directorate**	**Date**	**Sign**	**Date**

5.7.2.5 Confidentiality Of Quality Manual:

This document is for circulation within ISF Services only. The Quality Manual, or extracts from the Quality Manual, may NOT be copied or passed on to other companies or persons, not employed by ISF Services without express permission from the Chief Executive Officer (CEO) or appointed officer.

Copies issued to other companies or persons not employed by the ISF SERVICES will be marked 'FOR INFORMATION ONLY'.

ISSUED TO: _____

COMPANY: _____

ADDRESS: _____

_____

5.7.2.6 Change History

Version No.	Date	Revision Description	Reviewed By	Approved By
D1	28/09/09	Preliminary Release	M. Ali	CEO
0.1	11/01/10	First Revision	M. Ali & Shavir Maghnath	CEO
0.2	19/04/10	Second Revision, Clause 7.3 and 7.5 added to revision 2 after careful consideration from the 1st Stage Audit.	M. Ali & Shavir Maghnath	CEO

5.7.2.7 Normative Reference and Terms & Definitions

- ISF -PL Quality Policy
- ISF -OS Organizational Structure
- ISF -SI Sequence and Interactions
- ISF -QM Quality Manual
- ISF -SLP System Level Procedures
- PM Project Manager
- AD Administration
- PC Standard Operating Procedures
- FM Forms

5.7.2.8 Clause 4.0 THE QUALITY MANAGEMENT SYSTEM (QMS)

5.7.2.8.1 Clause 4.1 GENERAL REQUIREMENTS

ISF Services has established a process approach for the design, development, application and maintenance of its quality management system. The QMS processes will be adequately defined and documented, effectively implemented and maintained to consistently meet customer and applicable regulatory requirements thereby ensuring enhancement of customer satisfaction. ISF Services seeks to continually improve on the effectiveness of the QMS in accordance with the requirements of ISO 9001:2008 and other business management tools where applicable.

The organization ensures through its documented processes

that they:

a) identify the processes needed to meet customer requirements,
b) determine the sequence and interaction of these processes,
c) ensure the availability of resources and information necessary to support the operation and monitoring of these processes,
d) monitor, measure and analyze these processes, and
e) implement actions necessary to achieve the planned results and the continual improvement of these processes.

These processes will be monitored and measured through planned quality assessments, and quarterly management reviews, to ensure efficiency and effectiveness. The measurements and data will be used to determine satisfactory performance of the organization (as per management reviews, referred to in process SLP-01).

5.7.8.2.2 Clause 4.2 Documentation Requirements

5.7.8.2.2.1 Clause 4.1.2 General

ISF Services will develop documentation to ensure adequate understanding and effective implementation of the quality management system.

The documentation set includes:

- a documented quality policy and quality objectives, and
- a quality manual.

Documented System and Operating Process procedures and records that ensure the effective planning, operation and control of processes which conforms to ISO 9001:2008.

The quality management system ensures that services and processes conform to specified requirements and shall be effectively implemented and managed.

5.7.8.2.2.2 The Quality Manual (QM)

The document describes ISF Services overall intentions toward quality, and establishes Top Management's commitment to the requirements of ISO 9001:2008.

The detailed layout of the sequence of ISF SERVICES'S processes and the ISO 9001:2008 requirements are described in an overall Business Process flow diagram.

Reference:

Sequence & Interactions of Processes [ISF -SI-001]

a) **THE SYSTEM LEVEL PROCESSES (SLP)**

These documents define how management intend pursuing the operation of the quality management system as well as implementing it within the organization.

b) **THE OPERATING PROCESSES & PROCEDURES (SOP)**

These documents define the activities to be performed by the designated personnel on specific tasks. These operating processes will be generated and implemented, to prevent nonconformities on services and/or processes to Quality.

c) **FORMS & RECORDS (QF)**

These documents are utilized to demonstrate compliance with documented requirements.

5.7.8.2.3 Control Of Documents

All documentation will be approved for adequacy prior to issue.

Documents will be reviewed, updated and re-approved if the need arises. The relevant process owner will verify changes to documents and data to ensure current revision status.

A QMS database will be installed to house documents of current revision status to prevent the use of non-applicable documents.

Documents are identified and controlled internally. Documents issued outside of the business shall be identified as information only.

A hard copy of the QMS master and any issued copies will be stored, secured and protected against any loss or damage as defined in the Records Control procedure. Unauthorized changes or copying of controlled documents is strictly prohibited.

Obsolete documents will be identified to prevent unintended use.

All documents will be stored in such a way that they remain legible and readily identifiable.

Reference: Control of Documents [ISF-SLP-02]

5.7.8.2.4 Clause 4.2.4 Control Of Records

Records required by the quality management system will be established and maintained to demonstrate compliance to requirements. These records shall be legible, readily identifiable, retrievable and stored in a manner to prevent damage or loss and retained for an appropriate period of time to substantiate the effective operation of the system. The Records Control Process clearly defines the identification, storage, protection, retrievable, retention times and disposition of records.

Reference: Control of Records [ISF-SL-03]

Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page 2-3

5.7.2.9 Clause 5.0 Management Responsibilities

The CEO has the responsibility and authority to ensure that the requirements of the system are implemented, effectively communicated and maintained. The organisational structure of ISF Services is arranged in such a way that the ISO 9001:2008 standard requirements are addressed.

5.7.2.9.1 Management Commitment

Management will, at all levels of the organization, lead in promoting the development and implementation of the quality management system by continually improving its effectiveness by:

- communicating to all staff, the importance of meeting customer and applicable regulatory requirements,
- establishing a Quality Policy and Quality Objectives,
- conducting Management Reviews of the system,
- providing necessary resources when required to support the system and to promote the philosophy of meeting customer requirements amongst employees.

5.7.2.9.2 Customer Focus

Top management ensures that customer requirements are determined and are met with the aim of enhancing customer satisfaction.

Reference: Management Responsibility [ISF-SLP-001]

5.7.2.9.3 The Quality Policy:

“ISF Services is a consulting engineering practice providing technical and Construction Project Management services. It specialises in Conceptual Planning, Design & Development, Procurement, Construction Management for technical and engineering projects based on the highest level of reliability, cost

awareness, growth planning and performance management. Our people are committed & experienced professionals who understand complex infrastructural projects. The ways in which we will maintain a high standard is by understanding our customers' needs and requirements by providing solutions that meet those needs and by keeping ourselves updated with the latest technological developments in our field. .

We therefore commit ourselves to the implementation and maintenance of our quality management system that complies with ISO 9001: 2008 requirements and endeavour to continually improve its effectiveness by including processes for continual improvement, with the aim of enhancing customer satisfaction.

This policy has been drafted, understood, implemented and upheld by all employees throughout the organization."

5.7.2.9.4 Planning

5.7.8.9.4.1 Quality Objectives:

The following quality objectives are established to meet or exceed agreed customer requirements:

- Utilize capacity to its optimum level to maximize productivity.
- To guarantee quality by ensuring all staff gratify Key Performances
- Maintaining an 80% and higher client satisfaction at all times.
- To deliver projects on time, within budget, on approved specification and satisfactory quality.
- Reduce internal non-conformances by 25% with an aim towards zero tolerance.

5.7.2.9.5 Quality Management System Planning

Top management focuses on defining processes needed to effectively and efficiently meet the requirements of ISO 9001:2008.

The Inputs: for effective and efficient planning may be as follows:

- The integrity of the quality management system is maintained during changes.
- The objectives of the organization are defined.
- Needs and expectation of the customers are defined.
- Statutory and regulatory requirements are met.

- Performance data of processes is evaluated.
- Opportunities for improvement are indicated.
- Achievements of the company's performance improvements are evaluated regularly.

The Output: of Quality Planning defines the operational and support processes in terms of:

- Skills and knowledge needed.
- Responsibility and authority for Implementation of process improvements.
- Resources needed.
- Methods, equipment and needs for improvement.
- Reports of the evaluation from the achievements of the company's performance improvements.

Top management will continuously review the outputs to ensure the effectiveness and efficiency of the processes through management reviews.

5.7.2.9.6 Responsibility, Authority And Communication

5.7.2.9.6.1 Responsibility And Authority

The responsibility and Authority of the quality management system is clearly identified in the organizational structure. The interrelation of all employees who manage, perform and verify work, affecting quality, is illustrated in the organizational structure.

Reference: ISF-OS-01 Organizational Structure

The Chief Executive Officer is entirely responsible for the management, organizational objectives, direction and operations of the business. Managers are responsible for the development of procedures in their areas of responsibility.

Detailed responsibilities and authority are explained in the individual's Employment contract and documented processes to establish each employee's involvement, motivation and commitment.

In the case of a negative trend being identified, a formal Improvement Report (FM.01) shall be instituted to remedy the actions. Such actions shall be monitored and evaluated to ensure effectiveness.

5.7.2.9.6.2 Management Representatives For Quality (MQR)

The Management Representative for Quality has been appointed with responsibility of:

a) Establishing, implementing and maintaining the System.
b) Reporting to management on the performance of the system and highlighting any improvement needs.
c) Promoting awareness of customer requirements throughout the organization and amongst its suppliers.

5.7.2.9.6.3 Internal Communication

All processes and procedures in the system are drawn up with the participation of representatives from different functions and levels within the ISF Services. The Management Review meetings provide a forum for discussion and its members disseminate information to their respective employees. The Chief Executive Officer has established that communication channels throughout the organization will be via email and staff meetings.

Reference Weekly Meeting Minutes

5.7.2.9.7 Management Review

Refer to System Level Procedure 001 (ISF -SLP-001)

Top Management reviews the quality management system quarterly to ensure its continuing suitability, adequacy and effectiveness. This review shall include the assessment of Improvement Reports, as well as the need for changes to the Quality Management System, including the Quality Policy and Objectives. The Management Review procedure is defined in the Management Responsibility Process. Records are maintained in accordance with the Control of Records Procedure.

Reference: Audit and Management Review Schedule

Control of Records [ISF-SLP03]

Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page 4-5

5.7.2.10 Clause 6.0 Resource Management

5.7.2.10.1 Provision Of Resources

The resources to implement and maintain the quality management system and continually improve its effectiveness is provided and reviewed at management review meetings. The aim is to enhance customer satisfaction by meeting or exceeding their requirements.

5.7.2.10.2 Human Resources

Personnel performing work affecting service quality are competent on the basis of legal requirements (when required), applicable education, training, skills and experience.

5.7.10.2.1 Competence, Awareness And Training.

Management ensures that the necessary competence of personnel performing work affecting service quality is met. Management ensures that personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the Quality objectives. Training records of employees are maintained and the Quality Committee reviews training needs.
The ISF Services provides training to satisfy competence, awareness and training needs. The training is evaluated to establish its effectiveness.

Reference: **BD-PC-004Training Procedure**

5.7.2.10.3 Infrastructure (Facilities)

The building, workspace, equipment and supporting services essential to quality is identified; provided and its maintenance specified.

5.7.2.10.4 Work Environment

ISF Services takes care and adheres to relevant Health and Safety Regulations to ensure that a suitable work environment, positive influence on motivation, satisfaction and performance of staff is maintained to enhance the performance of the organization.

Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page 6

5.7.2.11 Clause 7.0 Service Realization

5.7.2.11.1 Planning Of Service Realization

ISF Services plan and develop the processes needed to achieve the following:

1 Quality objectives and requirements for the service.
2 The need to establish processes, documents, and the provision of resources specific to the services rendered.
3 The required verification, validation, monitoring, inspection and test activities specific to the service and the criteria for service acceptance.
4 The records needed to provide evidence that the realization processes and resulting services meet the requirements.

5.7.2.11.2 Customer Related Processes

5.7.2.11.2.1 Determination Of Requirements

ISF Services determine specified requirements, including requirements for delivery and post delivery activities. Statutory and regulatory requirements related to service are addressed (when required). The requirements not specified by the customer are determined and addressed accordingly.

Reference: Project Management Process

5.7.2.11.2.2 Review Of Requirements Related To The Service

ISF Services review the requirements related to the service. The review is conducted by the Chief Executive Officer, in conjunction with respective process owners prior to the preparation of quotations or proposals and ensures that service requirements are defined. Records of the results of the review and actions arising from the review are maintained in accordance with the Records Control Process.

5.7.2.11.2.3 Customer Communication

ISF Services determine and implement effective arrangements for communicating with customers in relation to service information, enquiries, and customer feedback, including customer complaints.

Reference: QF-017 Supplier and Customer Feedback Document

5.7.2.11.3 Design And Development

ISF Services plan and control the design and development of its projects.

During the design and development planning, ISF Services determine:

a) the design and development stages,
b) the review, verification and validation that are appropriate to each design and development stage, and
c) the responsibilities and authorities for design and development.

ISF Services manages the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.

5.7.2.11.3.1 Design and development inputs

Inputs relating to the drafting (drawings) of projects as well as material requirements are determined and records maintained: The inputs include:

a) functional and performance requirements,
b) applicable statutory and regulatory requirements,
c) where applicable, information derived from previous similar designs, and
d) other requirements essential for design and development.

The inputs are reviewed for adequacy. Requirements are aligned to other international benchmarks: Usually done through Google.

Reference: Project Management Procedures

5.7.2.11.3.2 Design and development outputs

The outputs of design and development enable verification against the design and development output and are approved prior to release.

Design and development

a) meet the input requirements for design and development,
b) provide appropriate information for purchasing, production and for Product provision,
c) contain or reference product acceptance criteria, and
d) specify the characteristics of the product that are essential for safe and proper use.

Reference: Project Management Procedures

5.7.2.11.3.3 Design and development review

At suitable stages, systematic reviews of design and development are performed in accordance with planned arrangements:

to evaluate the ability of the results of design and development to meet requirements, and to identify problems and propose necessary actions.

Participants in such reviews include representatives of functions concerned with the design and development stage(s) being reviewed. Records of the results of the reviews and any necessary actions are maintained.

Reference: Project Management Procedures

5.7.2.11.3.4 Design and development verification

Verification is performed at a meeting with experts for final improvements and feedback. This ensures that the design and development outputs have met the design and development input requirements. Records of the results of the verification with the experts are maintained.

Reference: Project Management Procedures

5.7.2.11.3.5 Design and development validation

Design and development validation is performed in accordance with planned arrangements stated in the Procedure. This ensures that the resulting product can meet the requirements for the specified application or intended use, where known. Actual development of material linked to outcomes and Unit standards completed prior to the delivery or implementation of the product.

Reference: Project Management Procedures

5.7.2.11.3.6 Control of design and development changes

Design and development changes are identified and records maintained.

Control measures:

- Approval of the drawings and designs.
- Meeting with experts for final feedback and improvements.

The changes are reviewed, verified and validated, as appropriate, and approved before implementation. The review of design and development changes includes evaluation of the effect of the changes of constituent parts and product already delivered.

Reference: Project Management Procedures

5.7.2.11.4 Purchasing

5.7.2.11.4.1 Purchasing Process

All goods and services purchased by ISF Services conform to specified requirements.

The criteria for the selection and evaluation of suppliers & contractors are specified in the Purchasing Process.

Criteria for acceptance in the 'Approved Suppliers List' are specified in the Purchasing Process.

Records are kept to ensure that supply or service failures are noted and supplier performance is assessed regularly at management review meetings.

ISF Services may also inspect procured services or goods at the source when contract conditions require it without absolving the supplier from the scrutiny of receiving inspection.

Reference: **BD-PC-001 Purchasing and Procuring Process**

5.7.2.11.4.2 Purchasing Information

Purchasing information adequately describes the service/ goods to be purchased, including where appropriate other requirements determined.

Reference: **BD-PC-001 Purchasing and Procuring Process**

5.7.2.11.4.3 Verification Of Purchased Product

ISF Services establish and implement the inspection or other activities necessary for ensuring that purchased product meets specified purchase requirements.

Reference: BD-PC-001 Purchasing and Procuring Process

5.7.2.11.5 Service Provision

5.7.2.11.5.1 Control Of Service Provision

Service operations are controlled and monitored through documented processes, suitable monitoring and measurement activities and the implementation of release, delivery and post delivery activities. Records of the documents are retained for a specified period of time.

Reference: Operating Processes & Procedures
System Level Processes

5.7.2.11.5.2 Validation Of Processes For Service Provision

Refer to Customer Feedback

5.7.2.11.5.3 Identification And Traceability

ISF Services make use of unique Project numbers distinguishing one project from another, with the aim of tracing and controlling projects.

5.7.2.11.5.4 Customer Property

ISF Services exercise extreme care with the customer's intellectual property. In the event of loss while in ISF Services care; this shall be reported. Records of such reports will be maintained in accordance with the control of the records process.

Reference:
Control of Records [ISF-SLP: 03]
Non-conformance Procedure [ISF-SLP.04]

5.7.2.11.5.5 Preservation Of Product

The staff and management of ISF Services will preserve customer information during internal processing. Preservation will include identification, storage and protection through filing and system backups.

5.7.2.11.6 Control Of Monitoring And Measuring Devices

This clause is excluded (see paragraph 1.3)

Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page 7-11

5.7.2.12 Clause 8.0Measurement, Analysis, And Improvement

5.7.2.12.1 General

The necessary measurement, monitoring and analysis of the organization's processes to achieve conformity and service improvement are identified and documented.

5.7.2.12.2 Monitoring And Measurement

5.7.2.12.2.1Customer Satisfaction

ISF Services have an objective to establish and maintain customer satisfaction data by means of regular feedback from its customers; this information is reviewed quarterly by the Quality Committee to establish the effectiveness and efficiency of the quality management system.

Reference: QF-017 Supplier and Customer Feedback Document

5.7.2.12.2.3 Internal Quality Assessment

ISF Services conducts internal quality assessment at planned intervals that are determined in the Management review Meeting. The committee evaluates the effectiveness of the implementation and maintenance of the Quality Management system based on the results of the assessments. The assessments are to conform to planned arrangements of ISO 9001: 2008 requirements and the quality system requirements established in the Management Review Meeting or according to status of importance at the time.

The management responsible for the area being audited ensures that continuous actions (corrective and /or preventive) are taken to avoid recurrence of detected non-conformances. Follow-up activities include the verification of the actions

taken and reporting of verification results. Records are maintained in accordance with the records control process.

Trained employees independent of the functions being audited conduct the audits.

Reference:
Internal Quality Assessment [ISF-SLP: 04]
Corrective Action [ISF-SLP: 06]
Preventive Action [ISF-SLP: 07]

5.7.2.12.2.3 Monitoring And Measurement Of Processes.

Suitable methods of measurement and monitoring of processes are defined within processes documents for the specific functions within ISF Services. When planned results are not achieved, corrections are made and corrective and/or preventive actions initiated to ensure conformity to the service rendered.

Reference: Internal Quality Assessment [ISF-SLP: 04]

5.7.2.12.2.4 Monitoring And Measurement Of Service

Service related activities are monitored and verified regularly during meetings. Results are recorded and reported at Management Review Meetings.

Reference: QF-017 Supplier and Customer Feedback Document

5.7.2.12.3 Control Of Non-Conforming Product

All incidents of non-conformance that apply directly within the control of the ISF Services, that do not meet service or process requirements; including (where applicable) product requirements, are identified and recorded to ensure appropriate and effective action is taken.

Reference: Non-conformance Procedure [ISF-SLP.04]

5.7.2.12.4 Analysis Of Data

Data is collected and analyzed to determine the achievement of quality objectives, customer satisfaction and supplier performance for the purpose of continual improvement of the quality management system.

5.7.2.12.5 Improvement

5.7.2.12.5.1 Continual Improvement

ISF Services continually improves the effectiveness of the quality management system through the use of the quality policy and objectives, audit results, analysis of data, corrective and preventive actions and management review.

5.7.2.12.5.2 Corrective Action

All customer complaints, service failures, opportunities to improve processes or services, delivery and supplier non-conformities are recorded and reported through Improvement Reports, which require the cause of the problem to be determined, action taken to resolve them and whenever possible, prevent recurrence. The Management Representative reviews the reports for trends and identifies opportunities for improvements. The Corrective Action Process clearly defines the requirements for:

- reviewing nonconformities (including customer complaints),
- determining the causes of nonconformities,
- evaluating the need for action to ensure that nonconformities do not recur,
- determining and implementing action needed,
- records of the results of action taken, and
- reviewing the corrective action taken.

Reference: Corrective Action Process [ISF-SLP: 06]

5.7.2.12.5.3 Preventive Action

Any potential non-conformity is addressed via the preventive action process to prevent their occurrence. The preventive action shall be appropriate to the effects of the potential problem. The Preventive Action process clearly defines the requirements for:

- determining potential non-conformities and their causes,
- evaluating the need for action to prevent occurrence of non-conformities,
- determining and implementing action needed,
- records of the result of action taken, and
- reviewing preventive action taken.

Reference: Preventive Action Process [ISF-SLP: 07]

Reference STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland. Page 12-14

5.7.3 ISF Quality Policy Manual

The integration of the ISO 9001:2008 standards clauses, sub clauses with the commitment of ISF services to each clause on "What" should be done by ISF Services, relays the foundation for Procedures to execute the commitments stated by ISF.

KPMM Construction have a similar Quality Policy Manual.

5.8 System Level (Mandatory) Procedures

The ISO 9001:2008 Standard states,

"NOTE 1 Where the term "documented procedure" appears within this International Standard, this means that the procedure is established, documented, implemented and maintained. A single document may address the requirements for one or more Procedures. A requirement for a documented Procedure may be covered by more than one document."

The statement signifies the Mandate of Procedures referred to as "Documented Procedure" within the standard. The term "Document Procedure" appears six times within the Standard, these are:

1. Control of Documents
2. Control of Records
3. Internal Audit
4. Control of Non-Conformances
5. Corrective Action
6. Preventive Action

Failure to have these procedures documented for ISF Services and KPMM state that the organizations fails to comply with the ISO 9001:2008 standard. The standard guides each organization through the requirements of what is required to be addressed.

A minimum of six mandatory procedures for all employees within the organization is addressed according to the ISO 9001:2008 standard, however Top Management of each organization may wish to add more than six, in both ISF Services and KPMM Construction, the Management Responsibility Procedure enforces Top Management to conduct a meeting which shows the effectiveness of the QMS, the Agenda of the Meeting is taken from the ISO 9001:2008 standard of Clause 5.6.

Each sub clause in the standard related to a "Documented Procedure" is explained accordingly.

5.8.1 ISF Services Management Responsibility Mandatory Procedure

Purpose This process defines Management's Responsibility by means of the quality policy, setting quality objectives and Management Review Process.

The CEO has overall responsibility and authority to ensure that the requirements of the quality management system are implemented, effectively communicated, and maintained.

Scope This procedure is applicable throughout the operations and functions of ISF Services.

Reference ISO 9001:2008 Clause 5.0

Associated documents

- Management Review Minutes
- Objectives
- Performance Indicators
- Corrective Actions

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of this Procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include Procedures commonly used within ISF Services.

SOP standard operating Procedures and processes

FM Forms used within ISF Services

QMS (Quality Management System)

IR (Improvement Report)

NC (Non-conformance)

MQR Management Representative for Quality:

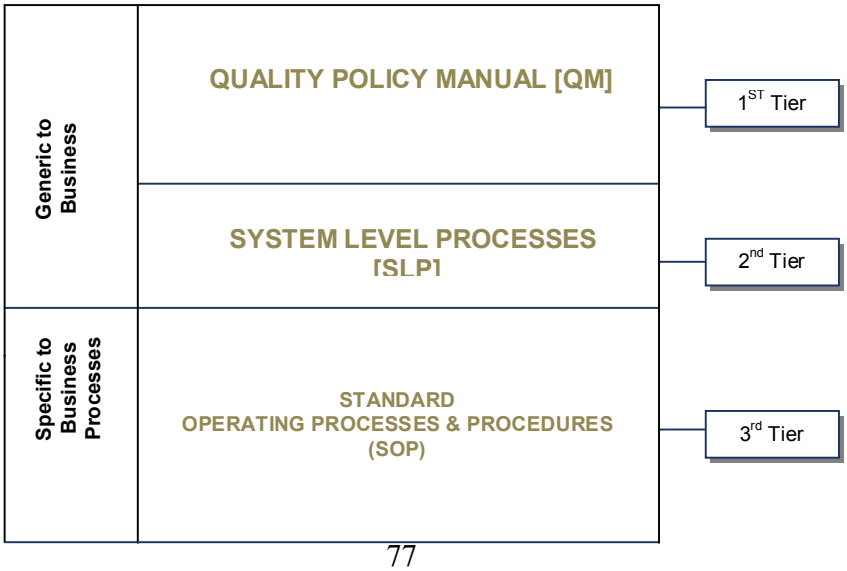
- **The Quality Management System Structure**

The Quality management system is structured in three levels (3 tiers):
The Quality Policy Manual covering the organization's policies with regard to each element of the ISO 9001:2008 standard.

System Level Processes (SLP): Responsibilities and Processes on how ISF Services operates to comply with policies. These are, the six mandatory processes required by the standard and other processes (e.g. Management Responsibility).

- **Standard Operating Processes & Procedures (SOP).**

These Procedures cover step-by-step instructions on a specific job or task; including (where necessary) any related documents and electronic mediums.



The above structure will make up the Quality Management System Manual and shall be indexed into relevant sections for easy reference to the current revision status.

Refer to Quality System Master Index.

- **Management Review**

The purpose of management review meetings is to review the continuing suitability, adequacy and effectiveness of the overall quality management system. [Determines how well the quality system is functioning as a whole and which changes are needed in the system's structure to improve its effectiveness].

The Chief Executive Officer chairs the management review meetings and the management representative for quality facilitates the agenda. The meetings shall be scheduled on a quarterly basis, later adjusting to a bi-annual or annual frequency as the system's performance improves. Detailed minutes and agendas shall be maintained to demonstrate compliance with requirements.

- **Management Review Inputs (AGENDA POINTS):**

The minimum agenda for the management review shall be as follows:

- Follow-up actions from previous management reviews
- Results of Audits
- Customer Feedback
- Process performance and service conformity
- Status of preventive and corrective actions – (Improvement Reports)
- Changes that could affect the quality management system
- Recommendations for improvement
- Review of the Quality Policy & Objectives
- Supplier Performance
- Training Needs
- General

- **Management Review Outputs**

The output of the management review includes actions to be taken related to:

- Improvement of the effectiveness of the quality management system and its processes,
- Improvement of service related customer requirements, and
- Resource needs.

Management Review results shall be recorded, including the **minutes, agenda and action plans** in accordance with the Records Control (SLP: 03). Issues identified for Action and shall follow the Corrective Action Process (SLP: 06). The

Improvement Report Database (FM.01) must be used for capturing such information.

- **Internal Communications;**

Management will ensure induction of new employees to bring awareness of the quality management system. Quality awareness training to all staff is done at least three times a year. The MQR will co-ordinate the awareness-training schedule and facilitators. Management has established that communication regarding the quality management system will be through staff meetings, internal e-mails.

- **Customer Focus:**

Top Management ensures customer requirements are determined and communicated through applicable Process functions. Customer satisfaction is determined through the collection and analysis of survey results; client visits.

Reference: Quality Manual [QM.01 – Paragraph 5.2]

- **QUALITY POLICY & OBJECTIVES:**

Refer to Quality Manual [QM.01] Paragraph 5.3; 5.4.1
View displayed copies of approved Policy Statement.

- **CUSTOMER SATISFACTION:**

ISF Services will make extensive use of data relating to customer queries and concerns. Trends regarding negative customer feedback shall be investigated for continual improvement.

- **THE PROCESS FLOW:**

Figure 1: Management Responsibility Points According to ISO 9001:2008

5.7.2 ISF Services Control of Documents Mandatory Procedure

Purpose The purpose of this Procedure is to ensure that the correct methods are followed throughout the organization with regard to handling of documents such as Procedures, policies, forms and reference documents required on the delivery of a product or service.

Scope This Procedure is applicable throughout the operations and functions of ISF Services.

Reference ISO 9001:2008 Clause 4.2.3 Control of documents.

Associated documents

- Improvement Report.
- Delivery Collection.
- APG'S Document Control Register.
- Master Index.
- QMS Database.

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of the Procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times.

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include Procedures commonly used within ISF Services.

SOP standard operating Procedures and processes.

FM Forms used within ISF Services.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance).

- **Quality Management System documents**

Documents required by the Quality management system will be developed in accordance with ISO 9001: 2008 requirements and presented to the MQR for review.

- **Content Review and Approval**

The management representative will initiate and facilitate a review process by means of discussion forums with relevant parties or document circulation – manually or via e-mail. Results of these discussions / circulations are documented and maintained in the document control file. Approval and re-approval of The Quality Manual, Quality Policy and System level Procedures are reserved for the CEO (Chief Executive Officer) and indicated by his signature on the Change History schedule located at the front page of the master document. In the event that the CEO is not available, an appointed deputy will sign on his behalf. Other documents such as standard operating Procedures will be approved by the relevant process owner. The process is facilitated further if copies are required for distribution. A Quality Management System Master Index is maintained in accordance with the review and approval process.

- **The QMS Master**

A single, signed master copy Quality Management System Manual will be maintained by the management representative. This manual holds signed copies of:

- the Quality Manual,
- Policy Statement and Quality Objectives,
- description of the Sequence & Interactions of Processes,
- System level Procedures generic to the business,
- Operating Procedures & Processes and including where applicable, detailed work Instructions,
- Organisational Structure, and
- Master Index.

- **Document Release**
  - **Accessibility & Use of Documents**

All documents related to the Quality Management System are suitably controlled. A QMS database (with read only access) is utilised for release purposes. Everyone affected by the above mentioned documents are notified of approval by receipt of e-mails.

The electronic QMS serves as a central access point for current versions of applicable documents (e.g. policies and Procedures). Therefore, once the review and approval process is completed the MQR will:

1. up-load reviewed document into database (restricted access),
2. allocate procedure number,
3. final spelling and grammar check,
4. print copy,
5. submit to Manager for signature,
6. place in master manual, and
7. give all access to the approved document on the system.

Procedures required for staff distribution shall be accessed directly from the electronic media. Members of staff will have access to the electronic media, and will not require the use of the issue & retrieval register; however, if the need for printed copies does arise, the document will assume the status: “Information only”; as indicated on the document header. The user is then responsible for the document after use.

- **Document Changes**

Requests for changes originating from any source within the organisation shall be brought to the attention of the Management Representative for quality by means of a completed improvement report. The request for change may result from ISF Services evaluating its quality management system and/or business documentation. Document changes may be influenced by events that are traceable to one or more of the following:

- Recommendations for Improvement.
- System or Process deficiencies.
- Customer Complaints.

When documents are revised, the changes will be incorporated in the document. All changes to documents shall follow the same authorisation route

as newly developed documents [refer to sections 6.1 to 6.3]. The revision status and description of the change shall be identified (or referenced) within the document history / amendment schedule of the document. All new changes to the body of the document will be highlighted in a ***BOLD ITALICS font***. Previous changes will revert back to the normal font used within the body of the document. Grammar, spelling or other minor changes will not constitute a revision change or require a formal IR. Only changes that significantly influence the content of the document or if the assigned responsibility changes will it constitute a revision change and require the submission of an IR.

Requests for change to externally generated documents shall follow the same procedure as prescribed and must be submitted to the MQR. All quality management system documents shall be stored and maintained in accordance with the "Control of Records" Process. Electronic data is controlled and reserved with regard to access control and back-ups.

- **Identification, Storage and Access**
  - **Document Codes**

ISF Services

- ISF-PL Quality Policy.
- ISF-OS Organizational Structure.
- ISF-SI Sequence and Interactions.
- ISF-QM Quality Manual.
- ISF-SLP System Level Procedures.
- PM Project Manager.
- AD Administration.
- PC Standard Operating Procedures.
- FM Forms.

- **Identification of Documents:**

Documents will be forwarded according to applicable templates; including revision status, published date and suitable process codes followed by a unique procedure reference number. Examples of these are:

IDENTIFICATION RESPONSIBLE	FIRST TIER	REVISION	
ISF -PL-001	Quality Policy & Objectives	0.1	CEO
ISF -OS-001	Organizational Structure	0.1	CEO
ISF -SI-001	Sequence & Interactions	0.1	CEO

QUALITY MANUAL			
ISF -QM-001	Quality Manual	0.1	MQR
SYSTEM LEVEL PROCEDURES			
ISF -SLP-001	Management Responsibility Procedure	0.1	MQR
ISF -SLP-002	Control of Documents Procedure	0.1	MQR
ISF -SLP-003	Control of Records Procedure	0.1	MQR
ISF -SLP-004	Control of Non-conformance Procedure	0.1	MQR
ISF -SLP-005	Internal Quality Assessment Procedure	0.1	MQR
ISF -SLP-006	Corrective Actions Procedure	0.1	MQR
ISF -SLP-007	Preventive Action Procedure	0.1	MQR
STANDARD OPERATING PROCEDURES			
PM-PC-000	Project Management Procedure Index	0.1	HOD
AD-PC-000	Administration Procedure Index	0.1	HOD
FIN-PC-000	Finance Procedure Index	0.1	HOD
HR-PC	Human Resource Manager Index	0.1	HOD
TEMPLATES AND FORMS			
PM-FM-000	Project Management forms Index	0.1	HOD
QA-FM-000	Quality Assurance forms Index	0.1	HOD

All indexes for Procedures start with a numbering of 000. The Procedures for any department then continue from 001 till the last available Procedure.

○ The Quality Management System Database

The Electronic Quality Management System (QMS) has been created to securely house the system's documentation and relevant data. It provides ease of access to current versions of applicable documents to use when needed. The management representative accesses system documentation through the use of unique passwords. The process procedures can be viewed as a read only (i.e. information only) document.

Documents stored in the electronic system shall serve as the current revision and shall be approved with a signature prior to release by the CEO or respective process owner. Evidence of such approvals is reflected in the Quality Management System Master File.

○ Documents of External Origin

Customer supplied documents such as contracts, Control plans; Statutory and Regulatory such as acts, industry standards and corporate standards and

Procedures must be registered and controlled via APG Document Control register and the Delivery Collection form.

- **Obsolete Documents**

Out-of-date documents or older versions of revised documents shall be protected from unintentional use. The management representative and staff shall ensure that hard copy of the QMS documents which has been superseded by newer versions; will be adequately disposed of.

An obsolete stamp or watermark will be indicated on the old master and archived manually or electronically.

- **Periodic Reviews of QMS Documentation**

All Quality Management System documents will be reviewed once every two years and updated as well as re-approved if needed.

- **THE PROCESS FLOW:**

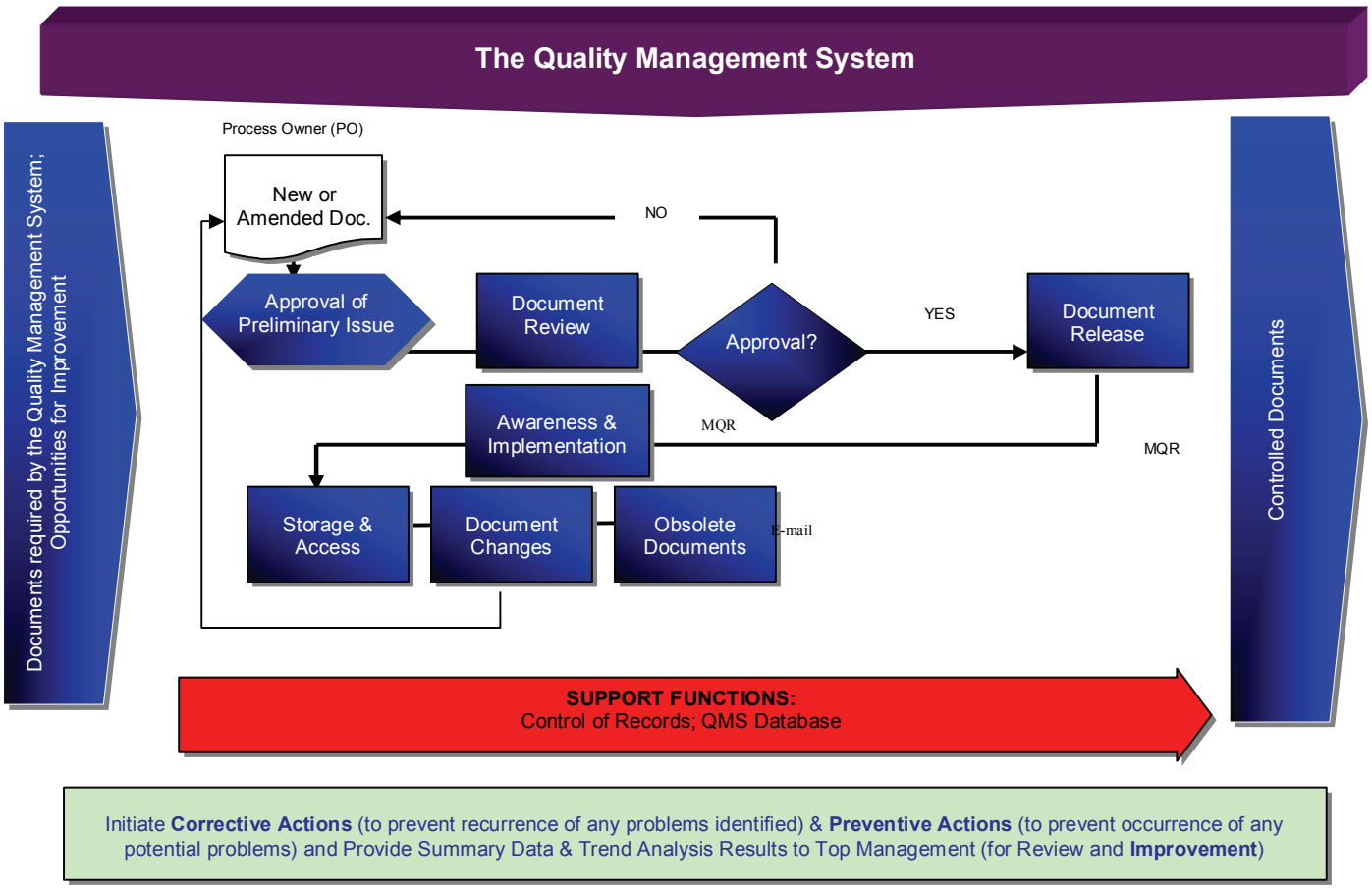


Figure 2: Control Of Documents Process Flow According to ISO 9001:2008

5.7.3 ISF Services Control of Records Mandatory Procedure

Purpose To ensure that all quality related records which demonstrate conformance to specified requirements and the effective operation of the quality management system is maintained and controlled. Records will be stored in a way to prevent damage, loss or deterioration.

Scope This procedure is applicable throughout the operations and functions of ISF Services.

Reference ISO 9001: 2008 Standard (Clause 4.2.4) Control of Records.

Associated documents Records Control Index
(All departments within ISF Services will follow the Control of Records Filing System Template within the QMS).

Reference: Quality Form 13 – List of Records with Retention Time.

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of the procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times.

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include procedures commonly used within ISF Services.

SOP standard operating Procedures and processes.

QF Forms used within ISF Services.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance).

- **CONTROL OF RECORDS (Filing Procedures)**

  - **Identification**

Records are uniquely identified by agreement numbers, procedure codes, electronic, or other appropriate methods. Anyone looking at records shall be able to easily establish what they are looking at. The process owner for record keeping must establish a filing index based on alpha or numeric or alpha – numeric for the work area.

  - **Storage (Hardcopy)**

Hardcopy records and files are stored in suitably controlled filing systems. All electronic records are stored in specialised electronic applications (e.g. electronic folders, the company Databases and Accounting Package in use). Protection of hard copy records is ensured by using lockable filing cabinets.

  - **Storage (Softcopy)**

The Project Managers may require help on the above and the support staff may need to assist since projects like ABSA phase 1 are large, and the task will take some time.

Everyone should work off the server only and not use microsoft outlook as a substitute for the server.

Below are the folders which should be used on the server to fulfil the above shortfall on the SABS report. The table below as well as questions from the auditor based on the cross functional process flowchart and the location for each process on the server were discussed with Project Managers.

Main Folder	**2nd Folder**	**3rd Folder**	**(ISF TEMPLATE REFERENCE)**	**(ISF PM PROCEDURE REFERENCE / ISO)**
1. Marketing	1.RFQ	1.RFQ		
		2.Submission of RFQ		
	2.Tender / RFP	1.Tender / RFP		
		2.Submission of Tender / RFP		
	3.Client Approval of tender/RFP/RFQ			
2. Client / Project	1.Scope/Brief of work			

	2.Photo (initial)			
	3.Approved scope			
	4.Consultants Concept Reports			
	5.Indicative Programme			
	6.Feasibility & Baseline			
	7.Approval of Baseline			
3. Consultants & ISF	1.Request Consultant Appointments			
	2. Fee / Service Proposal	1.ISF		
		2.Architect		
		3.Structural /Civil Eng		
		4.Mechanical Eng		
		5.Electrical Eng		
		6.Fire Eng		
		7.H&S		
		8.Town Planner		
		9. Surveyor		
		10.EIAConsultant		
	3. LOA	1.ISF		
		2.Architect		
		3.Structural /Civil Eng		
		4.Mechanical Eng		
		5.Electrical Eng		
		6.Fire Eng		
		7.H&S		
		8.Town Planner		
		9. Surveyor		
		10.EIA Consultant		
4. Design Development	1. Design Meetings	1.Minutes Design Meeting		
		2.Attendance Register		
		3.Action List		
	2.Initiation Programme			
	3.Procurement Schedule			
	4.Information Schedule			

5. Contractor Procurement	1.Tender Report/Recommendation	1.Main		
		2.Domestic		
		3.Selected		
		4.Nominated		
	2.Tender Approval – By Client	1.Main	ISF Cover Letter – Tender Approval	
		2.Domestic		
		3.Selected		
		4.Nominated		
	3.Tender Schedule – By QS	1.Main		
		2.Domestic		
		3.Selected		
		4.Nominated		
	4.LOA	1.Main		
		2.Domestic		
		3.Selected		
		4.Nominated		
	5.CAR Insurance Schedule	1. Main (and others if applicable)		
	6.Lien	1. Main (and others if applicable)		
	7.Performance Guarantee	1. Main (and others if applicable)		
	8.Cession	1. Main (and others if applicable)		
	9.Warentees / Guarantees	1. Main (and others if applicable)		
6. Contract Management	1.Contact Register			
	2.Contract Instructions			
	3.Change Control/Variations	1. Register Change Control/Variations		
	4.Claims – EOT	1. Contractor Claim Notification		
		2. Notification Reply		
		3.Contractor Claim		

		4.Claim – EOT Adjudication		
	5.Defect Notices			
	6.Drawings – Consultants	1.Architect		
		2.Structural /Civil Eng		
		3.Mechanical Eng		
		4.Electrical Eng		
		5.Fire Eng		
		6.Town Planner		
		7. Surveyor		
		8.EIA Consultant		
	7.Drawings – Contractor/Shop Drawings	1. Main (and others if applicable)		
	8.H&S	1. Client Specification		
		2.Reports/Audits H&S		
	9.Invoices			
	10.Programme	1.Contract Baseline Programme		
		2.Working Programme		
		3.Progress Updates		
	11.Payments	1.Payment Recommendations		
		2.Payment Certificates		
	12.Photos			
	13.Reports – Design Consultants	1.Architect		
		2.Structural /Civil Eng		
		3.Mechanical Eng		
		4.Electrical Eng		
		5.Fire Eng		
		6.Town Planner		
		7. Surveyor		
		8.EIA Consultant		
	14.Reports – Project Manager	1.PM Reports		
		2.Dashboard Reports		
	15.Reports – Main	1.Progress		

	Contractor	Report – Contractor		
		2.Snagging Status Report		
	16.Risk Register/Early warning	1.Risk Register		
		2.Early Warning		
	17. Site hand Over Certificate			
	18.Site Meetings	1. Minutes Site Meetings		
		2.Attendance Register		
		3.Action List		
	19.Snagging / Defect Inspections	1.Architect		
		2.Structural /Civil Eng		
		3.Mechanical Eng		
		4.Electrical Eng		
		5.Fire Eng		
7. Close Out	1.Completion Certificate			
	2.Council Approvals			
	3.Client Hand Over Documents			
8. Client Feedback Form				

- **Protection**

The method used to preserve records from loss or deterioration has been established. Hard copy records are adequately housed in filing cabinets. The environmental conditions (i.e. moisture, temperature) are suitable for the storage type.

Electronic records are protected within specially designed systems and are regularly backed-up by the company. ISF Services utilises anti-virus programs for ultimate protection from viruses and other undesired codes.

- **Retrieval**

Each record is filed and stored in a manner which is easily accessible. There is extensive use of the internal server to obtain electronic data. A Records Index List helps to improve retrievability.

- **Retention Time**

Specific retention requirements for quality and business records are prescribed in the records index list available at filing areas. Record information in the index is reviewed by the Management Representative for Quality (MQR). The MQR must be notified of any changes to retention time, disposition or responsibility.

- **Method of Disposition**

A comprehensive index of required records and special documents of ISF Services is retained for regulatory or good business practice purposes in the records control index. The Management representative for quality will have a copy of this index. The MQR must ensure that the respective directorates dispose records in accordance with the records control index.

- **THE PROCESS FLOW:**

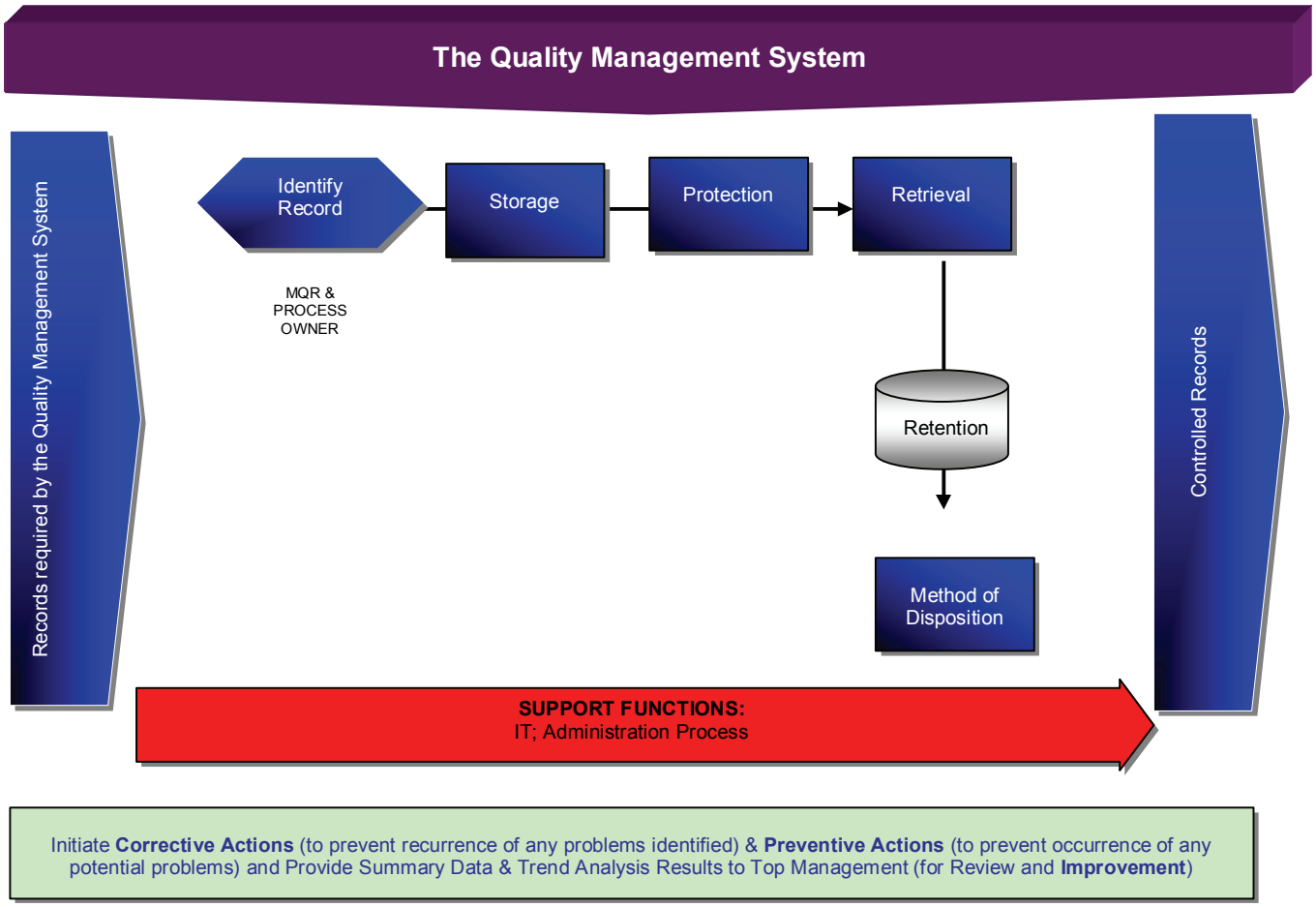


Figure 3: Control Of Records Process Flow
According to ISO 9001:2008

5.7.4 KPMM Construction Control of Non-Conformance Mandatory Procedure

Purpose The Procedure describes the method used to ensure that the material or service which do not conform to specified requirements are prevented from unintended use or processed, together with the method of conducting corrective action.

Scope The Procedure is applicable throughout the operations and functions of KPMM CONSTRUCTION.

Reference ISO 9001: 2008 Standard.

Associated documents The following records are required to be maintained by implementation of this Procedure:

- Non-Conformance Index.

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of the procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times.

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system which may include procedures commonly used by KPMM CONSTRUCTION.

SOP standard operating Procedures and processes.

FM Forms used within KPMM CONSTRUCTION.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance).

Procedure:

1. All services received, that are found to be non-conforming must be identified by the person receiving the services or goods and accordingly report to the Management Representative for Quality [MQR].

2. The person encountering the non-conformance shall ensure that a Non-conformance Report [NCR/IR] is completed and submitted to the Management Representative for Quality [MQR], informing him/her of the non-conformity, by specifying which goods or services were actually requested, via documentation.

3. The Management Representative for Quality [MQR] will register the Non-conformity in a Non- conformance Index and make necessary arrangements for the return of material or goods.

4. The MQR is responsible for ensuring that corrective action is communicated to the supplier by means of a formal written document.

THE PROCESS FLOW:

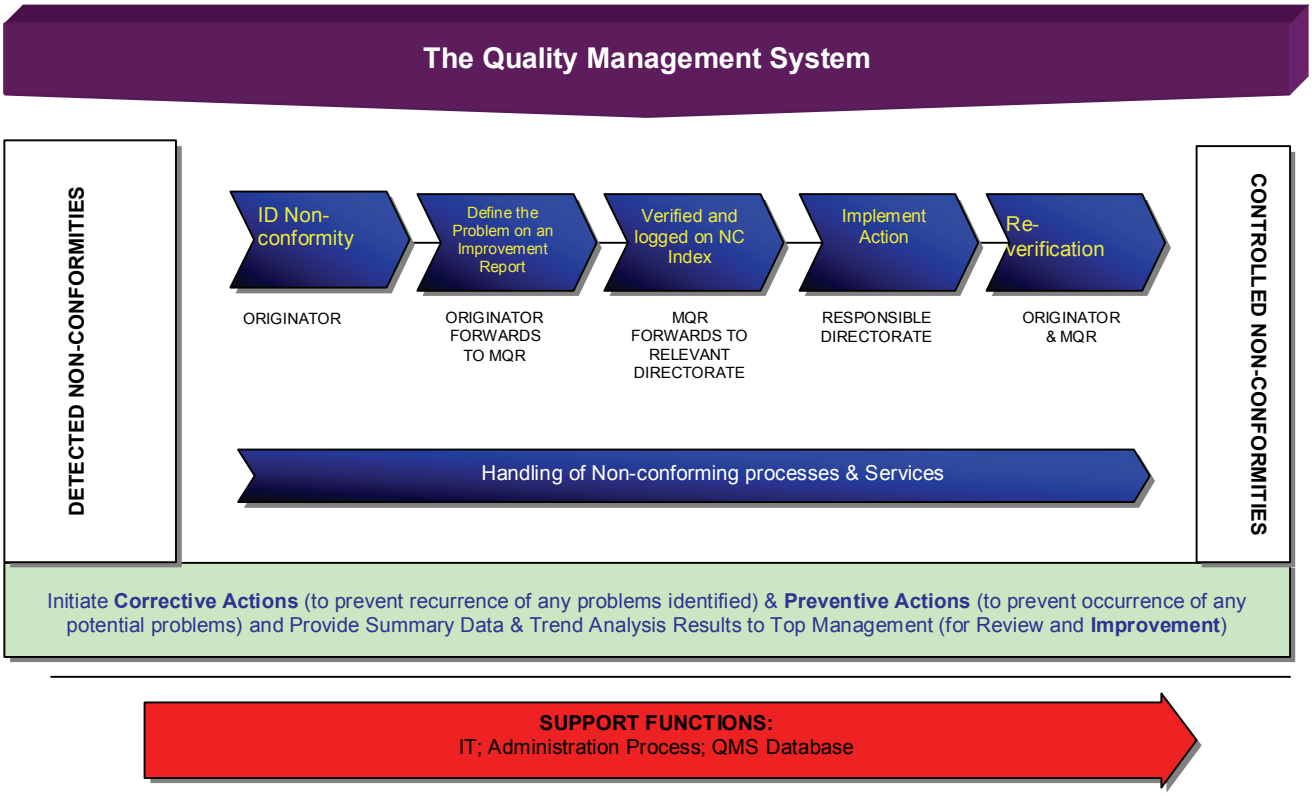


Figure 3: Control Of Non-Conformances
Process Flow According to ISO 9001:2008

5.7.5 KPMM Construction Internal Audit Mandatory Procedure

Purpose This Procedure details the Assessment Process to ensure that effective Internal Quality Assessments are planned, conducted and controlled.

Scope The Procedure is applicable throughout the operations and functions of KPMM CONSTRUCTION.

Reference

- ISO 9001:2008 Requirements
- ISO 19011:2002

Associated documents The following documentation is required for implementation of the Procedure:

- Assessment Plan
- Assessment Checklist
- Assessment Report
- Minutes of previous Management Review

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of this procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include Procedures commonly used by KPMM CONSTRUCTION.

SOP standard operating Procedures and processes.

FM Forms used by KPMM CONSTRUCTION.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance)
The words or phrases below, when applied within this Procedure shall assume the following meanings:

MQR Management Representative for the Quality Management System.

Management System
System for establishing and implementing Policies and Objectives.

Document
Information and its supporting medium, e.g. paper, magnetic or electronic.

Record
Document stating results achieved or providing evidence of activities performed.

Internal Quality Assessment

Independent, documented process for obtaining evidence that the Quality Management System remains suitable, adequate and effective.

Quality Assessment
A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether the arrangements are implemented effectively and are suitable to achieve objectives.

Definitions

Guide
A representative from the Auditee, who assists, acknowledges and confirms findings at the area affected.

Auditee
The organisation / department being assessed.

Lead Assessor
Leads the Assessment team also known as the Lead Auditor.

Assessor
Person who has the qualification to perform quality assessments and is a member of the team which reports to the lead assessor and conducts independent assessments within an assessment schedule.

Objective evidence
Qualitative or quantitative information, records or statements of fact based upon observation, measurement or test and which can be verified.

Procedure:

- **Assessment schedule**

The MQR determines the frequency; scope and objectives of the Internal Assessments after considering the relative importance of the Organisation's activities and this is recorded in the Assessment schedule.

The MQR shall ensure that Internal Quality Assessments are carried out in accordance with the schedule covering the Quality System and area of concern based on status and importance. The frequency may be changed by the MQR if the need arises.

During the end of the period of each year the MQR prepares a new Internal Assessment Schedule for the coming year.

The schedule is distributed to all interested and involved parties. This acts as an early reminder of when the Assessments are to be carried out since the schedule might have to change at short notice.

The departments to be Assessed shall be informed of the exact date at least one week in advance for them to provide personnel and resources.

Ad-hoc Assessments are arranged and conducted, by analysis of records and/or customer complaints, and a trend is identified which is detrimental to quality.

Assessments which could not be conducted due to problems encountered, are added to the schedule as and when required. The new schedule is then approved by the MQR and distributed as before.

- **Assessment Team**

The Assessment Team shall consist of the following personnel who must be independent of specific areas or activities being assessed:

- Management Representative for Quality.
- A representative of a department.
- Independent Assessors selected by the MQR either from another department of the organisation, a third party or any person invited by the MQR.
- Managers who should attend to Assessments as far as possible.

- **Preparing of the Assessment**

When necessary, the MQR prepares and/or revises the Assessment Check List to provide the Assessor with additional suitable guidance in conducting the Assessment.

The MQR appoints an Assessor who is independent of the area being Assessed, and then briefs him on the Assessment to be conducted using the relevant policy, procedure, work instruction, ISO 9001:2008 guidelines, and if necessary an Assessment Check List.

The MQR in conjunction with the auditor may or may not appoint an Assessment team leader (Lead Assessor) depending on the size of the Assessment. It could be only himself, or a co-opted independent specialist and/or trainee Assessors.

The MQR notifies the departments to be Assessed at least one week before the schedule date by means of an Assessment Plan that includes the purpose, scope and objectives of the Assessment, Auditee (s) i.e. employees to be Assessed date and expected duration of the Assessment.

- **Performing the Assessment**

An opening meeting is held with all the affected personnel in the organization concerned before the actual Assessment commences, to explain the purpose and scope of the Assessment.

The Assessment is then conducted using the relevant policy Procedure, work instructions, ISO 9001:2008 guidelines, and if necessary an Assessment Check list to establish the adequacy effectiveness and adherence to the system documentation.

A responsible representative accompanies the Assessor from the directorate (Guide) being Assessed throughout the period of the Assessment.

When any non-compliances or deficiencies are highlighted, then the Assessor, and the responsible representative record these, also witness the problem and sign acknowledgement on the Improvement Report form.

Immediately after the Assessment, a closing meeting is held between all the persons originally involved in the opening meeting. The Assessor then presents his/her findings highlighting any areas where non-compliance or deficiencies were discovered, and also summarises any corrective recommendations.

- **Process Flow Chart**

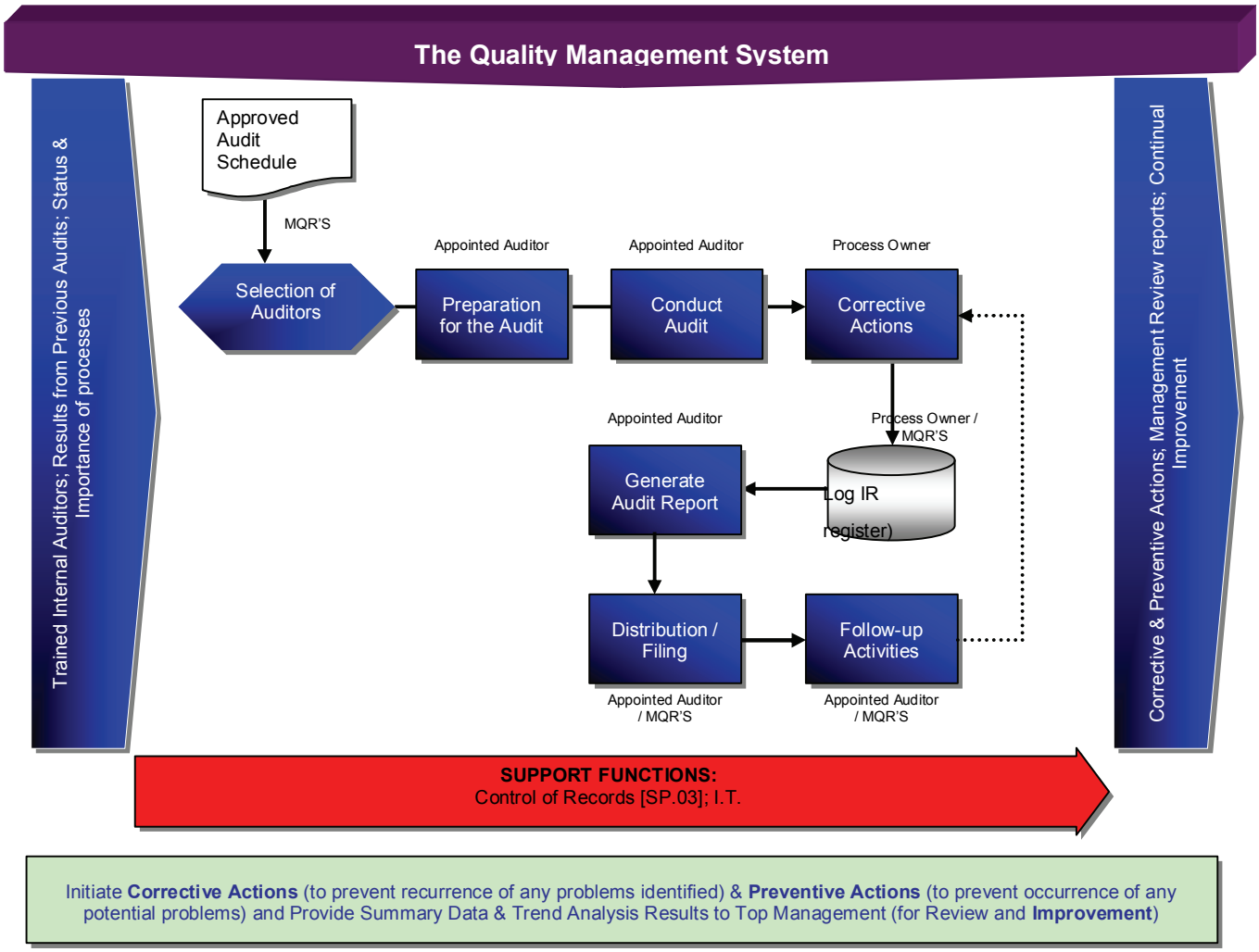


Figure 4: Internal Audit Process Flow
According to ISO 9001:2008

5.7.6 KPMM Construction Corrective Action Mandatory Procedure

Purpose

To establish a system of control, this ensures that all instances of non-conformances that impact or adversely affect the quality of service, processes and or system are investigated to establish the cause.

To have a method in place for addressing an opportunity for improvement that might be identified.

Scope

The Procedure is applicable throughout the operations and functions of KPMM CONSTRUCTION.

Reference

- ISO 9001:2008 Requirements.

Associated documents

The following documentation is required for implementation of this Procedure:

- Improvement Report [IR] form and Non Conformance Index
- Non Conformance Index.

Responsibility

The MQR is responsible for the content and the maintenance of the Procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times.

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include procedures commonly used within KPMM CONSTRUCTION.

SOP standard operating procedures and processes.

FM Forms used by KPMM CONSTRUCTION.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance)
The words or phrases below, when applied within this Procedure shall assume the following meanings:

MQR Management Representative for the Quality Management System.

Procedure:

Identification and Reporting

- Any person who identifies a non-conformance is responsible for taking appropriate immediate action, and reporting the non-conformance by completing an IR and providing it to the MQR.
- Persons that identify opportunities to eliminate potential non-conformances are encouraged to take any appropriate immediate action and submit an IR.
- Employees must input relevant information, including clear problem identification, classification of problem type [i.e. customer complaint, product non-conformance], and a suggested solution if known.

Tracking

- The MQR will assign a number to the Corrective Action Request (CAR) (Improvement Report form), notify the manager responsible for investigating the CAR and establish a close out date.
- Close out dates are based on the nature and urgency of the actual non-conformance.

Determination of Root Cause and Appropriate Corrective Action

The Process Owner will determine the root cause of the actual non-conformance, and recommend an appropriate corrective action. The Manager of the department shall form a team if necessary, perform a more detailed investigation, or involve others in the process.

Recording Results

- The Process Owner will enter the root cause and recommended corrective action on the IR. A Manager with appropriate authority will be assigned responsibility for implementing the corrective action.

Resolution and Follow-up

- After the corrective action has been implemented during an agreed period the MQR will follow up to ensure a satisfactory solution.
- The Process owner may enlist the help of others with the necessary expertise, and reviews may be conducted in the course of a regularly scheduled internal audit. If the solution is not effective, the corrective action is resubmitted to the responsible manager for implementation of additional action.
- Turn-around time for the closing off of Corrective Actions will be determined by the team investigating the non-conformance. An immediate response team investigating the problem will adhere to concerns promptly. Not exceeding longer than 2 weeks then action relayed to client and recorded.
- Concessions will be determined during the development of the Service Level Agreement between the supplier and client, stating all the necessary concessions if any.

Training

- When training is required as a result of a corrective action, the MQR will so note on the Corrective Action Request and notify the Immediate Manager, who will be responsible for scheduling the appropriate training.
- Evidence of the training in generic skills will be documented in the employee training record.

Trending

- The MQR will review CAR's annually to identify any trends and other opportunities for improvement. Such information will be reviewed during the Management Review meeting.
- Negative trends or potential problems could be derived from multiple problems being identifiable back to a single or several sources:

    - Supplier & Sub-contractor.
    - Equipment.
    - Department.
    - Internal Non-conformances.
    - Customer Complaints or concerns.
    - Non-conformances identified during Internal Audits.
    - Trends in Internal Quality Non-conformances not effectively corrected by the non-conformance procedure.
    - Management review actions that need to be addressed.

The Corrective Action Procedure will also be adhered to for any:

- customer complaints,
- audit deficiencies identified by certification Bodies or internally, and
- Internal Audit deficiencies.

THE PROCESS FLOW:

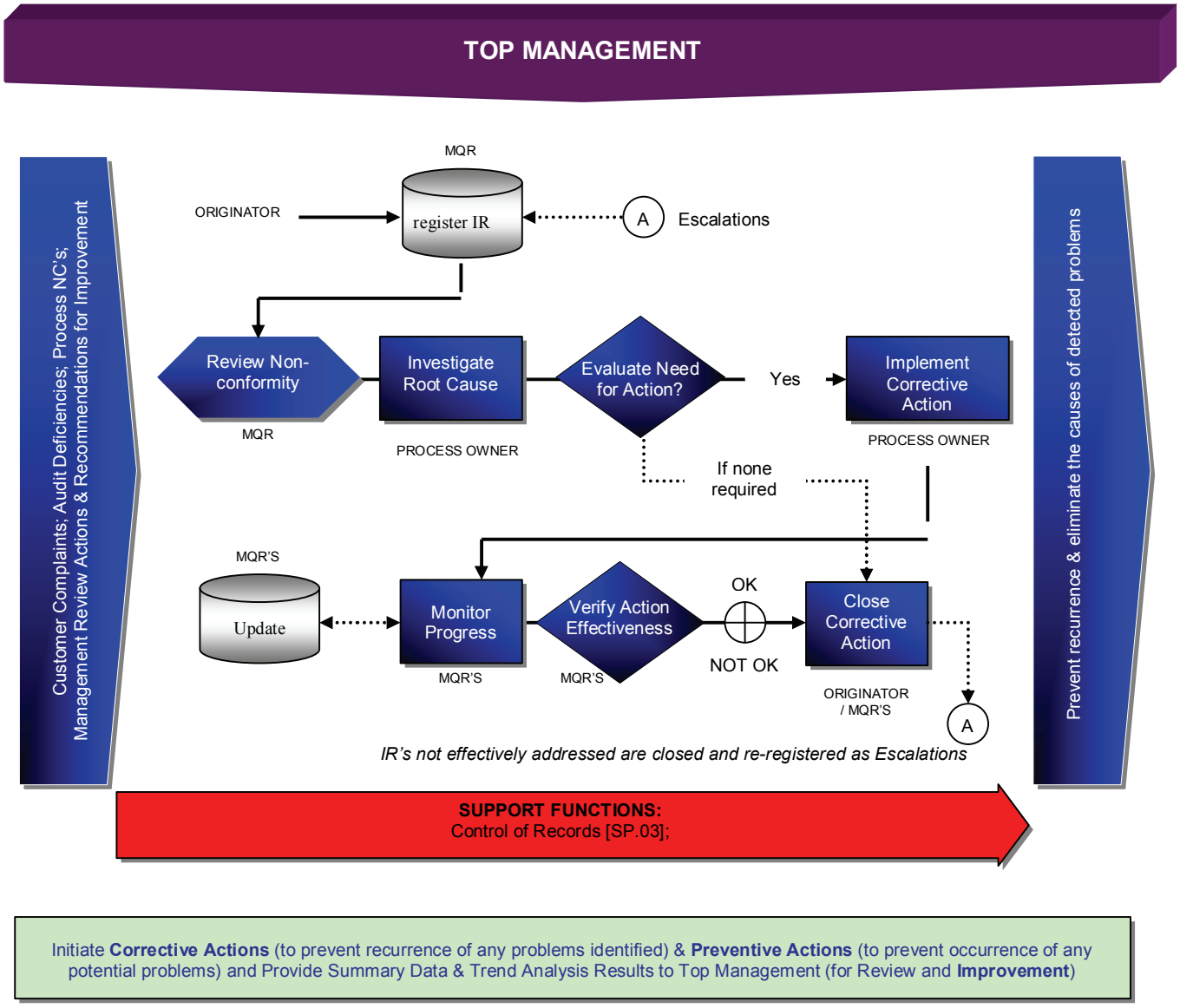


Figure 5: Corrective Action Process Flow
According to ISO 9001:2008

5.7.7 KPMM Construction Preventive Action Mandatory Procedure

Purpose To provide a systematic process improvement Procedure and to identify actions to eliminate the cause of potential nonconformities to prevent occurrence.

Scope The procedure is applicable throughout the operations and functions of KPMM CONSTRUCTION.

Reference

- ISO 9001:2008 Requirements.

Associated documents The following documentation is required for implementation of the Procedure:

- Improvement Report [IR] form and Non Conformance Index.
- Non Conformance Index.

Appendices N/A

Responsibility The MQR is responsible for the content and the maintenance of the Procedure. Individual staff members and respective process owners shall ensure that the disciplines prescribed below are adhered to at all times.

Definitions

SLP System Level Procedures are procedures required by the ISO 9001:2008 standard and the effective operation of the management system, this may include procedures commonly used within KPMM CONSTRUCTION.

SOP standard operating Procedures and processes.

FM Forms used by KPMM CONSTRUCTION.

QMS (Quality Management System).

IR (Improvement Report).

NC (Non-conformance).
The words or phrases below, when applied within this Procedure shall assume the following meanings:

MQR Management Representative for the Quality Management System.

Procedure:

Identification of Potential Problems or Non-conformities:

- Opportunities to improve the processes or quality management system may be identified by management or individuals through reports or trends of non- conformities that are experienced.
- A special team or individuals may be given the responsibility to investigate the possibilities and to recommend and manage the implementation of the recommended actions.
- Management or any person who identify a need to improve a process, Procedure, method, administration or service must complete an improvement report.

Determining and ensuring, the Implementation of Preventive Action.

- Anyone within the Organization may determine the best practice to prevent the nonconformities. This is done through investigations and the use of problem solving methods.
- The Originator will make recommendations and complete the relevant section of the Improvement Report.
- An implementation date will be established once the recommendations are accepted. The review will be done by the MQR and the Quality Committee.
- The originator or team will initiate and manage the implementation process and ensure that the results of the implementation have measurable objectives and are recorded.

Recording Results of the Action Taken:

- The originator or team must evaluate the result against the problem solving objectives and record the results in the appropriate section of the Improvement Report.
- The completed document will be handed to the MQR for further processing and Review.

Reviewing of Preventive Action:

- The MQR in conjunction with the originator will review the results and determine whether the actions were effective.
- The MQR will complete the follow-up section if the actions resolved the potential or current problem permanently.
- However, if the actions were not effective, the MQR will bring it to the attention of the originator and the Manager who implemented it. A second improvement report will be opened and the reference number will be recorded on the document.

This Procedure will once again be followed with management's involvement, to ensure that corrective and preventive measures are followed.

THE PROCESS FLOW:

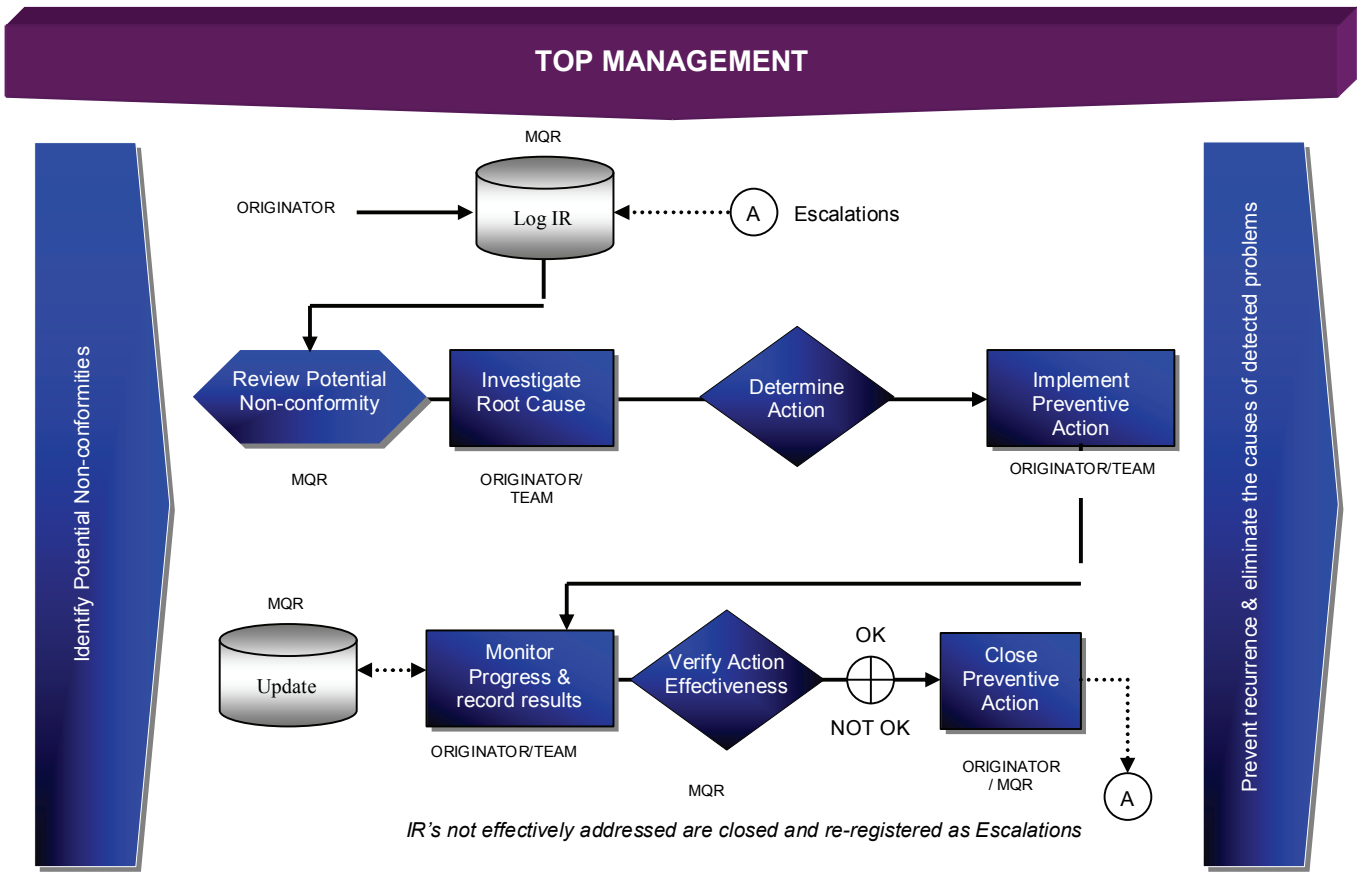


Figure 6: Preventive Action Process Flow According to ISO 9001:2008

5.7.5 Summary on Mandatory Procedures

The ISF and KPMM Mandatory procedures are similar in stature, with a flexible approach in allowing the Manager within the organization to control their processes.

5.8 Standard Operating Procedures (SOP) Development

A Standard Operating Procedure (SOP) is a set of written instructions that document a routine or repetitive activity followed by an organization. The development and use of SOPs are an integral part of a successful quality system as it provides individuals with the information to perform a job appropriately, and consistent in the quality and integrity of a product/service.

SOPs detail the regularly recurring work processes that are to be conducted or followed within an organization. They document the way activities are to be performed to facilitate consistent conformance to technical and quality systems. SOPs are intended to be specific to the organization or facility whose activities are described and assist that organization to maintain their quality control and quality assurance processes and ensure compliance with regulations.

If not written correctly, SOPs are of limited value. In addition, the best written SOPs will fail if they are not followed. Therefore, the use of SOPs needs to be reviewed and re-enforced by management, preferably the direct supervisor. Current copies of the SOPs also need to be readily accessible for reference in the work areas of those individuals actually performing the activity, either in hard copy or electronic format, otherwise SOPs serve little purpose.

The Quality Management System ensures that SOPs are effectively developed for all the necessary departments and respective activities. The SOPs developed are simple enough for a first time user following it to complete the activity correctly. Once an SOP is developed, it is uploaded onto the Quality Management System or added to the Word-based QMS, so that they are readily accessible for reference.

The method in which the SOPs are developed for ISF Services and KPMM Construction is:

Cover Page, the following details appear:

- **Procedure Name**- The name given to the procedure, example: Monthly Reports Procedure
- **Document Number**-Each procedure has a specific number which follow each other in chronological order as SOPs are developed. An example of

a document number : Example, PM-PCD-001, 'PM' relating to the department Project management, 'PCD' meaning Procedure, and '001' relating to the first procedure in the respective department.

- **Version**- If any detail in the SOP is changed, the version would change. **Publication date**- The date of which the specific version is published
- **Department**- The respective department to which the procedure is applicable
- **Approved by**- The individuals by whom the procedure is approved
- **Change history**- A Change History Log which contains a record of changes made to the document

Published / Revised Date	Version No	Section/ Nature of change	Author (Optional)	Approval Authority
01/11/2009	First Issue 0.0		Muhammad Ali	Ian (CEO)
05/01/2010	First Revision 0.1	Flow chart reviewed	Muhammad Ali	Ian (CEO)
	Second Revision 0.2	Typing Error	Muhammad Ali	Ian (CEO)

Figure 13: Table above showing the Change History Example

The following sections are then added to the SOP Document:

Purpose:

This section states the reason for the particular document and what the document is trying to achieve. The objective of the document.

Scope:

To develop the scope, the following questions are asked to understand the departments in which the procedure is related to:

- Which specific operations or tasks within an operation will be covered?
- Which are not covered?
- Who is the SOP written for?

Responsibility:

The identification in who will be responsible for conducting the tasks as well as who ensures that tasks are conducted according to the SOP.

Definitions/Abbreviations:

Providing definitions of terms or abbreviations used in the document.

Reference:

States any referenced documents or any related policies, procedures, process maps, diagrams and any other related document.

Records:
Any document generated whilst implementing the respective procedure document and having relevance to the procedure outputs, must be recorded and stored in this section.

Procedure:
This section contains the actual steps needed to complete the activity.

The following important details are inserted into each SOP:

- Include the number of people required for the task,
- Personnel qualifications and skill levels,
- The equipment and supplies required,
- Any personal protective or safety equipment required,
- A description of how the finished product or result should look.

Thereafter the procedure describes each task in detail as follows:

- Specific order in which activities are done
- Timing sequences and times allowed
- Materials or tools used and how they are used
- Safety or health considerations

The SOP attains information regarding each step as follows:

- Ask several experienced employees to be involved in drafting the initial SOP.
- Have trained employees check the written procedures against actual practices before implementation. Make revisions if necessary.
- Talk with all employees to gain agreement that procedures and expectations are appropriate and achievable.

Depending on the complexity of procedure steps, the following is the format for procedure steps:

- **Simple steps or a checklist:** These are easy to write and follow and work well for short, simple, straightforward tasks.

- **Hierarchical steps:** An extension of the simple steps format, this format works better for tasks that require additional detail or sub-steps within each primary step

- **Linear flow chart:** Think of this as a graphic version of the two previous formats. It works well for tasks where activities must be done in a specific order and where an easy to- follow reminder at the job site is useful.

- **Annotated pictures:** This format works well for people who cannot read or where a language barrier exists. Since pictures can dramatically reduce the need for written explanations, this format helps to shorten complex and detailed steps. For some employees, SOP pictures can make excellent work site reminders. For example a photo illustrating how a work site should be set up or arranged, or the proper locations of shields, levers, switches and handles on a piece of equipment.

The Control of Document Procedures explains the steps in developing, implementing, maintaining and changing procedures.

5.9 Controlling Forms and Templates

Forms are controlled due to the following scenarios:

- If you created a helpful form and found it had been changed, would you like to know who did it and why?
- If you changed your form, would you like your employees use the most resent revision?
- If you were on vacation, would you like employees to be able to find a specific form just by finding a reference to it?

Forms and Templates are controlled in two manners:

- Identification Numbers
- Revision Levels

These references are mentioned in the Documents Control Procedures.

Each form and template has a specific identification number and a corresponding revision level.

Identification numbers are developed as follows:

- Abbreviation of Company name, eg. ISF Services, ‘ISF’
- An abbreviation of the word ‘Form’ is given, ‘FM’
- A number is allocated to each form following in chronological order as forms are developed.

Therefore, a Form at ISF Services in the Project Management Department will be named as follows: ISF-FM001, ISF-FM002, and so on. This allows each form to have a unique number by which it can easily be identified.

Each Form and Template has a revision number depending on how many times the respective form or template has been edited. This allows management to keep track of latest forms and templates and to see who last made alterations.

Chapter 6: Results and Discussion

6.1 Impact of ISO Quality Management Systems Implementation

The following study and analysis is aimed at determining the impact that implementing an ISO Quality Management System had on specific businesses. Various methods were used to collect data and analysis it. The impact on customer satisfaction, employee satisfaction and client perception was closely monitored.

This study and analysis was conducted in a construction business and a service business:

1. KPMM Construction/Roads & Earthworks
2. ISF Services

6.2 Feedback Form Ratings

The first method used to collect data regarding the objective of the study was Feedback Forms with ratings. To determine how Customer Satisfaction and Employee Satisfaction were measured, specific categories were selected and rated. These categories contained aspects which could have a positive or negative impact on customers, employees and suppliers respectively. The feedback forms and ratings were distributed and completed before implementing an ISO QMS and again after the QMS were implemented. Ratings were established as follows:

- Very Poor – 1
- Poor - 2
- Average - 3
- Good – 4
- Excellent – 5

The following feedback forms were distributed to employees, customers and suppliers. Once all feedback forms ratings were received, an average rating for each category was used for analysis. The following categories were rated on the feedback forms:

Employee Satisfaction Feedback Form					
	Ratings				
Category	**1**	**2**	**3**	**4**	**5**
Resource Management					
Team Building					
Leadership					
Recognition					
Communication					

Table 2: Table above showing the Employee Satisfaction form used to obtain the data for the analysis.

Customer Satisfaction Feedback Form					
	Ratings				
Category	1	2	3	4	5
Timeous submission of information					
Attendance of meetings					
Understanding of client needs					
Quality of information provided					
Working relationship					

Table 3: Table above showing the Customer Satisfaction form used to obtain the data for the analysis.

6.2.1 Sample/Population Design

The sample design used in this study, is the entire population of both organizations. KPMM Construction a total of 10 employees (The rest are contractors and not within the scope of the QMS) and ISF Services a total of 10 employees are regarded as Micro Industries in the South African economy.

A non-probability sampling method and an entire population is considered for this study.

ISF Services have 2 known clients, MTN and ABSA. Whilst KPMM Construction work primarily with the South African Roads Department.

6.2.1.1 ISF Services Sample/Population Plan

ISF Services employees that were considered in the study and key criteria's to justify the value adding purpose of the QMS before and after implementation are seen below (refer to Page 44, Organizational Structure to view the number of employees):

ISF Employee Designation and Name	Question Criteria	Comments Before ISO Implementation (1 Very Poor - 5 Excellent)	Comments After ISO Implementation (1 Very Poor - 5 Excellent)
CEO - Ian Funeka	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 3 4 3	4 4 4 4
Average		65%	80%
Project Admin- Dumo Masondo	1. Resource Management 2. Team Building	3 3 3	4 3 3

	3. Leadership 4. Recognition	3	4
	Average	60%	70%
Finance Manager - Nonhlanhla Funeka	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	4 4 4 4	5 5 4 5
	Average	80%	95%
Project Office Manager - Shavir Maghnath	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	1 2 2 2	3 3 3 3
	Average	35%	60%
Operations Manager - Alberto Ridolfi	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	2 2 2 2	4 3 3 3
	Average	40%	65%
Project Manager - Lovemore	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 2 3	4 4 4 4
	Average	50%	80%
Project Manager - Roel	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 3 2	4 2 3 2
	Average	50%	55%
Project Manager - Ben	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 4 3	4 4 5 4
	Average	60%	85%
Project Manager - Nivesh	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	2 2 2 4	5 4 5 4
	Average	50%	90%

Project Manager - Oyama	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	4 4 4 4	5 5 5 5
Average		80%	100%

Table 4: The table above shows the Sample/Population plan of ISF Services employees that were used in the study to determine the effectiveness of the QMS in relation to employee satisfaction.

Average (%) Calculation:

$$\frac{(\text{Resource Management} + \text{Team Building} + \text{Leadership} + \text{Recognition})}{4}$$

6.2.1.2 ISF Services Methodology of utilizing the Population Plan

Step 1

Before the study began, ISF Services employees we were asked where the key areas within the environment were. It was concluded that:

1. **Resource Management** - Having the appropriate competent resources to manage projects.
2. **Team Building** - A more cohesive approach to understand employees within the organization
3. **Leadership** - ISF Services to create unity, motivation and guidance.
4. **Recognition** - ISF Services felt that where recognition was due it should be made with non-monetary incentives.

Step 2
These points were rated per employee within ISF services before the implementation of ISO 9001:2008.

Step 3
Once the system was implemented and operational (6 months from the time of Implementation), a study to measure the same key areas were done. These results are shown on table 4 above.

The results show a clear positive correlation on the impact of the QMS to the employees of ISF Services and shall be further discussed in a graphical format below.

6.2.2.1 KPMM Construction Sample/Population Plan

KPMM Construction employees that were considered in the study and key criteria's to justify the value adding purpose of the QMS before and after implementation are seen below (refer to Annexure A, Organizational Structure to view the number of employees):

KPMM Construction Designation and Name	Question Criteria	Comments Before ISO Implementation (1 Very Poor - 5 Excellent)	Comments After ISO Implementation (1 Very Poor - 5 Excellent)
Managing Director - Kevin Twiddy	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	4 3 4 3	5 5 5 5
	Average	70%	100%
Operational Director- Kevin Padayachee	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 4 4	5 3 4 4
	Average	65%	80%
Director - Mike Hickman	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	2 1 3 4	3 2 3 4
	Average	50%	60%
Director - Janine Schneider	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	2 1 3 2	3 2 3 2
	Average	40%	50%
Marketing Director - Paul Mahlka	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 4 1 2	3 4 2 2
	Average	50%	55%
Alt Director - Nico Holtzhauzen	1. Resource Management 2. Team Building	1 2 1	2 4 2

	3. Leadership 4. Recognition	3	4
	Average	35%	60%
Head of Finance - Siyanda Ntuli	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 3 2	4 2 3 2
	Average	50%	55%
Human Resource - Mathews Minis	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	3 2 4 3	4 3 3 4
	Average	60%	70%
Estimating and Buyer - Anne Mocke	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	2 2 2 4	3 3 3 4
	Average	50%	65%
Receptionist - Mandy Jacobs	1. Resource Management 2. Team Building 3. Leadership 4. Recognition	4 4 4 4	5 5 5 5
	Average	80%	100%

Table 5: The table above shows the Sample/Population plan of KPMM Construction employees that were used in the study to determine the effectiveness of the QMS in relation to employee

The Methodology and formula used is the same as for ISF Services.

A Population Plan is utilized for the customer satisfaction surveys, since KPMM Construction has one recognizable client and ISF Services have 2.

The methodology in which was utilized was as follows:

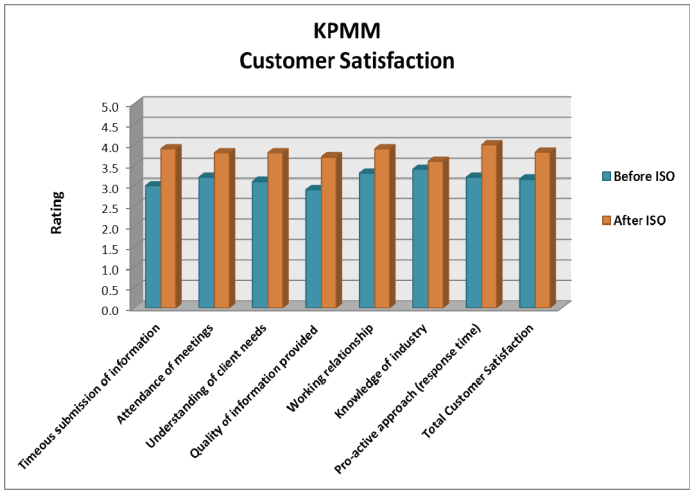
Step 1
A list of clients was obtained from each Organization.

Step 2
A questionnaire format was created with the organization in accordance to the contractual agreements with the client, that were assessed before ISO 9001:2008 Implementation.

Step 3
After the implementation the same client with the same criteria of measurements from the contract were measured to obtain a analysis.

6.2.3 KPMM Construction Customer Satisfaction Ratings

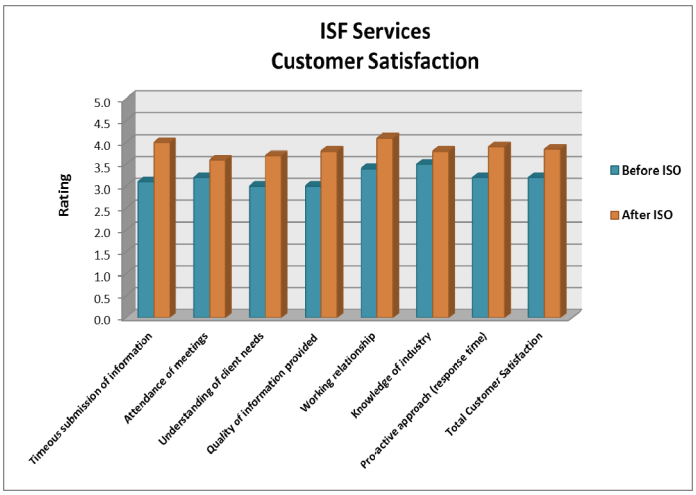
The main aspect of ISO 9001 is to measure client satisfaction and a significant increase in the ratings of customer perception is shown in the graph below. The study shows a higher rating of customer satisfaction after ISO certification than before.



Graph 1: Showing the Customer satisfaction before and after ISO certification for KPMM.

6.2.4 ISF Services Customer Satisfaction Ratings

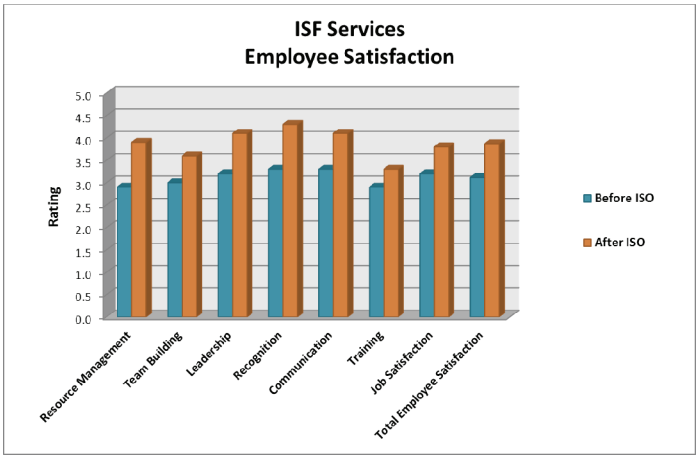
ISF Services show a significant rise in their ratings after ISO certification and the graph shows a greater rating than that of KPMM Construction.



Graph 2: Showing the Customer satisfaction before and after ISO certification for ISF.

6.2.5 ISF Services Employee Satisfaction Ratings

The significant increase in recognition in the implementation of ISO 9001 for the employees in ISF Services can be seen in the graph below:



Graph 3: Showing the Employee satisfaction of employees before and after ISO certification for ISF Services.

6.2.6 KPMM Construction Employee Satisfaction Ratings

The graph below shows how KPMM Construction was rated before and after ISO certification, there were employees who were less satisfied with their work before ISO certification, then after ISO certification the employees became more satisfied with their work, due to the significant impact of control of multiple processes.

Graph 4: Showing the Employee satisfaction of employees before and after ISO certification for KPMM Construction.

6.2.7 Customer Satisfaction Analysis

For Customer Satisfaction, all ratings have increased after the implementation of the QMS in both firms. In KPMM, the most improved Customer Satisfaction categories are Timeous submission of information and Pro-active approach. Both of these categories have increased by 8%. Timeous submission of information as well as having a Pro-active approach both result in work being completed faster, thus deadlines being met and tasks being completed within schedule. This ultimately means more satisfied and happy clients. In ISF, Timeous submission of information has increased by 8%, Understanding of client needs has increased by 7% and Quality of information provided has increased by 9%. Understanding client needs primarily results in client specifications being more accurately defined, resulting in the most appropriate solution and improved quality of work. Providing quality information results in less work in managing and controlling information, thus less time wasting, ultimately resulting in more efficiency. All these aspects finally result in customers being more satisfied.

Concluding the Average Customer Satisfaction before and after ISO 9001:2008 Certification, the results are shown below, for both organizations:

Before ISO 9001:2008 Implementation (Overall Customer Satisfaction)

- KPMM Before ISO 9001 (Average) 68.45%
- ISF Services Before ISO 9001 (Average) 65.75%

After ISO 9001:2008 Implementation (Overall Customer Satisfaction)

- KPMM After ISO 9001 (Average) 72.15%
- ISF Services After ISO 9001 (Average) 75.95%

6.2.8 Employee Satisfaction Analysis

For Employee Satisfaction, all ratings have increased after the implementation of the QMS in both firms. The two most improved areas are Resource Management and Recognition. Resource Management has increased by 11% in KPMM and by 8% in ISF. Recognition has increased by 13% in KPMM and by 10% in ISF. Resource Management is vital in most organisations. If resources are managed effectively, productivity and efficiency increases tremendously. Company recognition is directly proportional to new clients. Therefore, the increase in company recognition means that the client base will increase.

6.3 Survey on ISO QMS Benefits

The second method used to collect and analyse data on the perceived benefits of implementing an ISO QMS was a survey. The survey was carried out a few

months after the implementation of the QMS in both companies. Various benefits were stated and employees were required to state whether they completely agree, agree, neutral, disagree or completely disagree. Once the surveys were answered and received, they were analysed to determine which benefits the majority of employees strongly agree with. The survey was completed by various people within each department as well as top management. The survey is shown below:

Benefits	Completely Agree	Agree	Neutral	Disagree	Completely Disagree
Improved Service Levels					
Market & Tender Aquisition Increased					
Supplier Relations Improved					
Coordination between Departments Increased					
Cost Reduction					
Risk Reduction					
Improved Quality Levels					
Improved Document Control					
Improved Consistency					
Improved Management Control and Reporting					
Improved Permanenet Problem Resolution					
Employees know exactly what to do					
Duplication Reduction					
Enhanced Communication					
Improved Performance					

Table 6: Table above showing the benefits of Implementing ISO 9001

The survey results were analysed and the top 5 perceived benefits are summarised in the charts below:

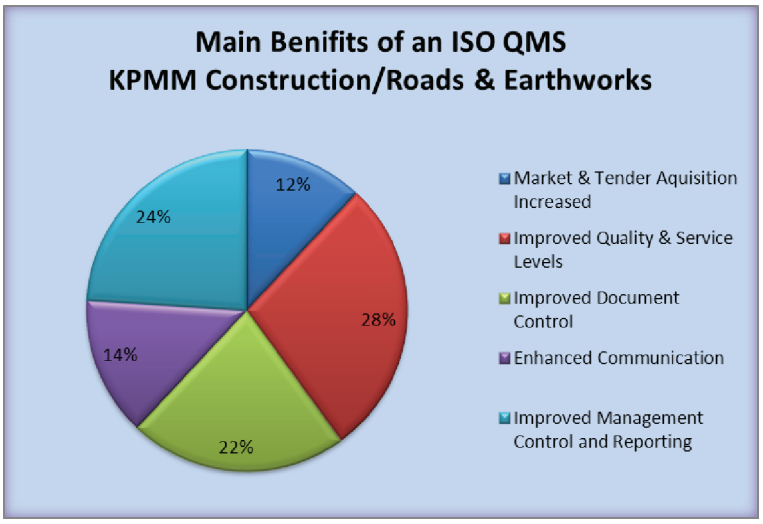


Chart 5 (Benefits of an ISO QMS):

According to the average KPMM employee who took the survey, improved quality and service levels was perceived to be the greatest benefit. The next best perceived benefit was improved management control and reporting.

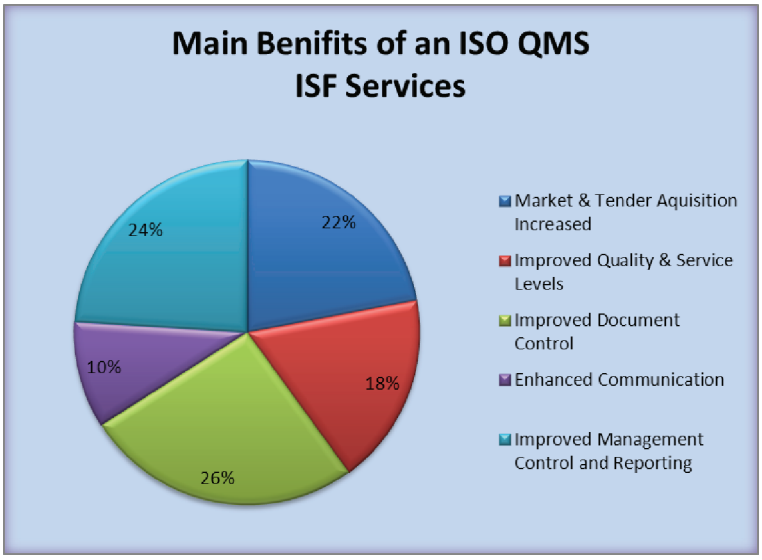


Chart 6 (Benefits of an ISO QMS):

Main Benefits of ISF Services of becoming certified with ISO 9001. A significant improvement of document control of 26%, with a 24% market and tender increase, allowing the business to enter new markets and obtain more business.

6.4 Key Performance Indicators

The final method used to determine the impact of ISO QMS implementation was the analysis of Key Performance Indicators of employees at both firms. KPI's of employees in all departments as assessed by management before and after ISO QMS implementation were obtained from both companies.

The following data and graphs depict the Key Performance Indicators for both firms within their respective departments, before and after ISO QMS implementation.

ISF Services								
Key Performance Indicators per Department								
Number of Employee	Business Development		Finance & HR		Project Admin		Project Management	
	Before ISO	After ISO	Before ISO	After ISO	Before ISO	After ISO	Before ISO	After ISO
1	70%	73%	69%	78%	71%	82%	69%	79%
2	72%	75%	65%	74%	68%	76%	75%	82%
3	74%	76%	71%	78%	75%	84%	72%	83%
4			74%	81%	69%	77%	70%	81%
5							68%	79%
Average	*72%*	*75%*	*70%*	*78%*	*71%*	*80%*	*71%*	*81%*

Table 7: Table above showing the Key Performance Indicators of the Departments before and after ISO 9001 for ISF Services

ISF Services consists of the following departments:

- Business Development with 3 employees
- Finance and HR with 4 employees
- Project Admin with 4 employees
- Project Management with 5 employees

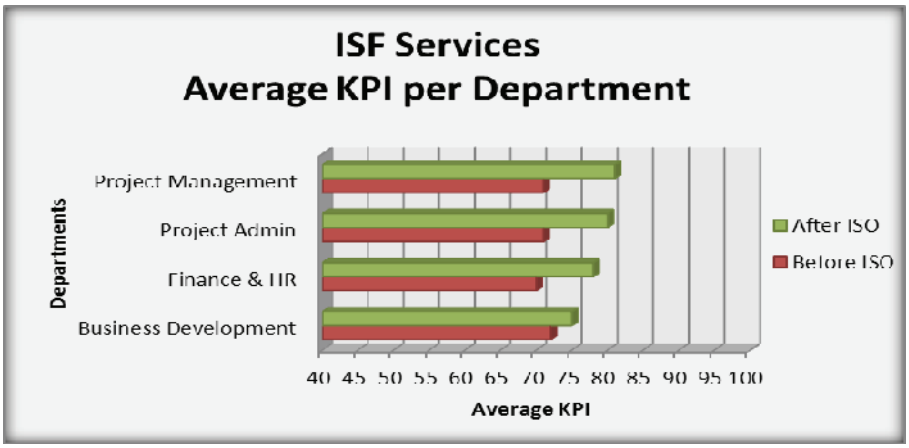


Chart 7: Graph above showing the average KPI's before and after ISO 9001 for ISF Services

The average Key Performance Indicators for each department before and after ISO QMS implementation are shown on the above graph. We notice that all the average KPI for each department has improved. The Business Develop average KPI increased by 3%, Project Admin department by 9%, Finance and HR department by 8% and the Project Management department by 9%. Thus overall company performance has increased, which means that the ISO QMS implemented has improved quality, productivity and efficiency in each department.

KPMM Construction/Roads & Earthworks										
Key Performance Indicators per Department										
Number of Employee	Financial/Admin Dept.		Estimating Dept.		Buying Dept.		Surfacing Dept.		Plant Dept.	
	Before ISO	After ISO	Before ISO	After ISO	Before ISO	After ISO	Before ISO	After ISO	Before ISO	After ISO
1	68%	74%	72%	80%	69%	78%	72%	81%	73%	82%
2	71%	75%	74%	82%	73%	83%	68%	76%	66%	78%
3	68%	73%	70%	81%	72%	81%	69%	79%	70%	78%
4	75%	79%					73%	83%	72%	81%
5	69%	74%					70%	81%	69%	78%
6	72%	80%								
7	71%	81%								
8	70%	83%								
Average	***71%***	***77%***	***72%***	***81%***	***71%***	***81%***	***70%***	***80%***	***70%***	***79%***

Table 8: Table above showing the Key Performance Indicators of the Departments before and after ISO 9001 for KPMM Construction

KPMM Construction consists of the following departments:

- Financial/Admin with 8 employees
- Estimating Department with 3 employees
- Buying Department with 3 employees
- Surfacing Department with 5 employees
- Plant Department with 5 employees

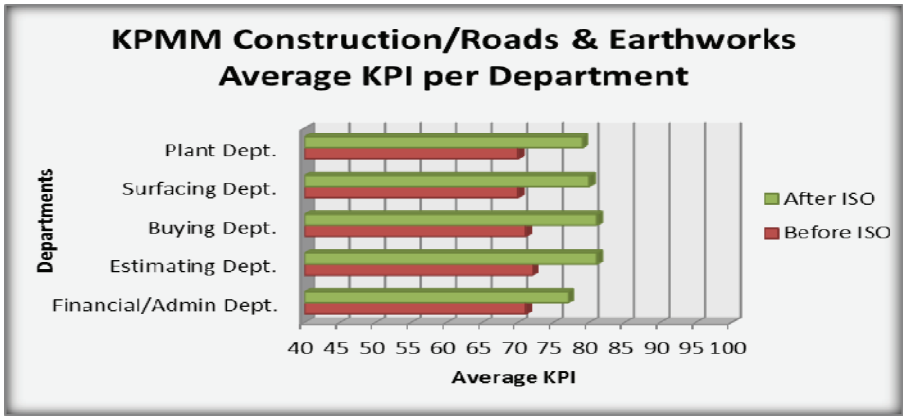


Chart 8: Graph above showing the average KPI's before and after ISO 9001 for KPMM Construction

The average Key Performance Indicators for each department before and after ISO QMS implementation are shown on the above graph. All KPI's have tremendously improved after the implementation of the ISO QMS.

The Finance/Admin department average KPI increased by 6%, the Estimating department by 9%, the Buying department by 10%, the Surfacing department by 10% and the Plant department by 9%. Once again, overall company performance has increased, proving that implementing an ISO QMS has proven benefits and proves to increase quality, productivity and performance.

In conclusion, after analysing Feedback Forms with ratings, Employee Surveys and Key Performance Indicators, for a service company and a construction company, it is clear that the implementation of an ISO Quality Management System has benefitted both companies with regards to performance, quality of work done and productivity of employees. Overall customer satisfaction, employee satisfaction and supplier perception has also improved.

Chapter 7: Conclusion and Recommendation

In conclusion, ISO 9001:2008 can be implemented in virtually any business as it was developed in such a way that the general guidelines used in the process can be integrated into any type of industry (Organization, International Standards, 2009).

From the study it can be seen that the development of a Quality Management System in line with ISO 9001:2008 Standard, has a significant impact for both Service and Manufacturing industries. An average of the key performance indicators for ISF Services and KPMM Construction before and after:

ISF Services Before ISO 9001: (72 + 70 + 71 + 71) × 100 ÷ (4 Departments) = 71%

ISF Services After ISO 9001: (75 + 78 + 80 + 81) × 100 ÷ (4 Departments) = 79%

KPMM Construction Before ISO 9001: (71 + 72 + 71 + 70 + 70) × 100 ÷ (5 Departments) = 71%
KPMM Construction after ISO 9001: (77 + 81 + 81 + 80 + 79) × 100 ÷ (5 Departments) = 80%

The calculation of each departmental performance and the total average thereof for each Organization before and after ISO 9001 Certification concludes a 9 - 10% increase in value for each organization.

A significant impact on the overall client satisfaction after ISO 9001:2008 can be seen from both organizations as discussed in the analysis chapter. A summary of the Analysis shows that KPMM Construction Client Satisfaction had risen by 3.7% after ISO 9001:2008 Implementation. Whilst ISF Services had a 10.2% increase in client satisfaction after ISO 9001:2008 Implementation.

ISF Services increased its clientele by 200% over the past 12 months after becoming ISO 9001:2008, with their respective clients gaining the assurance of Quality.

The organizations taken for this study for before and after ISO allow one to conclude that the development of a Quality Management System in line with the ISO 9001 standard add significant value to the organization and an increase of employee and customer satisfaction.

This study shows clearly the benefits of a Construction and Service industries benefits of implementing ISO 9001. The Quality Management system in line with the standard allows customer and employee satisfaction and allows the organizations to be in control of their processes.

Once the development of the Quality Management System is concluded and Top Management sign of on all Policies, Processes and Procedures. The project plan continues with an on the job training for all employees and thereafter an Internal Audit is conducted with trained internal auditors to identify any deficiencies within the system and the concluded with an action plan during the Management Review meeting. Once all the corrective actions have been completed SABS or any certification body is contacted for an external certification audit.

The system and organizations progress does not end here as continuous improvement being the fundamental objective of ISO 9001, the process only begins after certification to maintain the QMS and ensure that the system is being upheld and implemented appropriately with continuous improvement being the forefront. The standard shows that continuous monitoring of the Mandatory procedures allows organizations customer perception to increase.

The study shows that the organizations who have developed and implemented a Quality Management System in accordance with the ISO 9001:2008 standard have had a significant positive impact to their business with processes controls and higher customer satisfaction ratings, which justifies the objectives of adding value to the organization by improving its performance.

Validation of this study and process can be seen by the success of ISF Services by obtaining the ISO 9001:2008 certificate through SABS. See Annexure B.

To ensure sustainability of the system and progression of the QMS, ISF and KPMM included Quality as an indicator of each employee's Performance Appraisal, with regular audits, improvement teams and management review meetings. The governing body for each company, was delegated from Top Management to ensure that the system is driven and improved.

Chapter 8: References

- Anand, K. B., Laxmi, A. B., & Maruti, S. P. (2012). *An expert advisory system for ISO 9001 based QMS of manufacturing environment*. Paper presented at the 2012 International Conference on Communication, Information & Computing Technology (ICCICT), Mumbai, India.

- Chi-Hsiang, W., & Dwen-Ren, T. (2009). *Integrated installing ISO 9000 and ISO 27000 management systems on an organization*. Paper presented at the 43rd Annual 2009 International Carnahan Conference on Security Technology, 2009.

- STANDARDS OF SOUTH AFRICA, 2008. ISO 9001:2008, Quality management systems requirements, Clause 1-8. Switzerland.

- James R.Evans, 2008, 2005. Quality & Performance Excellence Management, Organization and Strategy. 5th Edition. U.S.A page 54 - 114, 21/03/2012.

- DISSANAYAKA, S. M, M. M KUMARASWAMY, and K KARIM. 2001. Evaluating outcomes for ISO 9000 - certified quality systems for Hong Kong constructors. *TOTAL QUALITY MANAGEMENT, VOL. 12, NO. 1.*, p.12.

- JOHN C. ANDERSON, Manus Rungtusanatham and Roger G. Schroeder. 1994. A Theory of Quality Management Underlying the Deming Management Method. *The Academy of Management Review Vol. 19, No. 3.*, p.38.

- KENNEDY, William. 2010. Implementing ISO 9001:2008. *In*: *The Implementation of a Quality Management System for Consulting Engineers*. Johannesburg: CESA, p.93.

- LABOUR, The South African Department of. 2004. *Amended Occupational Health and Safety Act No 85 of 1993*. Cape Town: Department of Labour.

ANNEXURE A

KPMM ORGANIZATIONAL STRUCTURE

ANNEXURE A KPMM COMPANY STRUCTURE - 2012

KPMM CONSTRUCTION I KPMM ROADS AND EARTHWORKS

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

KPMM CONSTRUCTION

Managing Director	Kevin Twiddy
Operational Director	Kevin Padayachee
Director	Mike Hickman
Director	Jannie Schneider
Marketing Director	Paul Mahlaka
Alt Director	Nico Holtzhauzen

ESTIMATING DEPARTMENT

Estimating Director	Kevin Padayachee
Buyer	Annie Mocke

FINANCIAL / ADMIN DEPARTMENT

Managing Director	Kevin Twiddy
Head of Finance	Siyanda Ntuli
Financial Manager	Jennifer Kirsten
Creditors	Myra Stevens
Creditors	Roelin Gouws
Human Resources	Mathews Mnisi
Polokwane Reception	Lynette Botes
JHB Reception	Mandy Jacobs

BUYING DEPARTMENT

Buying Director	Kevin Padayachee
Buyer	Annie Mocke

PLANT DEPARTMENT

Plant Director	Jannie Schneider
Plant Manager	Hans Coetzee
Ass. Plant Manager	Rudi Du Toit
Other Staff	
Jan Booysen	Jan Booysen
Braam Stoltz	Elias Mabibilala
	Johan Erasmus

SURFACING DEPARTMENT

Managing Director	Kevin Padayachee
Operational Manager	Riaan JV Rensberg
QS / Planning / Admin	Edwin Breetzke
Operations	Francois Van Wyk
Surfacing Foreman	Isaac Mofokeng

KPMM ROADS & EARTHWORKS - GAUTENG

Managing Director	Kevin Twiddy
Operational Director	Kevin Padayachee
Director	Mike Hickman
Director	Jannie Schneider
Marketing Director	Paul Mahlaka
Alt Director	Nico Holtzhauzen

KPMM ROADS & EARTHWORKS - LIMPOPO

Managing Director	Kevin Twiddy
Operational Director	Kevin Padayachee
Director	Mike Hickman
Director	Jannie Schneider
Marketing Director	Paul Mahlaka
Alt Director	Nico Holtzhauzen

NICO HOLTZHAUZEN - OFFICE MANAGER

SURVEYORS

All Sites	Derek Joubert
T458 - Percy	Manie Van Staden
154 - Mahvunda	Andries Ramashala
T458 - Percy	Cedrick Maboya
T440 - Siloam	Klass Ntuli
NRA R023	Sylvester Ramotsamai
T440 - Siloam	Robert Motolla
UOVenda	Thomas Molapo
44/2010	Christina Moyaha

GCT 1504 - Kempton Park / N14 Surfacing

Contracts Director	Kevin Padayachee
Site Manager	Bradely Prigge
QS	Johannes Soyani
Foreman	Kobus Richter
Safety Officer	Neels Marais
Clerk	Alphius Malesa
Clerk	Lindiwe
Clerk	Lindiwe

NRA R023 - Balfour Greylinstad

Contracts Director	Kevin Padayachee
Site Manager	Mark Errera
QS	Johannes Soyani
Foreman	Kobus Richter
Earthworks Foreman	Joseph Motsoeneng
Earthworks Foreman	Elmon Molla
Safety Officer	Neels Marais
Clerk	Alphius Malesa
Driver	Peter Maelane

T440 - SILOAM

Contracts Director	Kevin Padayachee
Site Manager	Jeann Van Tonder
QS	Steven Deverias
Foreman - EW	Kobie Human
Foreman - EW	Hendrik du Preez
Foreman	Eben Coetzee
Foreman - Conc	Adros Mmekwa
Drainage Foreman	Ismael Molefi
Foreman - Conc	Rexon Sibana
Foreman	Given Malinga
Clerk	Adam

T458 - PERCY FYFE

Contracts Director	Kevin Padayachee
Site Manager	Johan Kritzinger
QS	Jermaine Neethling
Foreman - EW	David Mothlabane
Foreman - EW	Frans Baloyi
Foreman - Conc	Jackson Shibambu
Foreman - Conc	Isaac Tshabangu
Clerk / Jnr	Lodrick Malatjie

44/2010 - Cluster 2 Extension

Contracts Director	Kevin Padayachee
Contract Manager	Lane Breetzkee
Foreman - Conc	Isaac Tshabangu
General Foreman	Mesh Magagula
Clerk	Samuel Motsoeni

UOVenda - Earthworks

Contracts Director	Mike Hickman
Site Manager	Gert Pretorius
QS	Marsell Vermeulen
Foreman - EW	Patrick Masiapala
Concrete Foreman	Mathews Magoro
Clerk	Blessing Makhura

UOVenda - Phase 1

Contracts Director	Mike Hickman
Site Manager	Logan Naidoo
QS	Marsell Vermeulen
Concrete Foreman	Mathews Magoro
Clerk	Blessing Makhura

154 / 2009 - Mahvunda

Contracts Director	Mike Hickman
Site Agent	Herman Calitz
QS	Jonty Malaka
Foreman - EW	Clarens Bartlett
Foreman - EW	Arno Terblance

ANNEXURE B

VALIDATION OF THESIS

1. Letter of Confirmation and Validation of the Quality Management System from ISF Services
2. ISO 9001:2008 Certificate from the South African Bureau of Standards (SABS) For ISF Services
3. Letter of Confirmation and Validation of this Thesis from Small Enterprise Development Agency Science and Tchnology Programme (SEDA STP)

ISF SERVICES
53 Phillip Engelbrecht Avenue
Woodhill Office Park, Building 7
First Floor
Meyersdal
011 867 3090 – Tel
011 867 3095 - Fax

Thursday 4th April 2013

RE: LETTER TO CONFIRM THAT MR MUHAMMAD ABDULLAH ALI HAS SUCCESSFULLY DEVELOPED A QUALITY MANAGEMENT SYSYTEM (QMS) FOR ISF SERVICES.

This letter serves as confirmation that Mr Muhammad Abdullah Omar Ali from World Wide Industrial & Systems Engineers CC has provided his services to ISF Services in developing a Quality Management System (QMS) for our company.

He followed processes to develop this system, in accordance with the ISO Standard. He has successfully maintained our system for the past 4 years and continues to do so.

Mr Ali has also helped us in attaining ISO certification from SABS.

For further information do not hesitate to contact myself, Mr Ian Funeka, as per the details below:

Tel: 011 867 3090

Cell: 083 212 5671

Yours Sincerely,

Ian Funeka
(Chief Executive Officer)

ISF SERVICES
53 Phillip Engelbrecht Avenue, Woodhill Office Park,
Building 7, Unit 27 & 28 First Floor, Meyersdal
P.O. Box 602, Ridgeway, 2099

Reg No. 2006/020945/07
VAT Reg No. 4360239315

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

SABS

Certificate of Registration

This is to certify that the Quality Management System of

ISF CONSTRUCTION SERVICES (PTY) LTD RIDGEWAY

has been assessed and found to satisfy the requirements of

ISO 9001:2008 QUALITY MANAGEMENT SYSTEMS

in respect of

PROVIDING TECHNICAL AND CONSTRUCTION PROJECT MANAGEMENT SERVICES

EXCLUDING CLAUSE:
7.6 CONTROL OF MONITORING AND MEASURING EQUIPMENT

This certificate, including the schedule which forms an integral part thereof;
- is issued without alteration;
- is identified by the applicable registration number;
- is subject to any condition or limitation contained therein;
- is valid subject to ongoing compliance with certification requirements.
- bears the embossed SABS Commercial seal. In the absence of the seal, the certificate and the schedule shall be invalid; and
- the certificate may be authenticated by referring to the register of "Certified Clients" on the SABS Commercial website (www.sabs.co.za)

Registration Number	LS 4474
Effective Date	30 June 2010
Expiry Date	29 June 2013
Date of Original Registration	30 June 2010
Director	

SABS COMMERCIAL (Pty) Ltd.
1 Dr Lategan Rd, Groenkloof, Pretoria
Republic of South Africa

seda
SMALL ENTERPRISE DEVELOPMENT AGENCY
a member of the dti group

Thursday 4th April 2013

RE: LETTER TO CONFIRM THAT MR MUHAMMAD ABDULLAH OMAR ALI HAS SUCCESSFULLY COMPLETED VARIOUS QUALITY AND INTEGRATED MANAGEMENT SYSTEMS FOR SEDA STP.

This letter serves to confirm that Mr Muhammad Abdullah Omar Ali from World Wide Industrial & Systems Engineers CC has successfully provided his services to KPMM Construction and various other Organizations on behalf of Seda Stp, the work he has completed for these companies is up to standard and most importantly in accordance with the ISO Standard.

Seda Stp can confidently say that his work is of superior quality and he never fails to deliver on time.

For further information kindly contact Malembe Mtsweni on *012 441 1178* or Elia Netshisaulu on *012 441 1052.*

Yours Sincerely,

Malembe Mtsweni
Manager: Conformity Assessment & Training (Stp)

Elia Netshisaulu
Project Officer: Conformity Assessment & Training (Stp)