

DEVELOPMENT AND IMPLEMENTATION OF A
QUALITY MANAGEMENT SYSTEM FOR SWEMGAT
FRANCHISE

By

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Submitted in partial fulfilment of the requirements for the degree of

BACHELORS OF INDUSTRIAL ENGINEERING

in the

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND
INFORMATION TECHNOLOGY



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

UNIVERSITY OF PRETORIA

PRETORIA

October 2009



DEPARTEMENT BEDRYFS- EN SISTEEMINGENIEURSWESE
DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

VOORBLAD VIR INDIVIDUELE WERKOPDRAGTE - 2009
FRONT PAGE FOR INDIVIDUAL ASSIGNMENTS - 2009

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Werkopdragnommer Assignment number	Final Year Project
Onderwerp Subject	Development and Implementation of Quality Management System for Swemgat Franchise
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EXECUTIVE SUMMARY

If they want to survive, small businesses must focus on satisfying customers by providing the products and services of the best quality, (Rhey et al, 2001). Companies and businesses that continuously deliver quality products and services that meet customer requirements are more likely to retain or grow their market share. This capability is every business's desire, since the increased market share invariably improves the chances of increased profits and satisfied shareholders. This too is the case of Swemgat Franchise.

Swemgat Franchise is a pool and spa specialist business that offers all products and services related to Swimming pools and spas. The Franchisor started the company 11 years ago and in the past 9 years of operation the owner realised the potential for franchising. The aim of the Franchisor is to attain 2% of the overall South African pool and spa market, resulting in 37 outlets, by 2015. This it was decided could only be achieved by continuously providing products and services of equal and conforming quality at all current and future franchise outlets. To do this the Franchise required a system of methods, tools and techniques to assist and ensure the delivery of products and services that meet or exceed customer requirements.

The project aimed to develop and implement an ISO 9001:2008 (E) based Quality Management System (QMS). The developed QMS would provide the Franchise with the required methods, tools and techniques that could assist them in continuously delivering products and services of conforming and suitable quality. The project aimed to deliver the required documentation required by the ISO standard including the required documented procedures to assist the Franchise in operations and product delivery.

The project also investigated the use of a Content Management System (CMS) to facilitate the managing of information and knowledge within the Franchise. The Liferay CMS solution was implemented and the required documentation developed.

The QMS implemented in the Franchise will enable them to increase the quality of products and services offered and meet or exceed customer requirements. This will greatly increase their chances of capturing the desired market share and assist the Franchisor in achieving the aspired goal. The implemented CMS will aptly improve the communication and sharing of knowledge and information within the Franchise.



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1. INTRODUCTION

BACKGROUND ON SWEMGAT FRANCHISE

Swemgat is a swimming pool company that specializes in installing and servicing swimming pools, spas and spa pools. They are involved from design to final product and cater to all customer's needs and lifestyles. The company was started in 1998 by Hendrik Ehlers in the Zwartkop area after perceiving a gap in the market for quality swimming pool and spa installation services. The business has grown to such an extent during the past 10 years that the owner has now decided to expand the business by franchising Swemgat.

During the past six months, two associates have already bought into the Swemgat Franchise Network. They are currently operating as independent owners governed under a franchise agreement, trading as Swemgat (Menlyn) and Swemgat (Midstream). The company strives to uphold a high standard of quality and the franchisor expects the franchisees to continue delivering a high standard of service.

Market research has shown that if they expand the network to include thirty-seven (37) franchisees, they will own approximately two (2%) percent of the total pool and spa market of South Africa (2007 base year). They have found that the market growth rate is between three and eight percent per annum.

PROBLEM DEFINITION

The franchise owner wants to focus on growing Swemgat's market share in Gauteng and desires to continue growing the franchise network to 37 outlets by the end of 2015. This will include approximately 17 outlets in Pretoria and 20 in the Johannesburg area. The franchisor wants to continue delivering quality installation services and products to customers. A quality control and management system will help in standardizing the franchise policies, processes and procedures. Such a system will provide the franchisees with a procedure manual, ensuring the provision of quality services and products while enabling the franchise to attain FASA accreditation. The use of an easily accessible knowledge management and document handling system will provide the franchisor and franchisees with information regarding all aspects of the enterprise.

However, the franchise currently has no form of quality control system, and franchisees do not have access to a standardized procedure manual. They rely on techniques of their own, resulting in different service levels between each franchise. The franchisor currently



possesses no means to view the progress of projects undertaken by the current two outlets. There also exists no means to determine whether the projects performed are conforming to the standards desired by the franchisor. The franchise does not possess a method or system to share information or knowledge. The only means of communication currently employed by the parties involved are emails and telephone conversations, resulting in erroneous information and miscommunication problems to arise.

In the event that Swemgat continues to delay implementing a solution to the problems faced, they will be unable to ensure the delivery of quality services and products. This could affect a loss of customers and an increase in non conforming products that need to be replaced or repaired, reducing profit and increasing expenses. The lack of a standardized procedure manual will also prevent the franchise from achieving FASA accreditation and realizing the desire of acquiring 2% of the market share. Franchisees will be forced to rely on emails and telephone conversations to provide the franchisor with relevant information, resulting in incorrect or incomplete information. This could result in time lost and increased expenses due to costly communication methods.

In order to ensure FASA accreditation and the continued delivery of quality service and products the project proposes to investigate methods and standards available, such as ISO 9001, to ensure quality service and product delivery through a Quality Management System. Research into methods to facilitate the effective sharing of knowledge and information will also be carried out to determine the best possible knowledge management and document handling methods. The project will also include the development of such a quality management system that will provide the franchisees with a standardized procedure manual together with an effective method to share knowledge and information.

PROJECT DOCUMENT FIGURES AND DIAGRAMS

The quality of some figures and diagrams in the project document does not reflect the required standard desired due to the size of these figures and diagrams. In order to provide the reader with the ability to view these images at the desired level of quality they have been included on the supplied project CD under the PROJECT DOCUMENT IMAGES. The reader is kindly referred to the digital images if clarity regarding the supplied figures and diagrams are required.

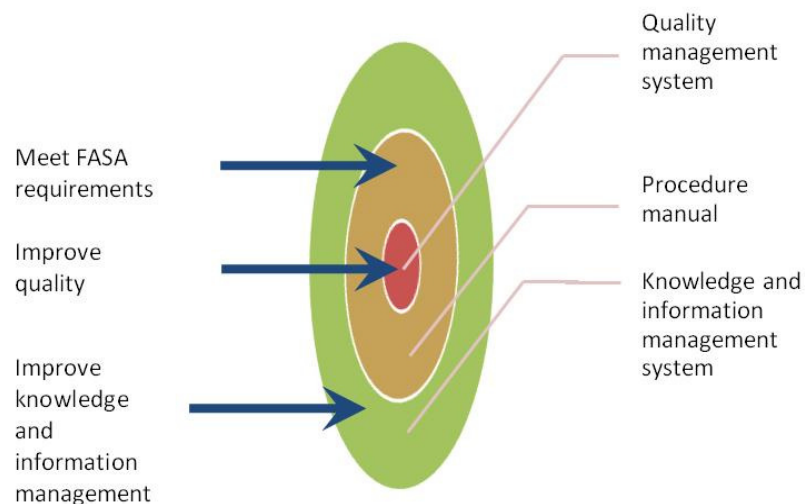
2. PROJECT AIM

The project's main aim is to improve the organisations quality of service delivery and help in attaining FASA accreditation and get the franchise registered with the organisation. This will require the development and implementation of a quality management system to provide the standardised policies, processes and procedures that the organization requires. The project will supply the franchise with the required functional areas in the procedure manual as well as a method and tool to ensure effective information and knowledge sharing. This will help increase the franchise value through improvement of performance and service quality.

The project therefore aims to improve quality and attain FASA registration through the supply of

- Quality management system
- Required areas of the Procedure manual
- Method to effectively and efficiently share knowledge and information

Figure 1: Project Aim





3. PROJECT SCOPE

The project will be concerned with the development and implementation of a Quality Management System that will be complemented by the application of a Content Management System. The Content Management System and Quality Management System will be easily accessible and usable.

Various Industrial Engineering methods, tools and techniques will be used to analyse and improve, if necessary, the current system and procedures as performed by the organisation.

PROJECT DELIVERABLES

The project will aim to deliver

- A Quality Management System
- The required documented Procedures
- A configurable Content Management System

These deliverables will form the proposed solution to improve the overall quality of services, products and procedures of the franchise in order to gain FASA registration and improve their market share.

PROJECT CONSTRAINTS

All projects contain some form of constraint. These constraints will need to be managed and controlled in order to successfully complete the project and deliver the desired results. The constraints that are faced include

- Budget – The project will need to be carried out on a specified budget. This will impact the decision process and type of content management system used.
- Time – The project forms part of the requirements for the bachelor degree in engineering, and needs to be concluded during the final year of study. This would mean that the project shall not be concerned with the follow up or monitoring of the quality management system. The project requires that the processes and procedures carried out by the franchise be observed, analysed and documented.
- Current Financial Environment – Due to unforeseen events and circumstances the financial environment that Swemgat finds itself in has changed dramatically. Due to these circumstances many of the projects and job orders that they anticipated did not realise. This placed a constraint on the student who could not view all procedures as



required and planned. This constraint was managed through organised and planned discussions with the Franchisor in order to understand the required procedures.

These discussion were held on the following dates

- 15th August
- 22nd August
- 12th September

From these interviews and meetings the information needed to develop the procedures and processes required was gathered. The developed procedures and processes were reviewed by the Franchisor in order to ensure that they accurately reflect the procedures performed in the franchise.

4. LITERATURE REVIEW

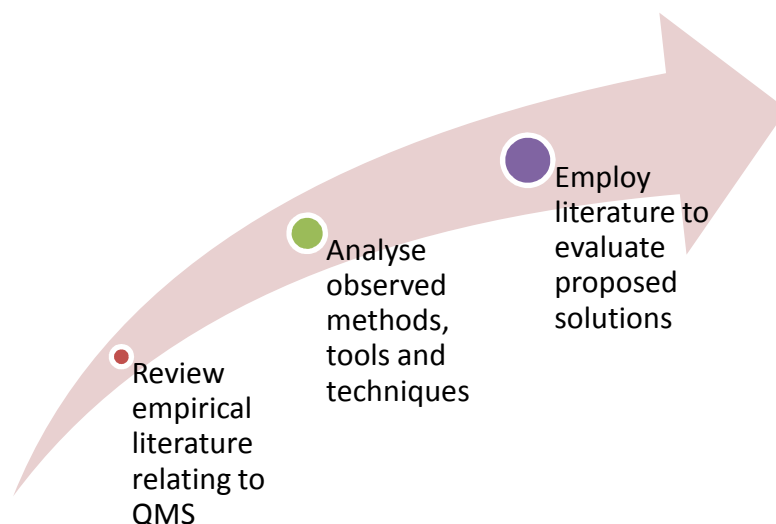
The literature study will help form the foundation on which the project is developed and through the successful analysis and thorough research of existing literature the methods, tools and techniques required to complete the project will be acquired. Jansen [2003] states that a literature review is a '*critical and integrative synthesis*' of the methods and techniques used by previous researchers working on the same problem being considered. He also recommends that a question be formulated that the literature review must attempt to answer; this question can be more clearly formulated once the goal of the literature study is determined. The goal of this literature study will be to

- Review other empirical literature relating to the project objectives
- Analyse the stated methods and techniques available for formulating of possible solutions
- Use available literature to evaluate proposed solutions

Therefore the literature study will address the question:

“What have researchers established and documented regarding quality management systems and how can this information be used to develop such a system?”

Figure 2: Literature Review Phases





TOTAL QUALITY MANAGEMENT

Total Quality Management (TQM) can be seen as a method or technique to improve and enhance the way that businesses and organisations are run. TQM as a technique to manage a business can be used effectively to achieve excellence and improve the chances of survival in the competitive industries of today. Numerous definitions for TQM exist, Tobin [1990] defines it as the totally integrated effort for gaining competitive advantage by continuously improving every facet of organisational culture. TQM arose in the 1980's in a response to the increasing competition from Japanese companies. Joubert [2002] defines the TQM approach as managing for total quality, effectiveness and competitiveness, and that it involves every activity and person at all levels in the organisation.

TQM is therefore the philosophy and principles that a business adapts and follows in order to continually improve all the processes performed in the organisation. This is done to ensure that the requirements of the customer are met while costs are actively being reduced. Ho [1993] states that the task businesses need to be accomplished, is meeting the customers' requirements, and since TQM aims at customer satisfaction, it ought to be implemented and practised. As a result it is clear that in order to ensure customer satisfaction the requirements of an effective TQM must be investigated.

Besterfield et al [2003] defines six fundamental principles required for the effective implementation of TQM. These requirements include

- A committed and involved management
- An unwavering focus on the customer
- The effective involvement and utilisation of the entire work force
- A continuous improvement of business and production processes
- Treating your suppliers as partners
- Establishing performance measures for your processes

The principles listed are indicative of solid and effective means of managing and operating a business. The implementation of a TQM based on these principles will help to improve the quality of services and products offered by an organisation by meeting the customers' requirements. The TQM can also assist in increasing productivity and lowering costs, helping the organisation maintaining or achieving a competitive position in the marketplace.

It should be noted that Tari [2005] found that there are no unique models for a good TQM and that a TQM consists of a network of interdependent elements, including critical factors,

practices, techniques and tools. This indicates that the TQM to be developed might include more principles required in implementation than found in the review. Therefore critical analysis of the organisations needs and requirements will be essential if the aim of improving the quality of services offered by the business is to be achieved. The quality of services offered will determine the profits and future growth of the organisation.

Figure 3: Total Quality Management drive force



One of the main tools that can be used to implement TQM is the Quality Management System (QMS). A decision was made to utilize and develop a QMS as the main method or technique to improve the quality of service delivery. Besterfield et al [2003], states that the quality management system is an exceptional and effective first step towards TQM. Therefore a critical analysis of literature and standards relating to quality management systems is required to develop such a system if the project is to be successful.



QUALITY MANAGEMENT SYSTEM

A Quality Management System (QMS) can be defined as the method an organisation manages the activities and processes performed in such a manner that customer requirements regarding quality are met. This is done while conforming to regulations and persuading continuous improvement on all levels. ISO [9000:2000] describes the QMS as a set of interrelated or interacting elements that the organisation uses to direct and control how the quality policies are implemented and the quality objectives are achieved. The South African Qualifications Authority defines a QMS as the sum of the activities and information an organisation uses to facilitate the consistent delivery of products and services that meet and exceed the needs and expectations of its customers, more cost efficiently and effectively, (SAQA 2001).

The implementation of a QMS is crucial for any organisation that desires to maintain or improve their market position. Organisations that employ QMS have a solid foundation for operations and generally find and utilize more opportunities and areas for improvement and cost reduction. Stelian [2008] found that in the current economic environment more companies implement QMS's in an effort of adding additional competitive advantages to their businesses. Company culture and values are influenced by QMS and organizations that implement such systems are more open and exposed to change. QMS emphasizes continuous and incremental improvement processes that tend to be in control.

The QMS employed by each organisation will be unique in the requirements and needs which it was develop and implemented for. Stelian [2008] therefore states that each organisation will require powerful tools to quantify criticalities, as well as robust ways to prioritise efforts under the framework of many project-related constraints. Several such tools and frameworks were identified and examined, these included award systems that are awarded by various nations as acknowledgement of the quality that organisations have exhibited. Many of these awards' assessment criteria are used by organisations as frameworks to base their QMS on. The identified frameworks include.

- Malcolm Baldrige National Quality Award

The award was instituted in America to promote the understanding of the requirements for performance excellence and competitiveness improvement, the sharing of information



on successful performance strategies and the benefits derived from using these strategies, NIST [1998]. The core values and concepts of the award include

- Leadership
- Strategic planning
- Customer and market focus
- Information and analysis
- Human resource focus
- Process management
- Business results

(NIST 1998)

- The EFQM Excellence Award

This award is awarded by the European Foundation for Quality Management (EFQM) and is rewarded to those companies that exhibit sustainable results across all areas of the EFQM measurement system, known as the EFQM Excellence Model. The core values and concepts of the award include

- Leadership
- Policy and strategy
- People management
- Resources
- Processes
- Customer satisfaction
- People satisfaction
- Impact on society
- Business results

(SAQA 2001)

- The South African Excellence Model

The SAEM can be seen as a method to affect continuous improvement in an organisation. The system makes use of the terms 'Enablers' and 'Results' to define the core criteria of the model. Enablers are the leadership of the organisation and the Results are the processes performed in the organisation. The Enablers describe how the Results are achieved, (SAQA 2001). The concepts and core criteria are

- Enablers: Strategy and planning
 Customer and market focus

People management

Resources and information management

- Results: Social responsibility

Customer and people satisfaction

Supplier and partnership performance

- The ISO 9001:2008(E) standard for QMS

The standard was developed by the International Organisation for Standardisation and relate to the development and requirements of a QMS. Quality Management Systems that are ISO 9001 certified and developed around the standard afford the organization and their customers with the reassurance that the QMS employed is both effective and efficient. The core values and concepts of the standard include

- Customer focus
- Leadership
- Involvement of people
- Process approach
- Systems approach to management
- Continual improvement
- Factual approach to decision-making
- Mutually beneficial supplier relationships (SAQA 2001)

From a critical analysis of these frameworks it becomes clear that there exists a consistency between the different frameworks identified. It was therefore decided to employ the ISO 9001:2008(E) set of standards as the framework to base the proposed QMS on. The reason for this decision is based on the consistency and relative ease with which successful QMS frameworks have been developed by numerous organisations. The standard is also the internationally accepted framework for an effective and efficient development of a QMS. Aldowaisan and Youssef [2004] states that the validity of ISO 9001 stems from the fact that many companies have reported considerate business gains because of the standards implementation. The amount of literature available relating to the ISO 9001 standard was also a contributing factor to the decision, since it would allow for a clearer picture to be



perceived as to how the QMS should be developed and what problems might be faced during that phase.

Table 1: Quick Internet search for QMS standards and requirements

	Google	Google Scholar
ISO 9001	317 000 000	3 410 000
MBNQA	298 000	2 040
EFQM	967 000	12 800
SAEM	242 000	66 000
	ISO 9001	ISO 9001

Therefore a critical analysis of the ISO 9001:2008(E) standard is required in order to determine the requirements stated by the standard to which the intended QMS will conform. The investigation will need to look into possible frameworks which can be utilised to develop the QMS. The advantages and disadvantages of the ISO standard framework should also be investigated in order to ensure that the QMS meets the needs and expectations of the organisation. Pun et al [1999] found that disciplines imposed on calibration, document control and internal audit through a QMS ensure a company operating efficiently with the current system, and in turn, facilitate quality improvement.

The identified methods, tools and techniques gained from the analysis of the standard will form the basis on which the design and development of the QMS is built.

ISO 9001:2008(E) QUALITY MANAGEMENT SYSTEM STANDARD

The ISO 9000 family of standards relate to the development and requirements of Quality Management Systems (QMS). The set of standards relate to what the organization, implementing the standard, does to meet their customer's requirements regarding quality, while meeting regulatory requirements and striving towards continuous improvement of its processes and performance. Charlotte [1992] stated that two-thirds of Western Europe's most prosperous companies were adopting ISO 9000 procedures and found that most required their suppliers to also gain ISO 9000 certification.

The ISO 9000 family of standards were developed as a result of a need for an internationally recognized QMS arising from the increase in international trade between various nations. Kochan [1993] stated that the objectives of the ISO 9000 standards were to remove trade



barriers among European Community (EC) and European Free Trade Agreement (EFTA) countries, Japan and the USA. The increase in trade could be hampered by possible problems stemming from different QMS standards developed by each nation. To prevent this problem ISO created the ISO technical committee TC 176 for Quality Management and Quality Assurance. This committee was responsible for the development and maintenance of the ISO 9001 and related standards.

The ISO 9001 standard was developed to define the requirements for Quality Management Systems (QMS). Quality Management Systems that are ISO 9001 certified and developed around the standard afford the organization and their customers with the reassurance that the QMS employed is both effective and efficient. Pun, Chin and Lau [1999] stated that the ISO 9001 standard, is merely process and customer focused, and relies on the ability of organisations to perform in accordance with the contracts with their customers. Brown et al [1997] found that the majority of respondents in their study saw ISO 9001 certification as preceding TQM and as a significant first step in implementing a TQM program, and few of their respondents thought that TQM should be implemented before the ISO 9001 certification. Ho [1993] states that organisations that want to implement TQM can use ISO 9000 as a vehicle or route to TQM, as the two are complementary.

ISO 9001:2008(E) REQUIREMENTS

The standard has five clauses relating to the requirements of a QMS that an organisation must meet in order for ISO certification. These five sections are: Quality Management Systems, Management Responsibility, Resource Management, Product or Service Realisation and Measurement, Analysis and Improvement. These requirements include

- Quality Management System

The requirements for the organisation are to develop, implement and improve the QMS. They should also develop the QMS documentation, which includes the quality manual that contains the quality policy and objectives of the organisation. The organisation must define how the quality system documents are to be controlled and maintained.

- Management Responsibility

The organisations management will have the responsibility to

- Support quality through the development, implementation and improvement the QMS



- Satisfy their customers' needs by identifying, meeting and enhancing customer satisfaction
 - Establish a quality policy by defining and managing the quality policy
 - Planning the quality objectives and QMS
 - Controlling the QMS
 - Review, examine and generate management reviews
- Resource Management

The organisation will be responsible for providing the resources to support the QMS, these will also include the human resources, infrastructure and work environment.

- Product or Service Realisation

The organisation will need to control the product realisation processes as well as managing the customer, purchasing and operational procedures and activities. Documentation on all these processes must be kept and maintained in order to monitor them and ascertain their effectiveness and quality.

- Measurement, Analysis and Improvement

The organisation will be responsible for the planning and implementation of methods to measure, analyse and improve the processes performed. These methods will primarily focus on customer satisfaction, internal audits of processes and products. The organisation shall analyse the collected data pertaining to the QMS and use it to develop and implement corrective and preventative actions to eliminate nonconformities.

BENEFITS OF ISO 9001 QUALITY MANAGEMENT SYSTEMS

As with all methods of development there exist benefits and drawbacks in using the ISO 9001:2008(E) standard to develop the QMS. Sampiao et al [2008] recognized that the benefits of ISO 9001 QMS can be divided into 2 (two) categories. These were found to be external benefits and internal benefits. The external benefits relate to marketing and promotional improvements while internal benefits relate to organisational improvements.

These benefits were investigated by Sampiao et al [2008] and are listed in table 2.

Table 2: Improvements offered by ISO 9001 Quality Management Systems

External Improvements	Internal Improvements
Access to new markets	Productivity improvements
Corporate image improvement	Product defect rate decreases
Market share improvement	Quality awareness improvements
ISO 9000 certification as a marketing tool	Definition of the personnel responsibilities and obligations
Customer relationship improvements	Delivery times improvements
Customer satisfaction	Internal organisation improvements
Customer communication improvements	Nonconformities decreases
	Customers' complaints decreases
	Internal communication
	Product quality improvement
	Competitive advantage improvement
	Personnel motivation

In order to attain these benefits an effective procedure writing method is used. Dew [2005], states that procedure writing is a main requirement of ISO 9001 QMS. Investigation into effective procedure writing is therefore required.

PROCEDURE WRITING AND DOCUMENTED PROCEDURES

Illetschko [1999] proposes that a Procedure Manual is the written study of the philosophy, systems, procedures, techniques and concepts under which a business is intended to operate, set forth in such a manner and style that it can be fully understood and easily referenced. From these findings it is clear that the procedure writing process will be of high importance if this project is to succeed.

The documented procedures will

- Maintain consistency and quality
- Uncover misunderstandings
- Form a valuable source of reference
- Be available on demand
- Allow for constant updating of processes performed

The development of effective procedures and procedure writing was investigated by Dew [2005] and the following five steps were suggested

- Make procedures short and to the point
- Write procedure with customer in mind, not expert
- Develop procedures than can be read and used under stress

- Use simple numbering and identification system
- Place procedures where user can get to them, such as placing procedures on an information or content management system

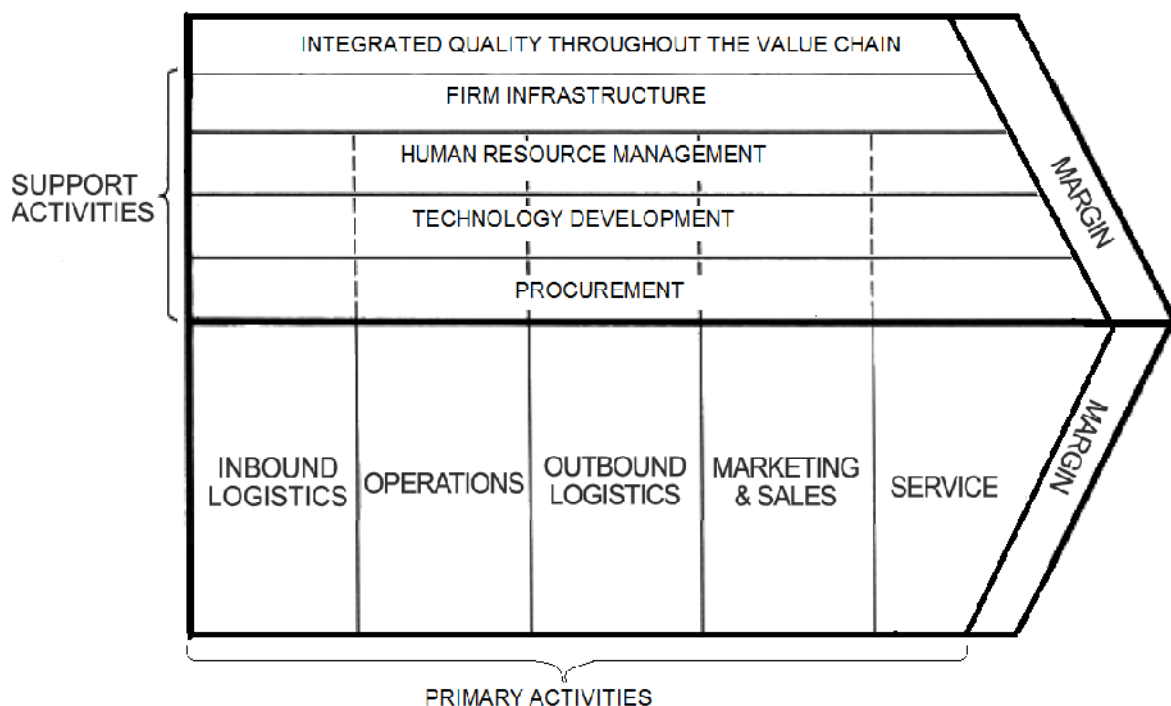
The documented procedures will be developed to accommodate the QMS and the proposed content management system. This will aid the franchisees with setup and running of their franchises.

By adhering to the FASA framework of procedure manuals the franchise can apply for registration as set out in the FASA guidelines for franchise registration, FASA [2008].

VALUE CHAIN ANALYSIS

The value chain, also known as value chain analysis, is a concept from business management that was developed by Michael Porter in 1985. Products pass through all activities of the chain in order and at each activity the product gains some value. The chain of activities gives the products more added value than the sum of added values of all activities. The value chain categorizes the activities of an entity into two main fields namely the primary activities and the support activities, (Porter, 1985). Figure 4 depicts the value chain.

Figure 4: Porter's Value Chain (Porter, 1985)





BUSINESS PROCESS MAPPING

Business process mapping is defined by Harvey [2005] as the set of technologies and standards for the design, execution, administration, and monitoring of business processes. Business process modelling tools can provide the business users with the ability to model the business processes and as a result, business process modelling tools can provide transparency into business processes.

According to Chase et al. (2006) the analysis of business processes will afford the organisation valuable insight into their process capacity, cost and throughputs. From the model it can become clear what the interdependencies between the processes are. The identified business process mapping tools that have been identified for this project are the IDEF 0, 3 modelling languages.

IDEF 0 refers to the method is used to specify function models. It allows the user to portray a view of the process including the inputs, outputs, controls and mechanisms.

- Inputs are resources consumed or transformed by the process;
- Outputs are the things created through the consumption/transformation of the inputs by the process;
- Controls are the elements guiding the processes: policies, guidelines, standards, laws;
- Mechanisms are the agents that accomplish the actions (activities) contained by the process.

Figure 5: Generic IDEF 0 Diagram

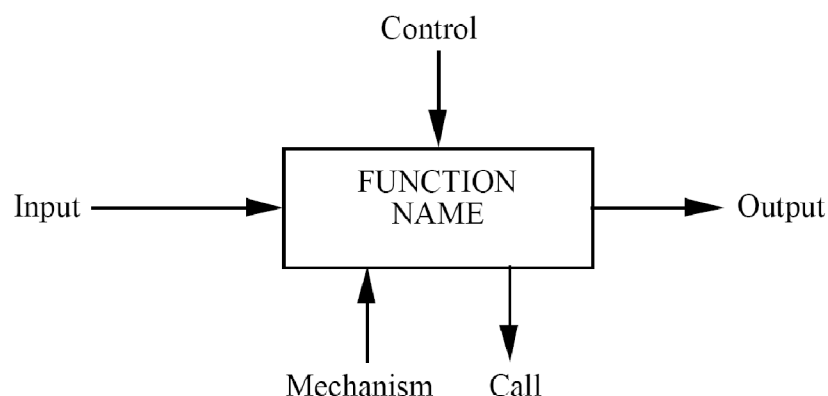
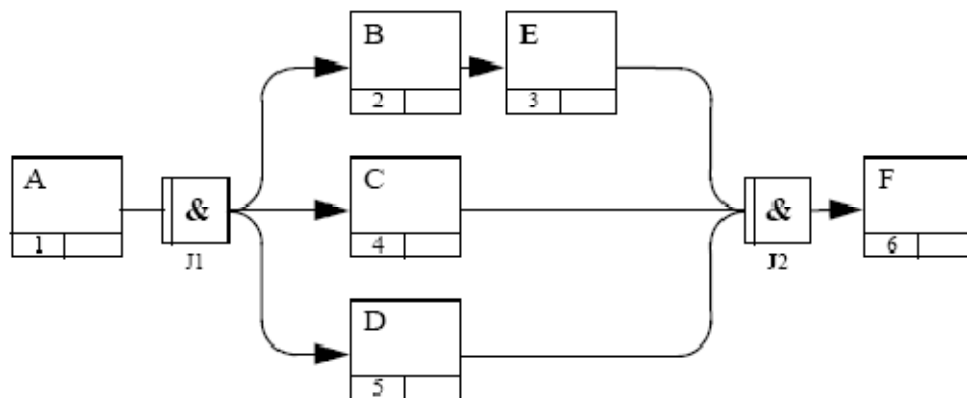


Figure 5 represents the generic IDEF 0 diagram. The diagram shows the activation of activities, not the flow of activities. The diagrams may also be decomposed into lower level diagrams. The hierarchy is maintained via a numbering system that organizes the parent and child diagrams.

IDEF 3 refers to the capture of process knowledge captured within a scenario. The basic syntactic unit in IDEF 3 modelling is an UOB (Unit of Behaviour). Depending on the surrounding structure, UOBs may become functions, activities, processes, etc. An UOB may be decomposed in other UOBs and may also be cross-referenced with IDEF0 activities, (Mayer et al, 1995). Figure 6 shows a generic IDEF 3 process flow diagram, with A, B, C, D, E and F as UOBs.

Figure 6: Generic IDEF 3 Diagram



CONTENT MANAGEMENT SYSTEM

A Content Management System (CMS) is the tool or means through which users can manage work flow required to create, edit, review, index, search, publish and archive different forms of digital information. This can include text, images, graphics, video, sound, documents and records. Boiko [2002] defines content management as a process of collecting, managing and publishing content, with content defined as any form of digital information. Such a system will help the franchise in controlling and managing their information, documentation and workflow in a more effective manner, improving quality of services and products offered.

The CMS should support the following

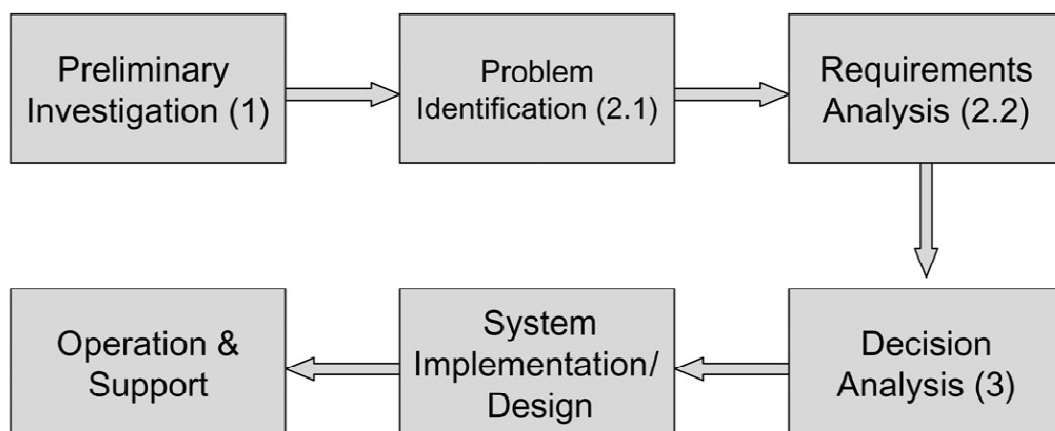
- Identification of users and their roles in the CMS
- Assigning positions and responsibilities to the content and content categories
- Workflow definition
- Event and change notifications
- Managing and tracking multiple versions of a single instance of content
- Capturing multiple forms of content
- Publishing of content to a central repository

Han [2004] states that the implementation of a CMS should provide the organisation with

- Improved information accuracy
- Increased flexibility
- Enhanced system management
- Reduced maintenance and costs

All of these benefits will assist in quality improvement. In order to decide on the best solution Han [2004] proposed that the systems analysis approach, as recommended by Whitten [2001], is implemented to determine the CMS that will be employed. This approach involves 6 phases that follow on each other. The final two phases will only be implemented in the final stage of the project during the June 2009 and October 2009 period. The approach is highlighted in figure 7.

Figure 7: Systems approach for CMS implementation - adapted from Han [2004]





This approach was implemented in order to determine the appropriate CMS that the franchise will implement. The first phase of the approach involved a study on available CMS solutions. The identified CMS solutions include

- Alfresco
- OpenCMS
- Liferay

The franchise required that the CMS help in the management of their content and assist in the workflow of the franchise. Assumptions were made regarding the CMS that was going to be employed by the franchise. These included the size of the organisation and type of CMS that would be used. This resulted in the following statement.

“The franchise will implement an open source CMS that is suited for a small to medium size organisation.”

The requirements of the franchise were analysed and reworked into a set of requirements against which the identified CMS solutions were compared in order to decide on the correct CMS. These requirements fell into one of two categories, functional and non-functional requirements as proposed by Han [2004].

Functional requirements can be reduced to what you want a system to do. Functional requirements therefore specify specific behaviours of a system. Functional requirements should be contrasted by non-functional requirements.

Non-functional requirements are requirements which specify criteria that can be used to judge the operation of a system, rather than specific behaviours. Typical non-functional requirements are reliability, scalability, and cost. The non-functional requirements are used as the restrictions on the solutions that will meet the functional requirements. Non-functional requirements can be divided into two types, performance and development.

The functional and non-functional requirements of the franchise were developed and were then used in a data analysis in order to determine the CMS solution that will be developed and implemented in the organisation. The analysis formed part of the solution approach section titled ANALYSIS OF CMS REQUIREMENTS AND SOLUTIONS.



LITERATURE REVIEW: CONCLUSION

The literature review indicated that in order to improve quality and meet the objectives of the project the development and implementation of an effective Quality Management System is essential. This will institute the first step towards total quality management.

Various approaches, requirements and frameworks for such a QMS was investigated and examined. These investigations were done in order to decide on the optimal methods, techniques and tools to be used for the development and implementation of a QMS. The approach and standard that was selected for the QMS is the ISO 9001:2008(E) standard relating to the requirements of a QMS. The procedure writing methods that were identified by Illetschko [1999] will form the basis for the procedure manual required.

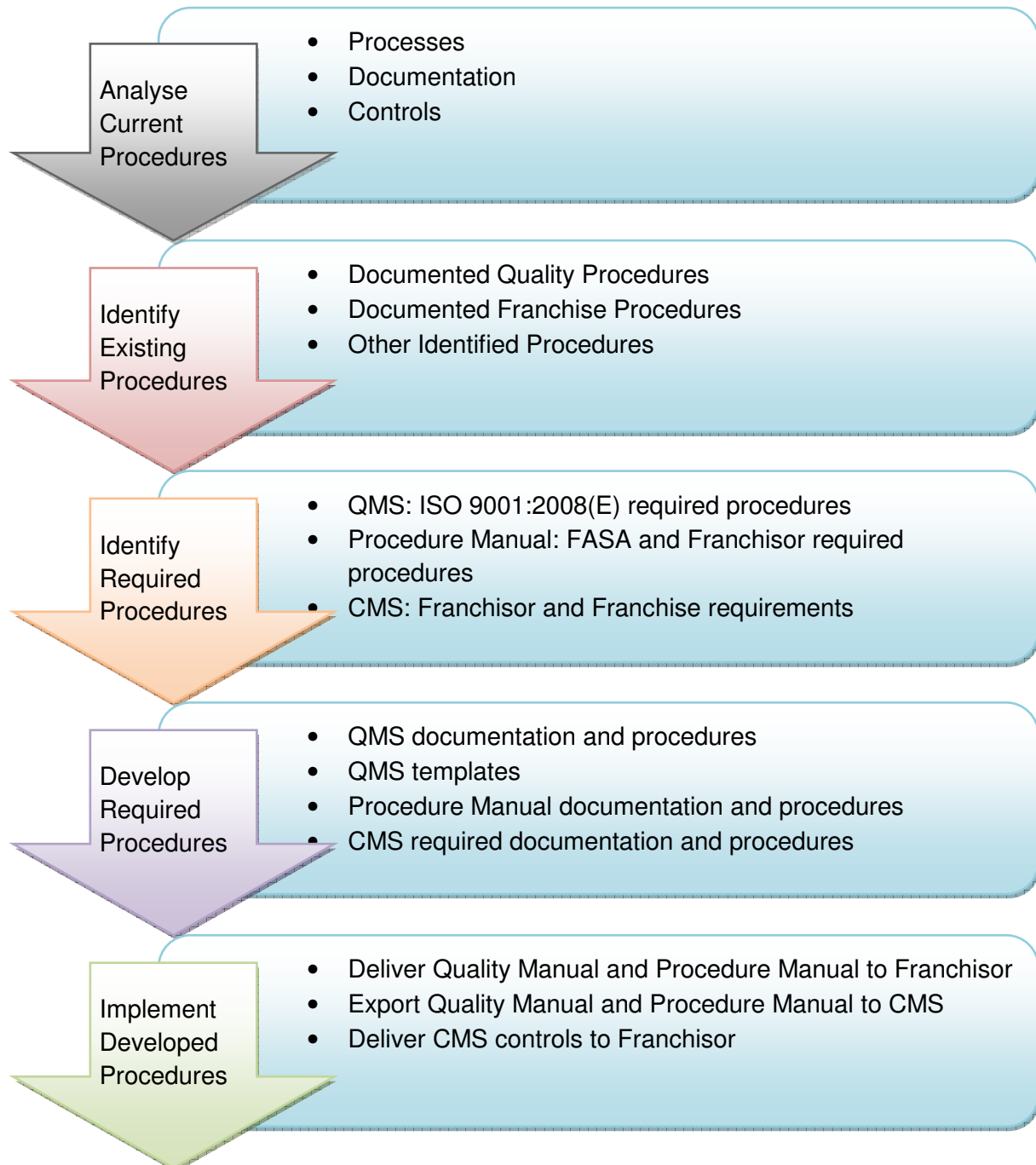
The Content Management System that will be developed will, as indicated in the literature review, assist the franchise in improving overall service and product quality. The possible CMS solutions identified will be analysed against the developed requirements of such a system. The identified CMS will also help form the basis of the QMS to be implemented in the franchise.

The literature review has assisted the project by offering possible solutions that will be developed and implemented in the final phase of the project. These methods, tools and techniques will be used to meet the project objectives.

5. SOLUTION APPROACH

The insight and knowledge gained during the first phase literature study allowed for the development of a structured approach to solve the problems stated. This structured approach is vital in the implementation of the QMS and effective integration into the proposed CMS. Figure 8 describes the solution approach used during the project.

Figure 8: Solution Approach





ANALYSE EXISTING PROCEDURES AND OPERATIONS

Before the QMS or Procedure Manual could be developed, the current operations and procedures of the franchise were required to be analysed and investigated. For this reason tools and methods that could be utilized for this purpose were identified. These tools and methods were then used to gain the required insight into the processes performed. The tools and methods used are

- Interview with Franchisor

Meetings were arranged and held with the Franchisor in order to obtain the required information on the procedures and processes performed in the franchise. The level of detail, requirements and scope of the QMS and Procedure Manual was determined together with the Franchisor. This was done to ensure that the final deliverables conformed to the required criteria.

- Interview with Franchisees

The student organised meetings with one of the Franchisees in order to understand what they required from a QMS and Procedure Manual. The meeting was also held to encourage their co-operation with the project as well as the eventual implementation of the system.

- Site visits and Procedure analysis

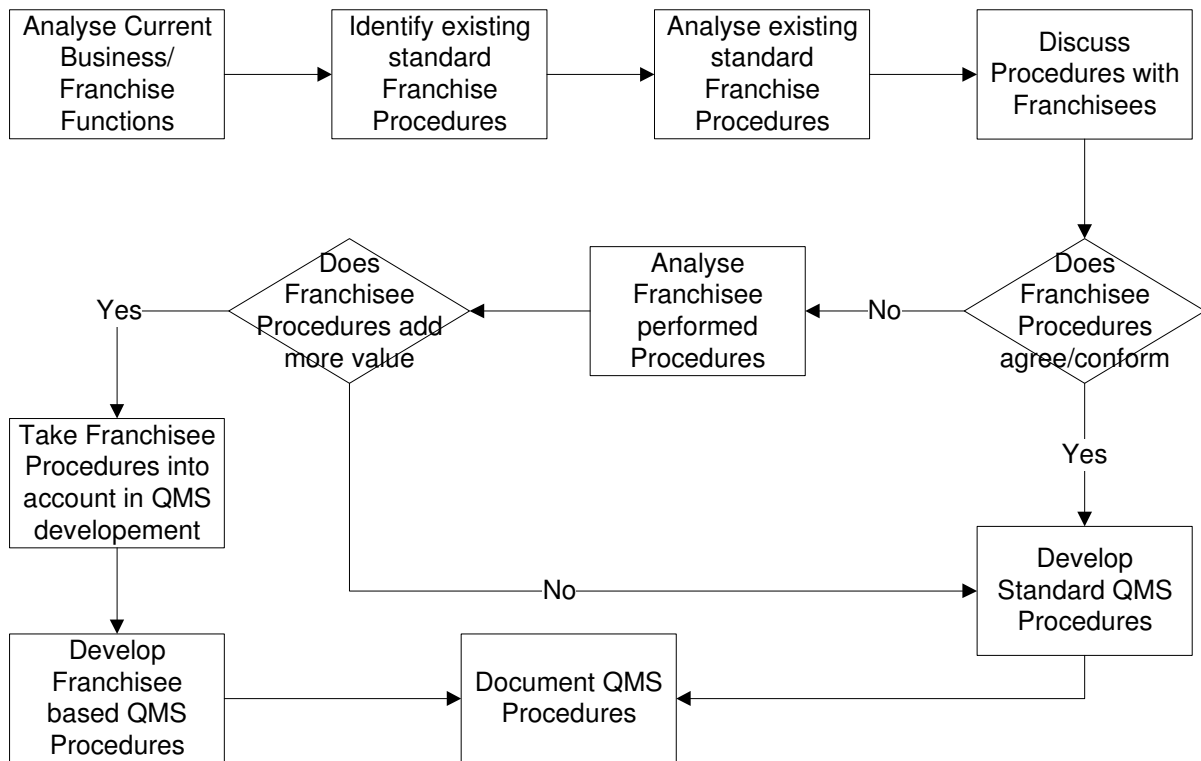
The student arranged to accompany the Franchisor and Franchisees and the technical staff in order to understand and analyse the operations performed. At this stage only two visits could be completed due to the current financial situation in the country and the down turn in the market. Many of the projects that would have been undertaken by the Franchisor and Franchisees have not been realised. For this reason many of the required procedures that were to be investigated could not be done. The Franchisor arranged for the student to discuss and develop a possible solution to this problem. It was therefore arranged for the student to be shown most of the procedures by the Franchisor. These visits and analysis opportunities are scheduled between 15th August and 20th September during selected weekends due to the working hours of the Franchisor. From these last visits the bulk of the work instructions and procedure analysis will be performed and developed for the Procedure Manual.



The aim of the analysis was therefore threefold. Firstly it was done to help the student familiarize himself with the franchise's environment. Secondly it was done to obtain the requirements of the proposed systems. Finally the analysis is done to establish a strong and informed base for the development and design phase.

Figure 9 details the process followed to determine and develop the required QMS procedures and documentation.

Figure 9: Analysis of procedures for QMS development





ANALYSIS OF ORGANISATION STRUCTURE

During the analyses procedure it was found that the franchise has no established and documented organisational structure. If the franchise wishes for the effective implementation of the Quality Management System then the positions and roles performed as well as the structure of the business must be analysed, determined and documented. It was determined that two separate organisational structures were to be developed. The first model would be for the entire Swemgat franchise and the second for the organisational structure as required within the separate franchises.

The organisational structure was developed during the design and development phase and can be viewed in the document under the section titled ORGANISATIONAL STRUCTURE OF SWEMGAT FRANCHISE.

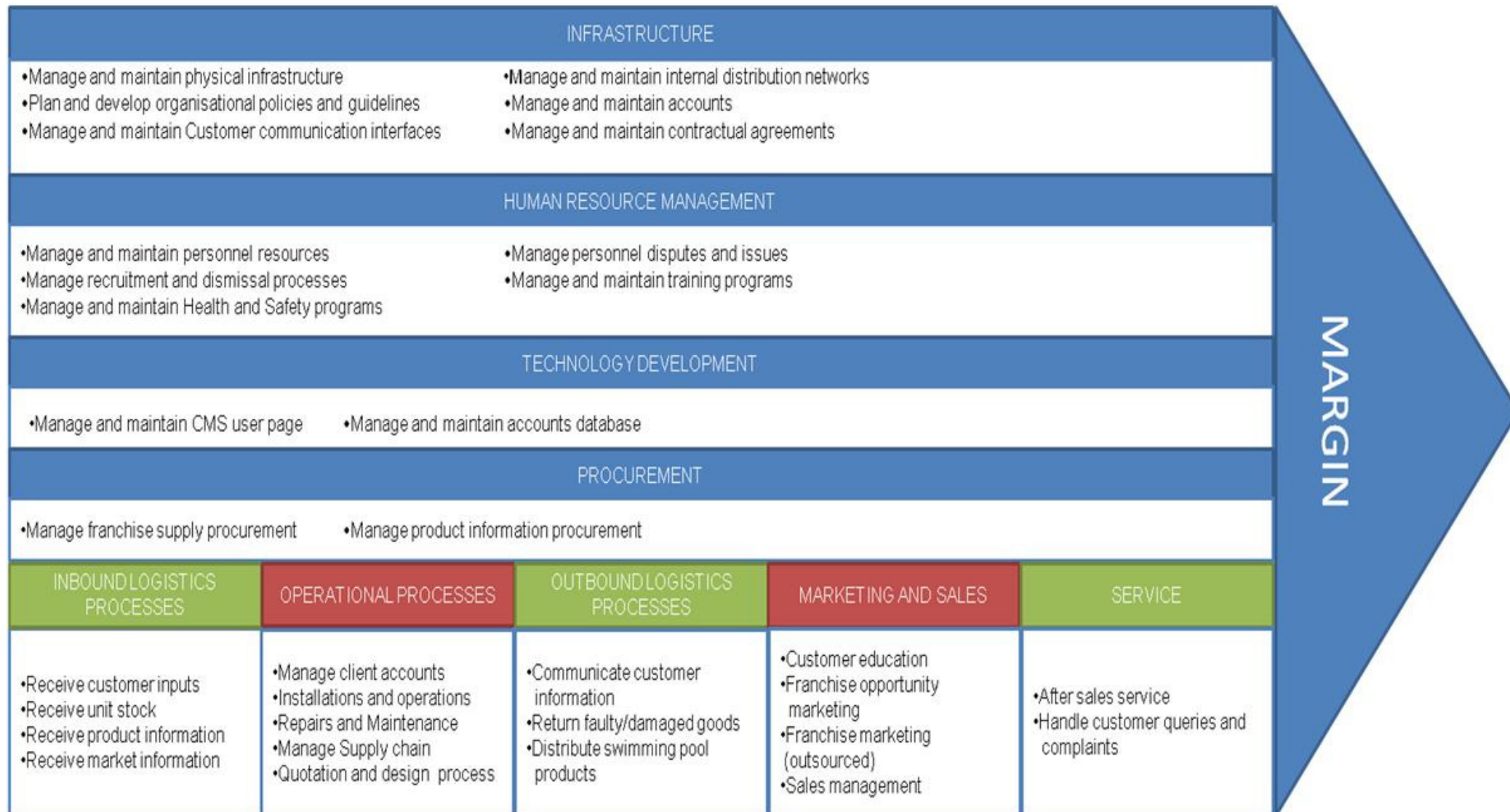
VALUE CHAIN ANALYSIS OF FRANCHISE

In order to understand the activities and processes performed in the franchise it was decided to perform a value chain analysis of the business. The literature review stage provided the required information to develop the model.

The value chain analysis allowed valuable insight into the functions and processes performed in the franchise. This analysis was also used during the development of the functional (IDEF0) and process (IDEF3) models. The value chain analysis is represented in the form as described by Porter. The Value Chain Analysis can be seen in figure 10.



Figure 10: Value Chain Analysis of Swemgat franchise





IDENTIFY EXISTING PROCEDURES

In order to establish, develop and implement a QMS and Procedure Manual it is important that the procedures currently in place in the franchise are to be identified and analysed. The first step was to establish if there existed documentation of the procedures and processes performed.

The analysis showed that there existed almost no formal documentation of the procedures. What is important to note is that those procedures for which there did exist documentation were either not communicated to all personnel or easily accessible.

The identified existing procedures were analysed and are set out below.

- Gain customer information

The current procedure followed by the franchise to gather the customer information was analysed. The procedure consists of two methods. The first method relies on customers contacting the franchise via telephone. The receptionist will then use the Enquiry Registration form to capture the required information. This information will then be entered into the franchise's filing system. The second method relies on the customer contacting the franchise via email. The client information will then be manually captured from the email and a follow up call will be made to acquire the needed information. Figure 11, 12 and 13 provide the process model for the current procedure followed.

- Product Handoff procedure

The current procedure required that the client be provided a Handoff form that should be signed. It was found that many customers did not sign these forms or that some were not provided with such forms. For this reason the franchise could not effectively determine whether products conformed to the customer's requirements. This also posed a problem since without the Handoff form being signed; the franchise could not give a warranty on products or services delivered. This procedure required reworking to increase the effectiveness. Figure 14 provides the process model for the current procedure followed.

- Delivered product inspection

The current procedure followed in the franchise to determine whether the delivered products and material are correct and conform to the franchise's requirements was analysed. It was observed that the person on duty at the franchise shop would not

always check the delivered products but would merely sign the delivery note. When the products were checked a visual inspection would consist of the person on duty to count that the correct amount of material and products were delivered before it would be moved to the stock room. In the event that it was found that the delivered products were not correct, the person on duty would report this to the supplier but make no formal note of the occurrence, nor notify the franchise management if the required product could be delivered within the next 24 hours. This procedure has the potential to cause problems for the franchise in the future. Figure 15 and 16 provide the process model for the current procedure followed.

- Document control

The procedure currently employed at the franchise was investigated. It was found that the document control procedure was not formally documented. The documents would be updated without informing all personnel involved. Different versions of documents were found to be used by employees. This led to confusion and reworking that had to be performed on the developed documents. It was determined that a documented procedure for document control was required. This is also a mandatory documented procedure as described by the ISO 9001:2008 (E) standard.

- Records control

The current procedure followed by the franchise involves all records to be provided with a sequential rolling number. These records are then filed according to their number in ring bound file folders. These folders are housed in filing cabinets in the back office of the franchise. The records are not available in an electronic format and the current method of maintaining the franchise records does not allow for fast and effective access. The current method will also not be sustainable due to the large space taken up by the filing method. For this reason a documented procedure is to be developed for the control of records. This is also a mandatory documented procedure as described by the ISO 9001:2008 (E) standard.

The procedures followed to complete installation projects and servicing operations were also analysed. These procedures were found to vary between each franchise to such a degree that new procedures for each operation were needed. These procedures are developed to conform to the ISO 9001:2008 (E) standards requirements. These required procedures are listed in table 3.



Figure 11: Customer information capture from calls received

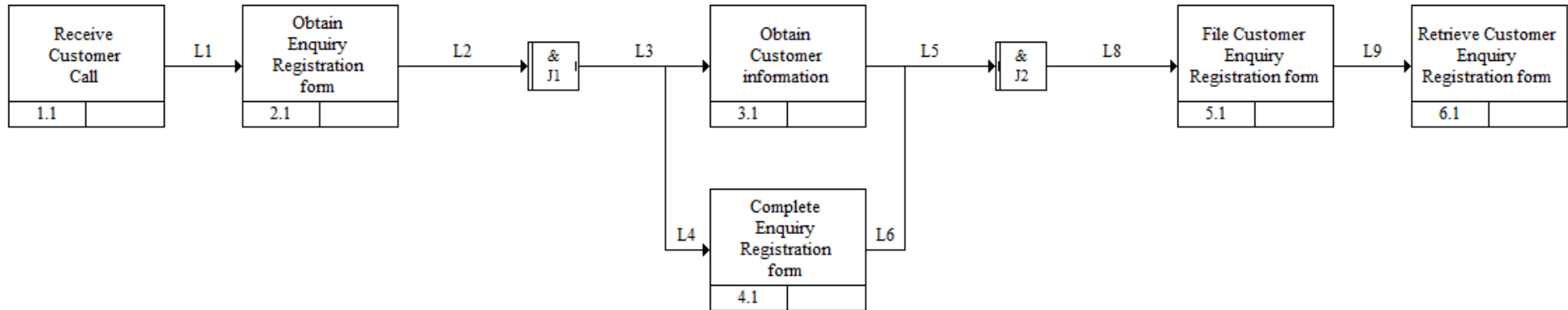


Figure 12: Customer information capture from received emails

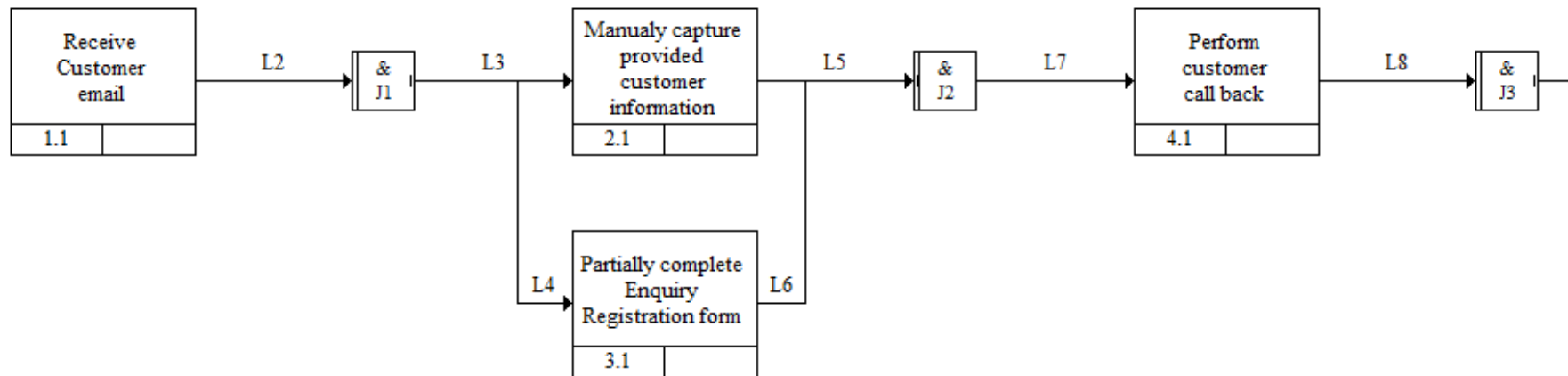




Figure 13: Customer information capture from received emails (continued)

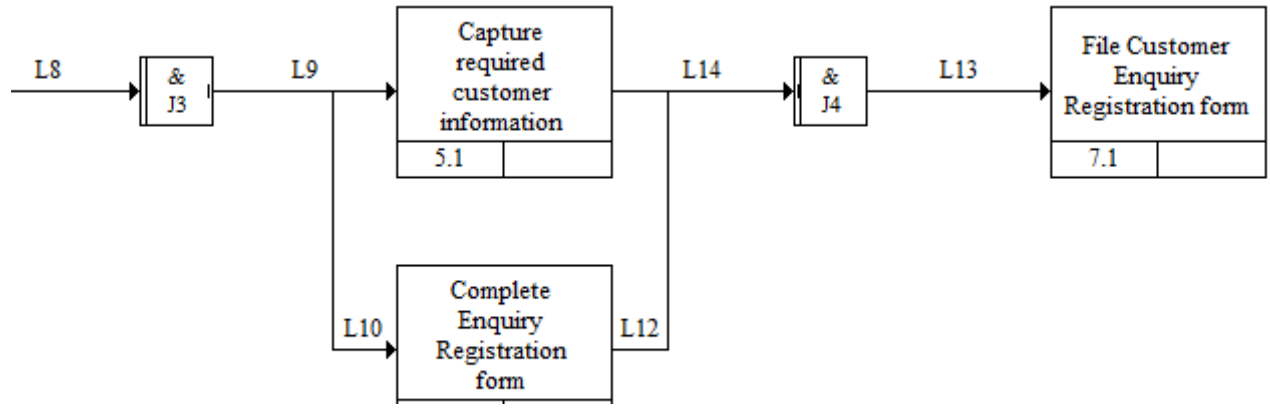


Figure 14: Project Handoff and warranty issue process

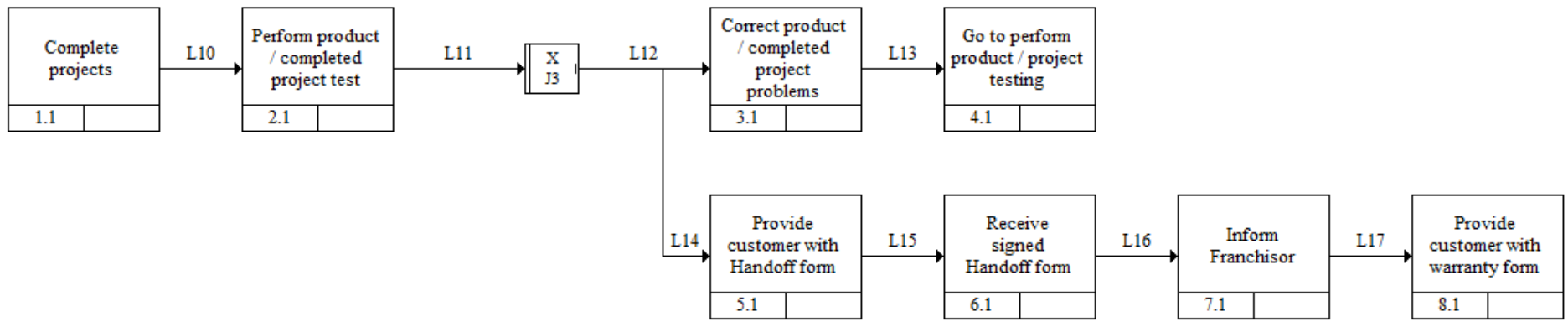




Figure 15: Stock receiving process

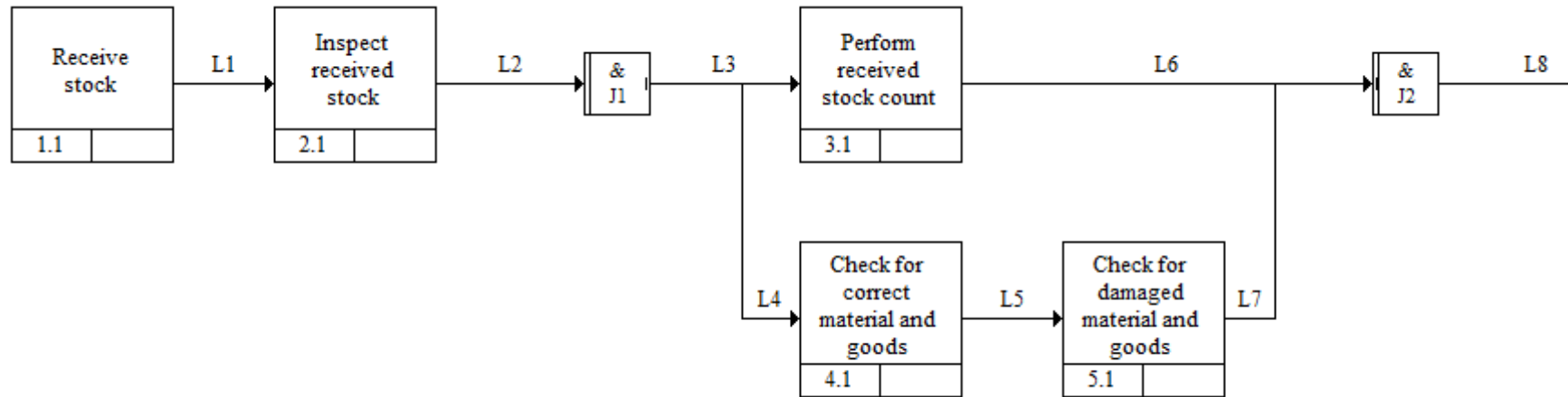


Figure 16: Stock receiving function (continued)

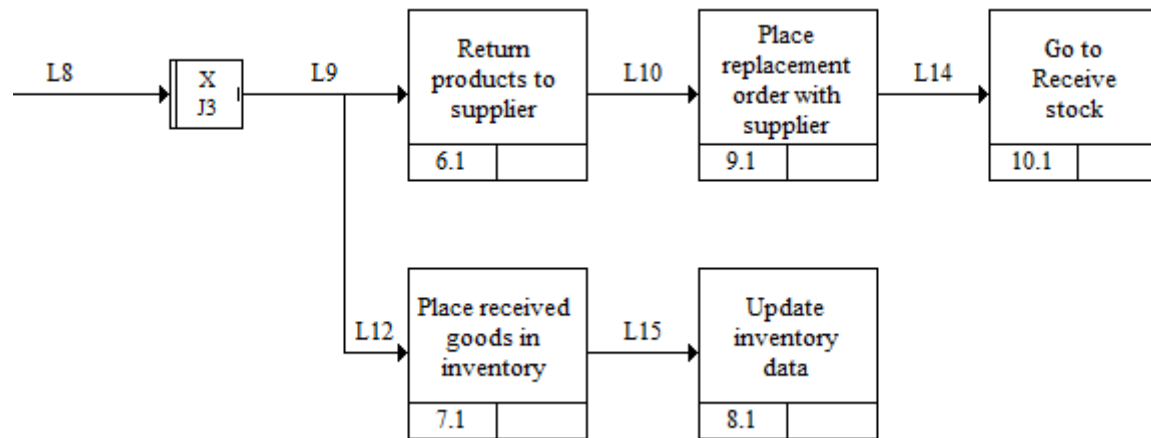




Table 3: Product and Service procedures required to be developed and implemented

Call-out for repair	QPR710a-010
Pool installation project	QPR710b-010
Spa installation project	QPR710c-010
Automated pool covers installation project	QPR710d-010
Water feature installation project	QPR710e-010
Swimming pool net installation project	QPR710f-010
Swimming pool light fixture installation project	QPR710g-010
Pool renewal project	QPR710h-010
Spa renewal project	QPR710i-010
Pool solar heating project	QPR710j-010
Heat pump installation project	QPR710k-010
Chlorinator installation project	QPR710l-010

These procedures were investigated through site visits and interviews with the Franchisor. The required data and process information was obtained in order to effectively develop and document the determined product and service delivery procedures. Table 3 also indicates each procedure's document code as referred to in the developed Quality Manual. These procedures are discussed in greater detail in the SOLUTION DESIGN AND IMPLEMENTATION section of the Project Document.



IDENTIFY QMS DOCUMENTATION REQUIREMENTS

If the franchise is to pursue a culture of quality it is essential that the correct procedures are developed, documented and continually reviewed to ensure suitability. These documented procedures should be communicated and made available to all franchisees and their employees. This will help ensure that they know what is expected of them and promote the delivery of quality products and services.

In the first phase of the project it was decided that the ISO 9001:2008 (E) standard would be used to determine both the framework and the requirements of the franchise's QMS. The standard stipulates various requirements that the proposed QMS should conform to and various procedures that should be included in the proposed system. During this phase of the project the aim was to analyse the requirements to identify the procedures and documentation that must be developed.

The standard requires the development of a Quality Manual that will form the main part of the QMS. The manual is to be used by the franchise as a support in compliance with the requirements of the standard. The manual should contain the following

- Scope of the QMS
- Quality policy
- Quality objectives
- Documented procedures
- Documented work instructions
- QMS templates

The ISO standard requires that certain documented procedures and statements be developed as part of the QMS. These documented procedures and statements are listed in figure 9 below. The third column of figure 17 indicates the six mandatory procedures that must be documented and developed for the franchise as part of the Quality Management System. The ISO standard specifies the requirements of each primary section as well as the requirements that the documented procedures are to fulfil.

Figure 17: Documented procedures and statements for ISO based QMS



IDENTIFY ISO REQUIREMENTS OF THE PROPOSED QMS

The ISO standard specifies the requirements that the proposed QMS of the franchise should adhere to and meet. These requirements must be identified and determined in order for the successful and effective development and implementation of the Quality Management System. These requirements are discussed in the following section of the project document.

These identified requirements will be used in the design and development of the QMS for the franchise. The design and development is discussed in the SOLUTION DESIGN AND IMPLEMENTATION section of the project document.

The procedures and other required documentation is listed at the end of this section in table 6 to indicate the procedures and quality documents identified to be developed.



QUALITY MANAGEMENT SYSTEM SCOPE

The QMS is based and scoped according to the ISO standard and looks at the 6 main procedures as stipulated in the ISO standard. The QMS will focus on the procedures required to ensure that the franchise can deliver consistent quality products and services.

QUALITY POLICY

The ISO standard requires that the franchise develop and establish a Quality Policy that must complement the purpose of the franchise. The Quality Policy should be developed in such a way that it reflects the franchise's commitment towards meeting customer needs and requirements. It should also reflect the purpose of the franchise. The policy should provide the framework for developing and sustaining of the Quality Objectives. It is vital that the policy is effectively communicated to all franchisees and employees. The Franchisor will have the responsibility to continuously review and update the policy in order for it to stay relevant and suitable according to the purpose and mission of the franchise.

QUALITY OBJECTIVES

The Quality Objectives of the franchise will be used to ensure quality products and services are delivered. The established objectives will allow the Franchise to compare the procedures performed in the business against a set of criteria to ensure that products and services delivered meet or exceed customer requirements. These objectives will also assist the Franchisor in assessing the other franchises to establish whether they are delivering the level of quality products and services as specified.

The Quality Objectives must be developed using the Quality Policy as framework and reference. It is important that the objectives reflect the policy set by the Franchisor if it is to set the level of quality for all procedures, products and services.

DOCUMENT CONTROL

ISO 9001:2008(E) requires that the documents required to plan and operate the QMS be identified, generated, developed and controlled. The standard requires that the franchise develop a documented procedure to control the documents of the franchise. It is important to note that this procedure relates to both internally and externally generated documents. The procedure requires the franchise to

- Approve documents prior to distribution for suitability and adequacy
- Provide correct versions of documents for use



- Review and approve documents when updated or changed
- Specify current revision statuses of documents
- Monitor and manage documents from external sources
- Ensure that documents are legible and identifiable
- Prevent accidental use of obsolete documents
- Preserve the usability of the quality documents

RECORD CONTROL

The ISO standard requires that the records established in order to provide the evidence of procedures conforming to the requirements of the ISO standard be developed and controlled. The ISO 9001:2008 (E) standard states that the franchise is required to develop a documented procedure to facilitate the control of records. The documented procedure must ensure that

- Records are created and kept to prove conformity to requirements
- Developed records be maintained and protected
- Records are identifiable and easily accessible

MANAGEMENT RESPONSIBILITY

The ISO standard requires that the management of the Franchise provide evidence of their commitment to the development, implementation and management of the QMS in the organisation. They are therefore required to develop and implement methods to provide this evidence and communicate their commitment. The ISO standard lists various methods and activities that must be implemented and performed by the Franchisor and the Franchisees. These include

- communicating the importance of meeting customer as well as statutory and regulatory requirements
- establishing the quality policy
- establishing the quality objectives
- conducting management reviews
- ensuring the availability of resources

The Franchisees are required by the ISO standard to determine and document the requirements of their customers. The Franchise should have an established process in place to achieve this and provide products and services that enhance customer satisfaction.

The ISO standard requires that the integrity of the QMS be maintained if changes are implemented and made. The Franchise should therefore have a process or procedure in place to ensure this.

The ISO standard requires that the roles, responsibilities and authority distribution in the organisation be documented and made available to all personnel in the Franchise. These required documentation and information must therefore be developed and distributed among the Franchisees and their personnel.

The standard requires that a management representative be employed that will ensure the processes required for the QMS are established and implemented. This representative will also be responsible to communicate the performance of the QMS and promote awareness of the customer requirements. This representative and the relevant responsibilities must be determined and documented.

The ISO standard requires that the communication processes to communicate the importance of the QMS and the effectiveness of the system are established by the management of the organisation. These processes are therefore required and must be determined and implemented by the Franchise management in order for the QMS to adhere to the ISO requirements.

The standard stipulates that the management of the organisation review the QMS at planned intervals to ensure that it remains suitable, adequate and effective. The processes required to achieve this must therefore be developed, implemented and maintained. The ISO standard provides the inputs that must be used during the review process as well as the required outputs to be generated from the performed management reviews. These inputs and outputs are listed in table 4.

Table 4: ISO required Management Review inputs and outputs

Management review inputs	Management review outputs
follow-up actions from previous management reviews	actions and decisions on improvement of the effectiveness of the quality management system and its processes
changes that could affect the quality management system	actions and decisions on improvement of product related to customer requirements



process performance and product conformity	actions and decisions on resource needs
status of preventive and corrective actions	
results of audits	
customer feedback	
recommendations for improvement	

RESOURCE MANAGEMENT

The ISO standard requires that the organisation determine and provide the resources to implement maintain and continually improve the QMS to meet the customer requirements. The resources must therefore be determined and the processes required to provide these developed and implemented.

The standard requires that the personnel are competent regarding their education, training, skills and experience. The Franchise must therefore

- determine the necessary competence for personnel
- where applicable, provide training
- ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives
- maintain appropriate records of education, training, skills and experience

It is therefore important that the relevant job descriptions are developed.

The ISO standard must determine the infrastructure required to achieve product conformity. It is therefore required that the infrastructure of the Franchise be determined and documented. This includes the

- buildings, workspaces and associated utilities
- process equipment
- supporting services



The standard mandates that the management of the organisation provide the required work environment to achieve product conformity. The Franchise is therefore required to determine and document the ergonomic requirements of such a work environment.

PLANNING OF PRODUCT REALISATION

The ISO standard requires that the organisation plan and develop the processes needed for product realisation and that these processes conform to the same requirements as the QMS processes. The Franchise should therefore develop and determine

- quality objectives and requirements for products
- processes, documents and resources for the products
- verification, validation, monitoring, measurement, inspection and test activities specific to the product
- acceptance criteria for the product
- records to provide evidence of products meeting the specified requirements

The Franchise must therefore develop these requirements as stated for all products and services offered to customers.

CUSTOMER RELATED PROCESSES

The standard requires that the organisation determine the requirements of the related to products. This includes those requirements stated by the customer as well as requirements required for use unstated by the customer. These requirements are to be determined and documented by the Franchise for each product and service offered.

The ISO standard requires that the organisation review the product requirements before commitment to product or service delivery. The Franchise will therefore incorporate this requirement into the processes connected with customer order processing and product delivery. This process must ensure that the product requirements are defined, contract or product changes are resolved and that the Franchise has the capabilities to deliver the product specified by the customer.

The standard requires that the organisation determine and implement effective communication methods and techniques to establish communication with customers regarding product information, enquiries, contracts, order handling and customer feedback. The Franchise should therefore develop and document the required communication methods and processes required to perform this function.



DESIGN AND DEVELOPMENT PROCESSES

The ISO standard requires that the organisation plan and control the design and development of products and services offered. The organisation should determine the

- design and development stages
- review, verification and validation appropriate to each design and development phase
- responsibilities and authorities for the design and development

The Franchise should therefore develop and document the procedure that would allow them to perform this requirement. The standard also states specific design and development inputs that the Franchise should determine relating to the product requirements. The standard also list the design and development outputs to be used for verification against the design and development inputs. These design and development inputs and outputs are listed in table 5. The Franchise implemented Design and Development procedure should allow for verification and validation processes to ensure that the outputs meet the design and development inputs and that the products have the capability to meet the requirements of application and use.

Table 5: ISO specified Design and Development inputs and outputs

Design and Development Inputs	Design and Development Outputs
functional and performance requirements	meet the input requirements for design and development
applicable statutory and regulatory requirements	contain or reference product acceptance criteria
where applicable, information derived from previous similar designs	provide appropriate information for purchasing, production and service provision
other requirements essential for design and development	specify the characteristics of the product that are essential for its safe and proper use

PURCHASING

The ISO 9001 standard requires that the organisation ensure that purchased products are to conform to specified requirements. The organisation should also evaluate their suppliers based in ability and capability to supply products that conform to the organisation



requirements. The Franchise will therefore need to develop a Purchasing Control procedure that will assist them in complying with these requirements. The procedure should also provide the process for verification of purchased delivered products. The purchasing information of products should be determined and documented. This information should include

- products, procedures and equipment approval requirements
- personnel qualification requirements
- QMS requirements

Since the franchise purchases all of the necessary stock and equipment to deliver their services and to resell their products, the purchasing process forms an important part of the QMS. If the franchise wishes that their services and products are of a certain quality they must ensure that their purchasing process reflects this desire by fulfilling the ISO standards regarding the process

PRODUCTION AND SERVICE PROVISION

The ISO standard requires that the organisation carry out the provision of products and services under certain controlled conditions. These controlled conditions should be determined and the required documentation determined and used to establish such conditions in the Franchise.

The standard requires that the organisation identify the product throughout the product realisation process and monitor the product status. The Franchise should therefore develop a procedure to identify and track the product throughout the product realisation process.

The ISO standard requires that the organisation exercise care with customer property under the organisation's control. The Franchise should therefore develop a procedure to identify and protect the customer property provided during product realisation.

The ISO standard requires that the organisation ensure product preservation throughout the processing and delivery. The Franchise should therefore develop a product preservation procedure to ensure that the ISO requirement is satisfied.



CONTROL OF MONITORING AND MEASURING EQUIPMENT

The ISO standard requires that the organisation determine the measuring and monitoring equipment and processes be determined. The Franchise should determine the equipment required and that the processes to perform measurement and monitoring are developed and documented. The Franchise developed process should ensure that measuring equipment is

- calibrated or verified at specified intervals or prior to use
- adjusted and re-adjusted as necessary
- identifiable in order to determine calibration status
- safeguarded from adjustments that would invalidate results
- protected from damage and deterioration

MEASUREMENT, ANALYSIS AND IMPROVEMENT

The ISO standard requires that the organisation develop and implement the monitoring and analysis processes to ensure that products demonstrate conformity to product requirements and ensure conformity of the QMS.

The standard requires that the organisation determine and analyse customer feedback to determine satisfaction and perception of the organisation. The Franchise must therefore establish a documented process to determine customer satisfaction and customer perception regarding the Franchise.

The ISO standard requires that the organisation develop and implement internal audits. The Franchise should therefore implement a document internal audit procedure. This procedure should

- be performed at planned intervals
- conform to the requirements of the ISO 9001:2008 (E) standard
- define the responsibilities and requirements for planning and conducting audits and reporting results
- determine and document audit criteria, scope, frequency and required methods

The ISO standard requires that the organisation develop and implement a procedure to ensure the products that do not conform to the documented determined product requirements are identified and controlled. The Franchise should therefore develop a documented procedure to control nonconforming products. This procedure will assist the Franchise in handling the nonconforming products by dealing with



- actions to eliminate detected nonconformity
- authorising the use, release or acceptance under concession
- actions to preclude original intended use or application
- actions to be taken if product has already been delivered

The ISO standard requires that the organisation develop and implement a procedure to eliminate causes of nonconformities in order to prevent recurrence. The Franchise should therefore develop and implement a documented procedure that will define the requirements for

- reviewing nonconformities
- 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
- reviewing the effectiveness of the corrective action taken

The ISO standard requires that the organisation develop and implement a procedure to eliminate the causes of potential nonconformities in order to prevent their occurrence. The Franchise should therefore develop and implement a documented procedure to define the requirements for

- determining potential nonconformities and their causes
- evaluating the need for action to prevent occurrence of nonconformities
- determining and implementing action needed
- records of results of action taken
- reviewing the effectiveness of the preventive action taken



CONCLUSION ON QMS REQUIREMENTS

These identified and requirements were used to develop the specified areas of the Quality Management System while conforming to the requirements of the ISO 9001:2008 (E) standard. The identified required areas of the QMS, their procedures and documentation to be developed for the Franchise are listed in table 6.

Table 6: Identified Procedure and Quality Documentation to be developed

QMS section	Required Procedure	Required Quality Documents
General Requirements of the Quality Management System	Document Control Procedure	Franchise Quality Objectives
	Quality Records Control Procedure	Franchise Quality Policy
Management Responsibility	QMS Communication Procedure	Franchise Organisational Structure
		Franchise standard job descriptions
Resource Management		Franchise Infrastructure Requirements
		Franchise Training Manual
Product Realisation	Control of Equipment Procedure	Product Tracking quality document
	Customer Communications Procedure	
	Customer Identification Procedure	
	Customer Requirements Process	
	Product Preservation Procedure	
	Product Realisation Procedures	
	Product Research Procedure	
	Purchasing Control Procedure	
Measurement, Analysis and Improvement	Control of Nonconforming Products Procedure	Process Monitoring and Measurement quality document
	Corrective Actions Procedure	
	Franchise Internal Audit Procedure	
	Customer Satisfaction Procedure	
	Preventative Action Procedure	



ANALYSIS OF CMS REQUIREMENTS AND SOLUTIONS

The aim of this phase was firstly to determine the available CMS solutions and secondly the requirements that the Franchisor and the franchise placed on the CMS. The analysis was carried out on the identified CMS solutions by comparing the features listed of each CMS solution against the functional and non-functional requirements that were developed. These requirements constitute the needs and desires that the franchise expressed regarding a Content Management System. The Value Engineering decision making technique was used to determine the best possible CMS solution.

This technique applies weights to the different benefits offered by the proposed solutions and forming a pay off matrix. The first step was to determine the functional and non-functional requirements of the required CMS. These functional and non-functional requirements are each assigned a weight, (between 1 and 10), reflecting the importance of the specific requirement. Table 7 indicates the functional and non-functional requirements needed along with the weight assigned to each.

Table 7: Weighting for Functional and Non-functional CMS requirements

Functional Requirements	Weighting	Non-Functional Requirements	Weighting
Content	10	Economy	10
Metadata	4	Information and Control	7
Maintenance and Support	6	Performance	8
Accessibility and Security	8		
Authorisation	7		
Interface and Presentation	9		

The proposed CMS solutions are then analysed and the services or functions provided by each determined. These functions and services are then listed under the specific functional or non-functional requirements that it relates to. The functions offered by each are then summed to provide the CMS solution's score regarding the specific benefit. The summed values are then multiplied with the assigned weight to calculate the final score of the specific CMS solution.

Table 8 and 9 relate the findings of the functional requirements analysis. An 'X' indicates that the solution provides or fulfils the requirement stated. Table 10 relates the findings of the non-functional requirements analysis. Table 11 relates the assigned and final score of the proposed CMS solutions. From these findings the CMS solution to be used will be determined.



Table 8: Functional Requirements provided by CMS solution

Functional Requirements	Alfresco	Liferay	OpenCMS
Content			
Users must be able to upload new digital content	X	X	X
Users must be able to download digital content	X	X	X
Users must be able to modify digital content	X	X	
System should support versioning of digital content	X	X	X
System should support grouping of digital content	X	X	X
System should allow for content to be part of multiple groups	X		X
System should be compatible with different processing and editing software		X	X
System should create a review audit log and track changes and revisions	X	X	
System should alert users of changes	X	X	X
System should alert users of events	X	X	X
System should support a form of Dynamic Drag and Drop	X	X	X
System should provide a document library for centralised content	X	X	X
System should support a workflow process and method	X	X	
System should be able to store any file format	X	X	X
System should facilitate the creation of polls		X	
System must have scalable storage	X	X	X
Total	14	15	12
Metadata			
Digital objects have one or more associated metadata records	X	X	X
Users must be able to create metadata records	X		
Users must be able to modify metadata records	X	X	X
System must support different metadata schemas or formats	X	X	X
System should update metadata automatically	X	X	X
System should allow for tagging of content for referencing	X	X	
Total	6	5	4
Maintenance and Support			
System should provide online support	X	X	X
System should provide a help forum or community blog	X	X	
System should provide thorough documentation	X	X	X
System should provide training modules or guides	X	X	X
System should offer a scalable solution	X	X	X
System should provide add-on modules	X	X	X
Total	6	6	5



Table 9: Functional Requirements provided by CMS solution (continued)

Functional Requirements (continued)	Alfresco	Liferay	OpenCMS
Accessibility and Security			
System must provide for secure single sign on capabilities	x	x	x
System should support or provide activity tracking	x	x	
Users should be able to browse the digital content	x	x	x
Users should be able to search via metadata	x	x	x
Users should be able to search via full text	x	x	x
Users should be able to search via use of Boolean methods	x	x	x
System should provide help documentation for end users	x	x	x
System should provide for access to web content/portals		x	
System should support remote access	x	x	x
System should support multiple access (many users)	x	x	x
Total	9	10	8
Authorisation			
System should support different roles	x	x	x
System should provide for role assignment	x	x	x
System should support content assignment to different role groups	x	x	x
System should provide for full administration and development		x	
Total	3	4	3
Interface and Presentation			
System must provide a web based interface for all functionalities	x	x	x
System should allow for feedback on problems	x	x	
System should provide for branding of content		x	
System should provide notification of tasks and progress	x	x	x
System should provide statistical and reporting features	x	x	x
Total	4	5	3

Table 10: Non-functional Requirements provided by CMS solution

Non - Functional Requirements	Alfresco	Liferay	OpenCMS
Economy			
System must be cost effective	x	x	x
System should not require a large amount of hardware	x	x	
System maintenance should be economical	x	x	x
System should receive continuous support from community	x	x	x
Total	4	4	3
Information and Control			
Workflow processes should be well documented	x	x	x
System must ensure accuracy of metadata	x	x	x
Enforceable submission policies			
Total	2	2	2
Performance			
System must notify users of updates	x	x	x
System should facilitate the creation of communities or groups	x	x	
System should provide web publishing features	x	x	
System should provide social networking abilities	x	x	
Total	4	4	1



Table 11: Assigned and Final Scores of evaluated CMS solutions

Scoring	Weight	Assigned Value			Final Score		
		Alfrasco	Liferay	OpenCMS	Alfrasco	Liferay	OpenCMS
Content	10	14	15	12	140	150	120
Metadata	4	6	5	4	24	20	16
Maintenance and Support	6	6	6	5	36	36	30
Accessibility and Security	8	9	10	8	72	80	64
Authorisation	7	3	4	3	21	28	21
Interface and Presentation	9	4	5	3	36	45	27
Economy	10	4	4	3	40	40	30
Information and Control	7	2	2	2	14	14	14
Performance	8	3	4	1	24	32	8
				Total	407	445	330

The analysis revealed that Alfresco and Liferay CMS solutions both provide most of the required features needed by the franchise. Liferay does however score 38 points more than Alfresco. From these findings it was decided to use the CMS solution provided by Liferay. The Liferay CMS solution will provide the organisation with the required functionality in order to improve the management of digital content.

BACK GROUND ON LIFERAY

Liferay is an open source Content Management System solution created in 2000 by Brain Chan that offers high quality document, web and record management abilities. The solution is provided free of charge with the software available for download from their website.

The CMS solution has undergone numerous version changes, with the latest version 5.2 available for download. This version was decided as the preferred CMS solution to be implemented. The service is easy to use with a high level of security to ensure correct identification of user roles and authority. The software is compatible with various programming languages, including JAVA, in order to add to their competitive value.

The following features are included in the Liferay CMS solution

- Document Management
- Records Management
- Web Content Management
- Image Management
- Collaboration
- Business Process Management



- Enterprise Content Repository
- Workflow that is flexible, scalable and extensible

These features will provide the franchise with the desired CMS solution. This will assist the organisation to improve overall quality and productivity.

DESIGN AND DEVELOPMENT PLAN

During the design and development phase the findings of the first phase literature study as well as the findings of the solution approach section will be used to develop the documented procedures required for an effective and suitable QMS. The student develop these procedures and document them in such a way that they are

- easily understood
- developed with the customer in mind
- developed for non-expert users
- easily and readably available
- well structured and laid out
- well numbered and identified

The developed procedures constitute a large amount of paperwork therefore only a few of the developed procedures are contained in the project document with the all of the documented procedures available on the accompanying project CD.

IMPLEMENTING THE DEVELOPED QMS AND PROCEDURES

During this phase the developed and documented procedures will be implemented in all of the Franchises. This will be achieved through the provision of the Quality and Procedure manuals to all the Franchisees. The QMS and the developed procedures are to be communicated to the Franchisees during a scheduled meeting. This will be the responsibility of the Franchisor. The student will discuss the developed QMS with the Franchisor beforehand to ensure that the system is understood and suitable to their needs.



6. SOLUTION DESIGN AND IMPLEMENTATION

The subsequent section of the project document aims to describe and illustrate how the final QMS system was designed, developed and implemented. This is the most important phase of the project and uses the information and findings of the previous sections in developing the required QMS.

ORGANISATIONAL STRUCTURE OF SWEMGAT FRANCHISE

As stated in the previous section the organisational structure of the Franchise is neither established nor documented. For this reason the organisational structure for both the Franchise as a whole and as a separate business entity was developed. The developed organisational chart reflects the roles and responsibilities to be performed in the Franchise and Franchise outlets. The Organisational structure is provided in Appendix E of the project document.

The developed organisational structure of the Franchise reflects the current structure in place. This organisational structure was then used to establish and develop the standardised job descriptions to be used by the Franchise. These descriptions are contained in the Swemgat Organisational Structure quality document (FQD5510-012). This document is contained on the project CD. The job descriptions are to be used in determining employee education, skill and experience levels as well as providing their authority and responsibility levels.

BUSINESS LANDSCAPE FOR SWEMGAT FRANCHISE

The Franchise started as a private company in 1998. Franchise opportunities were offered starting from the previous year and currently two Franchise outlets have been started. In order to fully understand the Franchise and developed an effective and suitable QMS the business landscape had to be investigated and documented. The ISO standard requires that the regulations regarding the procedures and operations are documented and available to management and personnel of the Franchise.

The governance applicable on the Franchise is listed in table 12.

Table 12: Governance applicable on Swemgat Franchise

Companies Act no 71 of 2008	Competitions Act no 89 of 1998
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Labour Relations Act no 66 of 1995	Consumer Protection Act no 68 of 2009
National Environmental Waste Act no 59 of 2008	National Water Act no 36 of 2008
National Environmental Act no 107 of 1998	South African Bill of Rights 1996

These acts and regulates the operations of the Franchise. For this reason close attention was paid regarding these regulations during the development of the QMS.

FUNCTIONAL MODEL OF SWEMGAT FRANCHISE

In order to develop the required QMS procedures that they accurately reflect and effectively assist the Franchise the functional model of the Franchise was developed. The model was developed by analysing the current operations and by looking at the required operations and procedures of the ISO standard QMS. This model will provide insight into how the business functions and the activities should be and are performed.

The first two levels of the model are depicted in figure 18 and 19. The complete functional model is available on the project CD and in order to fully understand the workings of the business and the functions performed the reader is referred the full functional model.

Figure 18: Top level diagram of Swemgat Franchise IDEF0 Functional Model

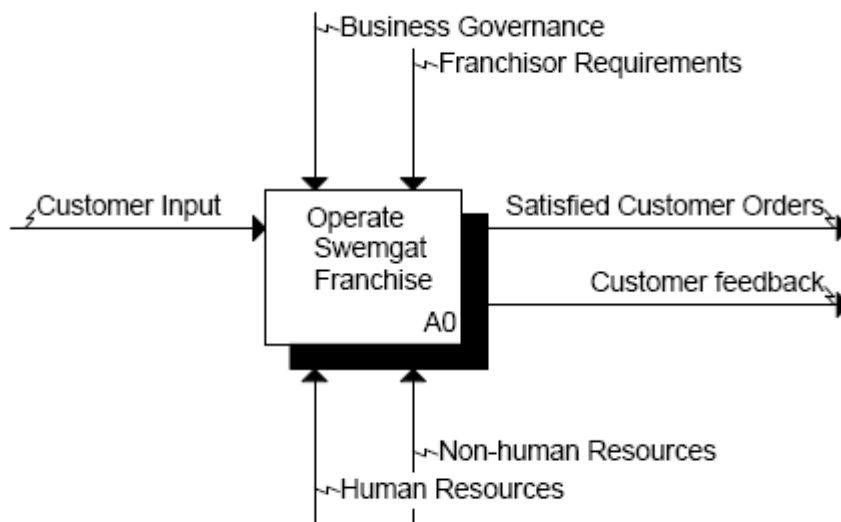
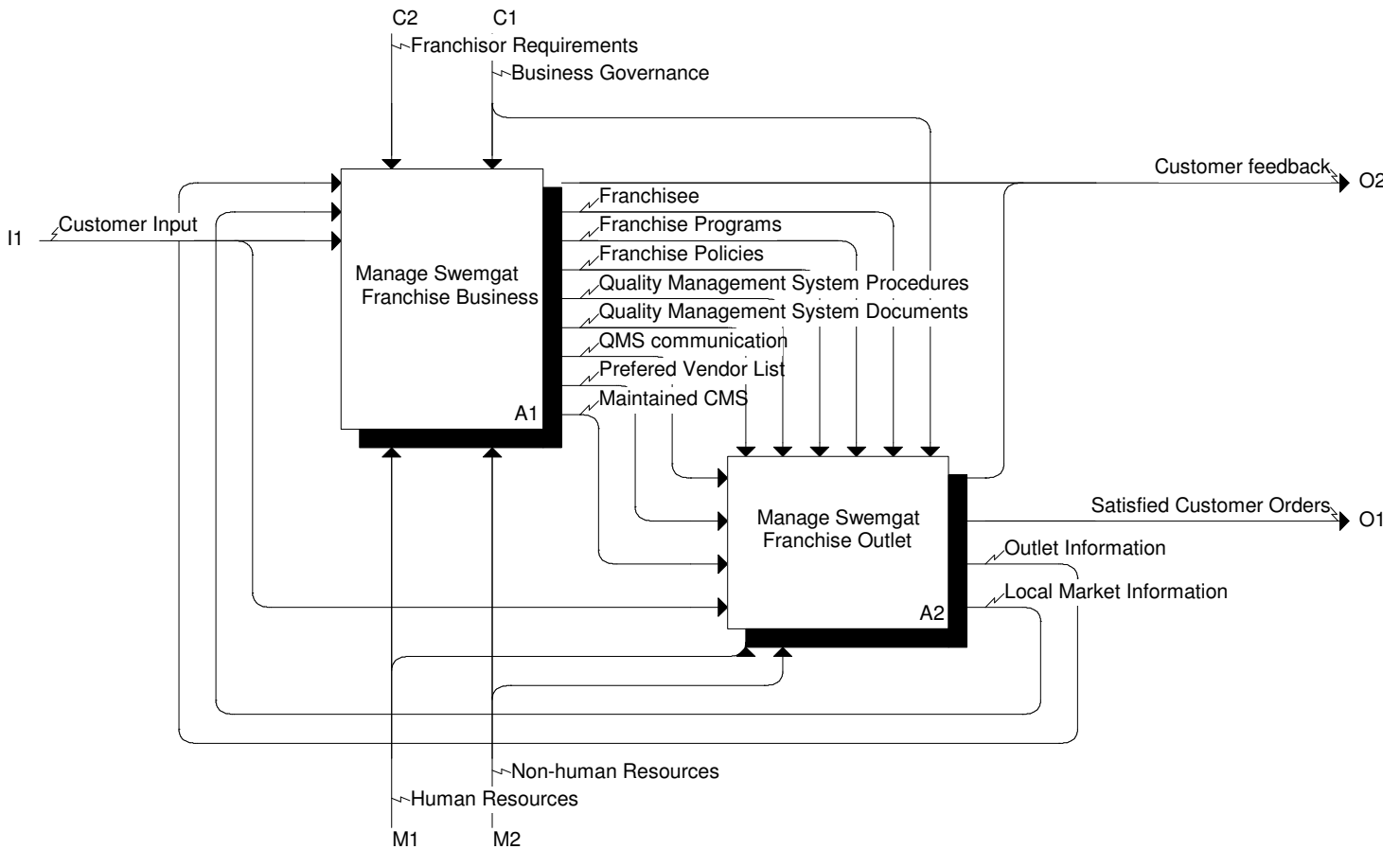


Figure 19: Child Diagram of Operate Swemgat Franchise function



PROCESS MODEL OF SWEMGAT FRANCHISE STANDARD OUTLET OPERATIONS

The basic process flow diagram model for processing for delivering products and services is depicted in figures 20, 21 and 22. The process model indicates how Franchisees are to process customer requests, determine product or service requirements, purchase required material and perform the required procedure to deliver the requested products and services.



Figure 20: Basic Process model for Processing Customer requests

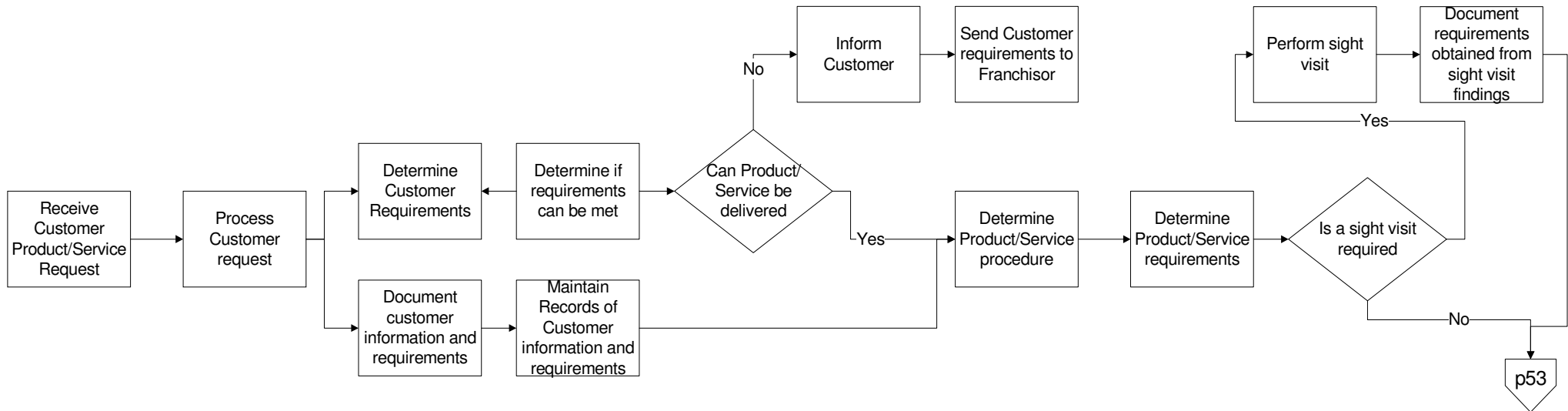




Figure 21: Basic Process for Purchasing Control and Commencing with Product delivery

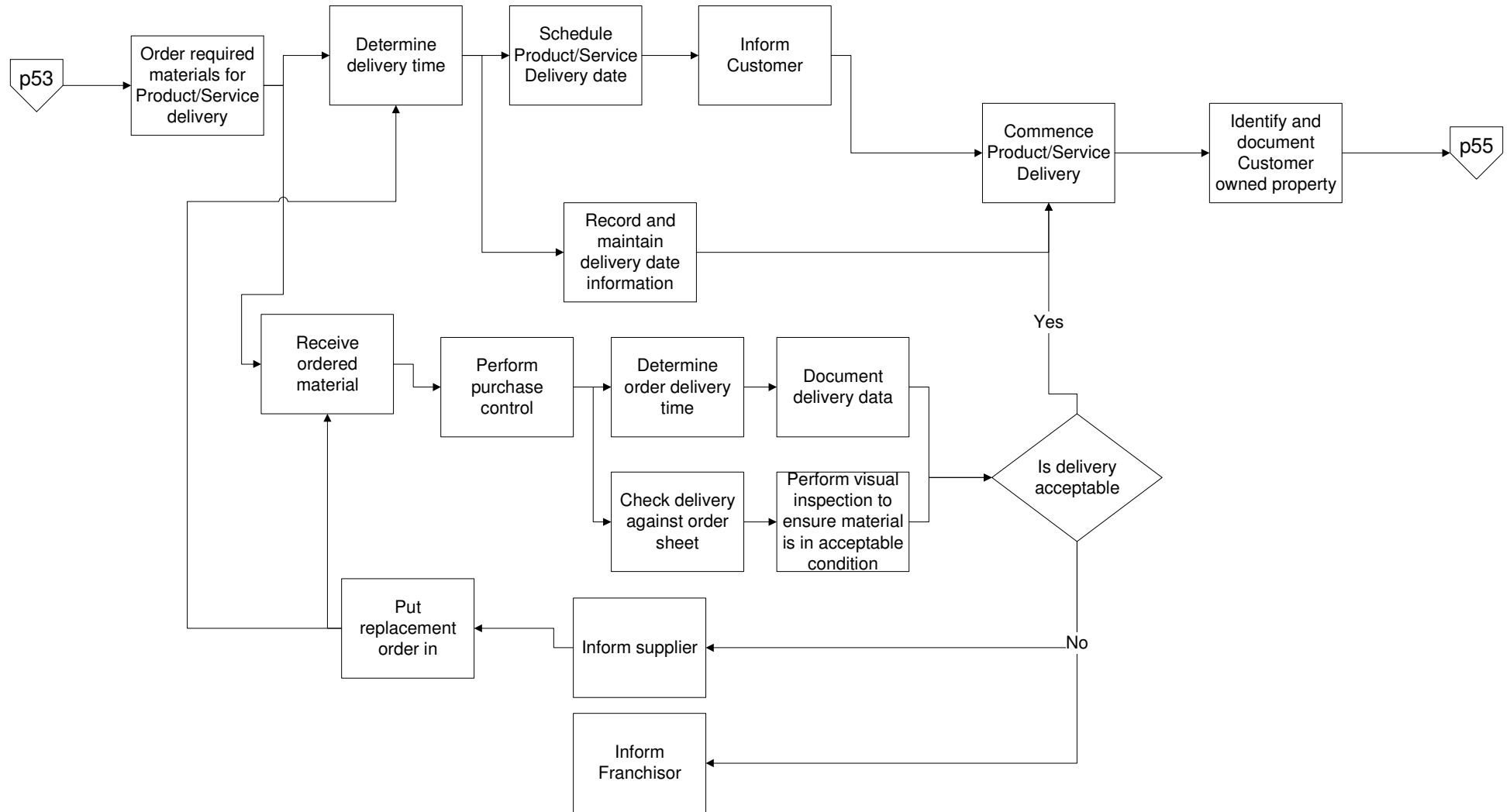
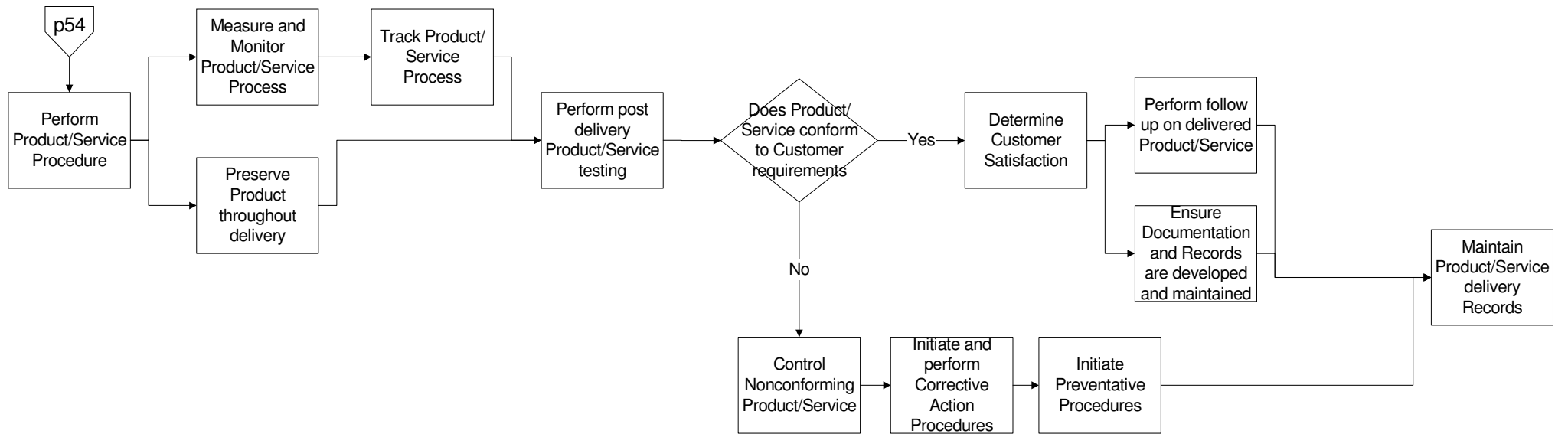




Figure 22: Basic Process for Product/Service Delivery to completion





QUALITY MANAGEMENT SYSTEM DESIGN AND DEVELOPMENT

The requirements of the ISO 9001:2008 (E) based QMS was determined and analysed. The findings of the analysis are documented in the Solution Approach section of the project document. These identified requirements of the ISO standard showed that various documentation and procedures for specific processes and operations in the Franchise were to be developed if the QMS is to be successful.

The development of these required documentation and procedures are discussed in this section of the project document. Due to the extensive nature of the developed documentation only a few examples of the developed documentation and procedures are contained in the project document. The reader is to refer to the accompanying project CD if a full understanding of the developed QMS is to be obtained.

QMS DOCUMENTATION REQUIREMENTS

The ISO standard specified that specific documentation be established and develop for the QMS. This requirements for the documentation was determined through analysis of the ISO standard and the Franchise operations. The documentation included

- The Quality Manual

The Quality Manual forms the core of the Franchise QMS and is a functional tool for controlling the QMS. The Manual contains the scope of the QMS and references the developed QMS Procedures. The Manual also indicates the interaction between the various QMS processes.

The developed Quality Manual can be viewed in Appendix A of this document and is also contained on the project CD.

- Procedure Manual

The Procedure Manual addresses all the required procedures that the ISO standard requires as well as those procedures and processes which the Franchise required in order for the QMS to be effectively implemented and operated. These procedures are labelled according to their function and reference to the ISO standard section it is related to. The procedure naming structure is indicated in table 13. Only the ISO mandatory required procedures Document Control Procedure (MQP4230-021) and Preventative Actions Procedure (MQP8530-010) as well as the Pool Solar Heating



installation project Procedure (QPR710j-010) are included in the project document and can be viewed in Appendix B. The other procedures are available on the project CD.

Table 13: Procedure naming structure

CQPXXXX-XXX	Customer Quality Procedure
MQPXXXX-XXX	Mandatory Quality Procedure
PRPXXXX-XXX	Product Requirements Procedure
QCPXXXX-XXX	Quality Communications Procedure
QMPXXXX-XXX	Quality Measurement Procedure
QRPXXXX-XXX	Product Realisation Procedure
QRPXXXX-XXX	Quality Research Procedure

The first part of the procedure name, e.g. MQPXXXX refers to the procedure type and number that refers to the procedure or section of the ISO standard. The last section of the procedure name, e.g. –XXX refers to the version of the developed procedure as the developed procedures are to be subject to continuous review.

- Form Templates

The developed procedures and documentation required that specific forms are used. These forms were developed and documented as required. The enquiry registration form template can be viewed in Appendix C of the document. The remaining form templates are contained on the project CD.

- Records

The records generated from the performed procedures are required by the ISO standard to be maintained. These records will provide the evidence of the Franchise conforming to the QMS requirements. No records are contained in the product document as these are to only develop by the Franchise themselves.



QUALITY POLICY

The Quality Policy required conforming to the ISO standard. The franchise did not possess a Quality Policy before the start of the project. It was therefore developed in conjunction with the Franchisor in order for it to reflect the purpose of the franchise. The policy was reviewed after completion to ensure the suitability.

The Quality Policy can be viewed in the Quality Manual in Appendix A.

QUALITY OBJECTIVES

The Quality Policy developed for the Franchise provides the framework for the Quality Objectives. The Franchise did not possess Quality Objectives and were therefore developed to provide the performance indicators against which the procedures performed by the Franchise could be compared and evaluated.

The Quality Objectives were developed in conjunction with the Franchisor in order that the objectives would reflect the commitment towards the customer and the delivery of quality products and services.

The Quality Objectives form part of the Quality Manual and can be viewed in Appendix A.

DOCUMENT CONTROL

The procedure required to conform to the ISO standard requirements. These requirements are discussed in the previous section of the project document. It is important to note that documents can refer to various forms of information, including written documents, drawings and electronic files. The procedure provides the guidelines and processes to control documents to ensure suitability, adequacy and correctness. The Document Control Procedure is used to ensure that the right documents are used, that they are approved, numbered and easily identified.

The required Document Control Procedure (MQP4230-021) was developed and implemented. The documented Document Control Procedure (MQP4230-021) can be viewed in Appendix B of the project document.

RECORD CONTROL

The procedure required to conform to the ISO standard requirements. These requirements are discussed in the previous section of the project document. It is important to note that records refer to the documents containing information on events or activities that have taken



place already. These records are used by the Franchisees and Franchisor during evaluation and review of the QMS and Product/Service delivery.

The required Quality Records Control Procedure (MQP4240-012) was developed and implemented. The documented Document Control Procedure (MQP4240-012) can be viewed on the project CD.

MANAGEMENT RESPONSIBILITY

The Franchise management is responsible to communicate the QMS and the requirements thereof to the Franchise employees and staff. A procedure for this communication was developed that will assist the management in perform the required task. The QMS Communication Procedure (QCP5530-010) is contained on the project CD.

The QMS also requires that the responsibilities and authority of employees are made available to all personnel in the Franchise. For this reason the Swemgat Organisational Structure quality document (FQD5510-012) was developed. This provides the Franchise with the organisational structure required as well as standardised job descriptions with the documented employee roles and responsibilities. This quality document is contained on the project CD.

RESOURCE MANAGEMENT

The ISO standard requires that the employees of the Franchise are trained and competent in performing processes related to the QMS. A training process was therefore required and developed. The Franchise Training Manual quality document (FQD6220-010) is contained on the project CD. This provides the Franchise with the required tool to ensure that personnel are competent and educated regarding QMS processes.

The required infrastructure to operate the QMS and perform the relevant procedures must be in place and available in the Franchise. The Required Franchise Infrastructure quality document (FQD6300-010) lists the required infrastructure to be in place. The document is contained on the project CD.

PRODUCT REALISATION

The ISO standard requires that the procedures required to deliver the products or services offered are documented and made available to the personnel involved in the product and service delivery. These procedures are required to address the process involved, the resources required, the quality objectives of the specific product or service and the testing

and validation procedures required. The various Product Realisation Procedures were developed and documented. The Pool Solar Heating project Procedure (QRP710j-010) can be viewed in Appendix B of the project document with the remaining procedures contained on the project CD. The developed Product Realisation Procedures are listed in table 14.

Table 14: Developed Product Realisation Procedures

QPR710a-010	Call-out for repair
QPR710b-010	Pool installation project
QPR710c-010	Spa installation project
QPR710d-010	Automated pool covers installation project
QPR710e-010	Water feature installation project
QPR710f-010	Swimming pool net installation project
QPR710g-010	Swimming pool light fixture installation project
QPR710h-010	Pool renewal project
QPR710i-010	Spa renewal project
QPR710j-010	Pool solar heating project
QPR710k-010	Heat pump installation project
QPR710l-010	Chlorinator installation project
QRP7100-010	Product Research Procedure

CUSTOMER RELATED PROCESSES

The ISO standard requires that the Franchise determine the requirements of the customer relating to the product or service. A procedure was therefore developed that would provide the Franchise with the ability to comply with this requirement and effectively capture the customer requirements. This procedure is titled Customer Requirements Procedure (CQP7210-010) and is available for view on the project CD.

The ISO standard requires that the Franchise communicate with their customers and that the effective arrangements for the communications are in place. A Customer Communications Procedure (CQP7230-010) was created to provide the Franchise with the required



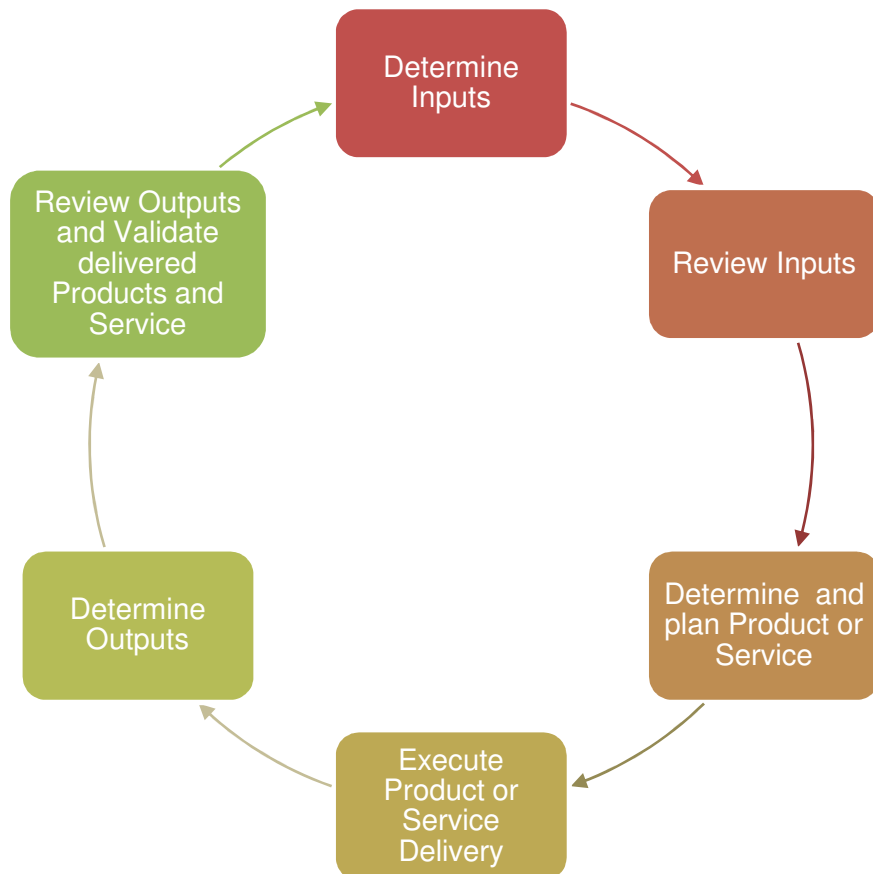
procedures to facilitate effective customer communication. The procedure is available on the project CD.

DESIGN AND DEVELOPMENT

The ISO 9001:2008(E) standard requires that the franchise management plan and control the design and development of products and services. The franchise does however not design or manufacture the products that they sell to customers and therefore the Design and Development section will focus on the services offered and planning done during the design of Swimming pool and Spa layout. The review of procedures related to the delivery of products and services will form part of the Internal Audit procedures. These procedures contain the required processes to be followed regarding the design and development. These procedures are available on the project CD.

The franchise management is committed to develop the required design and development stages required for the identified products and services. These stages shall follow the structure proposed by the ISO standard and is indicated in figure 23.

Figure 23: Design and Development phases





PURCHASING

The ISO standard requires that the Franchise ensure that the purchased products and material conform to the requirements set for each product. In order to do this the Franchise should have a procedure in place to control purchased products and verify that they conform to requirements. The Purchasing Control Procedure (PRP7400-010) was created to assist the Franchise QMS in complying with this requirement of the standard. This procedure is available on the project CD.

PRODUCT AND SERVICE PROVISION

The ISO standard requires that the Franchise plan and carry out product and service provision under controlled conditions. In order to ensure this the Franchise should determine these conditions and the requirements thereof. To assist the Franchise in performing this process and ensuring conformance with the ISO standard the following documented Procedures were developed and shall be used by the Franchise in determining and providing the controlled conditions

- Required Franchise Infrastructure quality document (FQP6300-010)
- Customer Requirements Procedure (CQP7210-010)
- Product Realisation Procedures

These procedures and documents are available on the project CD.

The ISO standard requires that products or services delivered be tested and validated after provision. This also applies to products and services provided of which the testing and validation can only be performed after implementation or delivery. For this reason the Post Delivery Product Testing Procedure (PRP7520-010) was developed. The procedure indicates the process to follow after product or services have been provided.

IDENTIFICATION, PRESERVATION AND TRACEABILITY

The standard requires that the Franchise is able to track and report the product status throughout the product lifecycle. To assist the Franchise in complying with this requirement the Product Tracking quality document was created and implemented. The quality document is available on the project CD.



The ISO standard requires that the Franchise identify and safeguard customer property during product or service delivery. The Customer Property Identification Procedure (CQP7540-010) was created to provide the Franchise with the required procedure to perform this function. The procedure is available for view on the project CD.

The ISO standard requires that the Franchise implement measures to preserve products during delivery. To provide the Franchise with the required measures and processes the Product Preservation Procedure (PRP7550-010) was created. This procedure is available on the project CD.

CONTROL OF MONITORING AND MEASUREMENT EQUIPMENT

The standard requires that the Franchise ensure that the equipment used to monitor and measure products and services delivered are controlled, maintained and calibrated. The procedure implemented should also provide the required records to provide evidence of conformance. The Control of Equipment Procedure (QMP7600-010) was developed for this purpose and is available on the project CD.

MONITORING AND MEASUREMENT OF CUSTOMER SATISFACTION

The ISO standard requires that the Franchise implement procedure to monitor and measure customer satisfaction levels relating to the Franchise. The Customer Satisfaction Procedure (CQP8210-010) was developed and implemented to provide the Franchise with the required process. This procedure can be viewed on the project CD.

MONITORING AND MEASUREMENT OF PROCESSES AND PRODUCTS

The Franchise is required to comply with the ISO standard regarding the monitoring and measurement of processes and products. This is done to ensure conformance of the products to the determined and established requirements. The Process Monitoring and Measurement quality document was created to assist the Franchise in this area. The quality document can be viewed on the project CD.

INTERNAL AUDIT

The ISO standard requires that the Franchise establish, develop and implement Internal Audit procedures. These procedures are to be carried out at planned intervals and required to conform to specific requirements. The following Internal Audit procedures were developed to conform to the ISO requirements

- Franchisee Internal Audit Procedure (MQP822c-010)



- Franchisor Internal Audit Procedure (MQP822a-010)
- Intra-Franchise Internal Audit Procedure (MQP822b-010)

These procedures are available on the project CD.

CONTROL OF NON-CONFORMING PRODUCTS

The ISO standard requires that the Franchise have a program in place to control nonconforming products. For this reason the Control of Nonconforming Products Procedure (MQP8300-010) was developed and implemented.

The procedure assists the Franchise in identifying products that do not conform to the determined product requirements by providing the identification controls required to determine non-conformance. The responsibilities and authorities regarding the process of control of non-conforming products are provided in the procedure document. The procedure provides the process and actions that must be taken and performed in the event of product non-conformance.

The procedure is available for view on the supplied project CD.

CORRECTIVE ACTION PROCEDURE

The ISO standard requires that the Franchise establish and implement a program to eliminate the causes of nonconformities in products. The Corrective Actions Procedure (MQP8520-010) was developed to provide the Franchise with the required processes to conform to the ISO standard.

The procedure provides the process and actions to continuously improve the products and services of the Franchise. The procedure is controlled by

- Product non-conformance occurrences
- Customer complaint handling
- Equipment failures and repairs

The procedure is available for view on the supplied project CD.

PREVENTATIVE ACTION PROCEDURE

The standard requires that the Franchise have a program in place to determine and implement actions to eliminate the causes of potential non-conformances to prevent reoccurrences. The Preventative Action Procedure (MQP8530-010) was developed and



implemented to provide the Franchise with the required processes. The procedure acts as an improvement procedure. The procedure can be viewed in Appendix A of the project document.

QMS PROCESS FLOW

In order for the Franchisor and Franchisees to understand how the operations of the QMS and QMS developed procedures interact and function as a whole, a process flow was required. This model was developed and indicates the interactions and sequence of the Franchise operations and procedures.

The process flow diagram in figure 24 relates how the QMS procedures and processes are performed as well as the sequence of the performed procedures. The diagram indicates what functions and procedures are carried out by the Franchisee and Franchisor. The process flow diagram also provides the time frame for the performed procedures.

Figure 25 indicates the process flow diagram relating the procedures performed by the Franchisor and Franchisee in sequence as relating to the ISO 9001 standard required QMS sections and operations.

Both these diagrams are supplied in the Quality Manual document provided to Franchisees in order to inform them of the required process sequence and operations.



Figure 24: Process Flow Diagram for QMS procedures (time constrained)

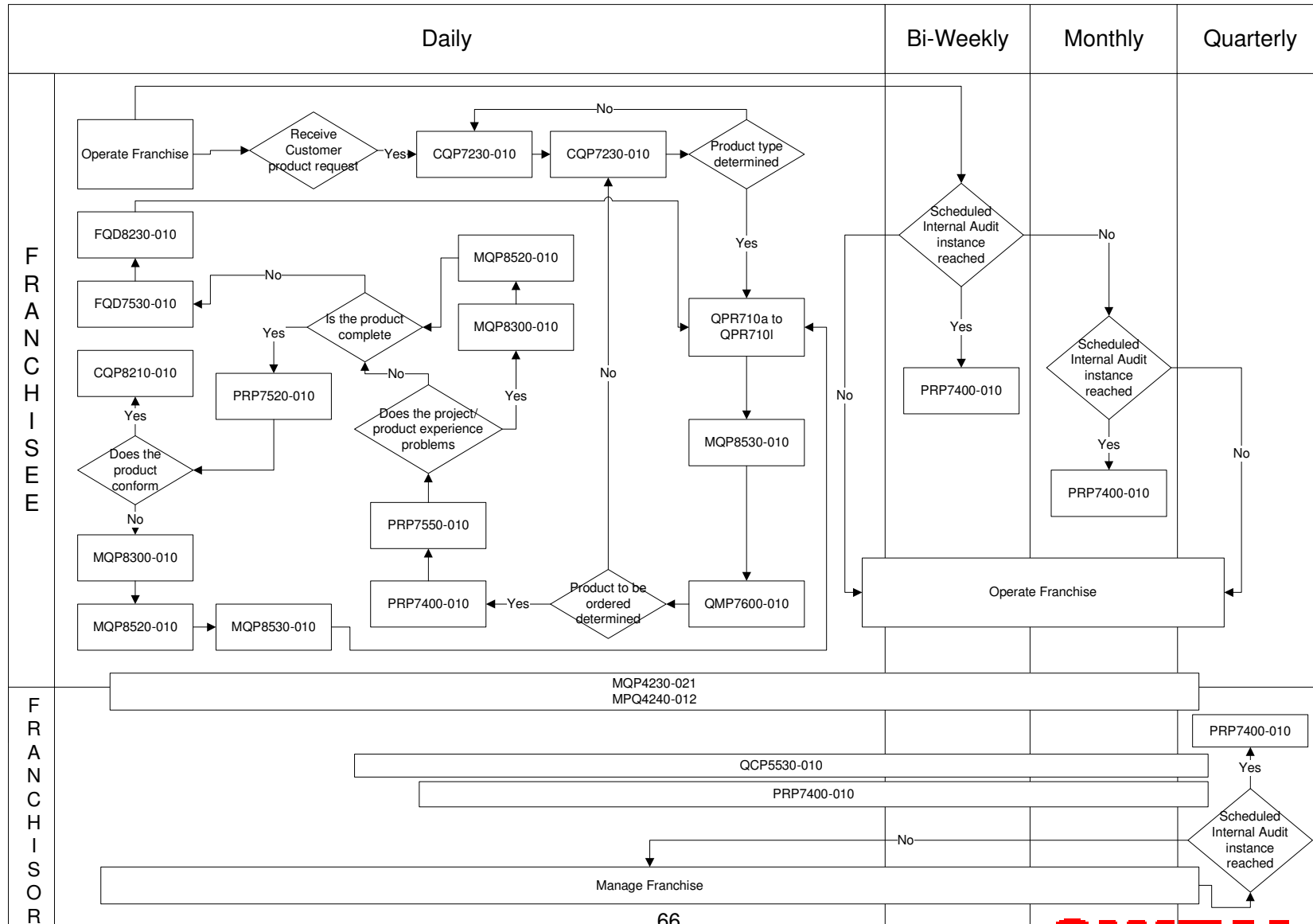
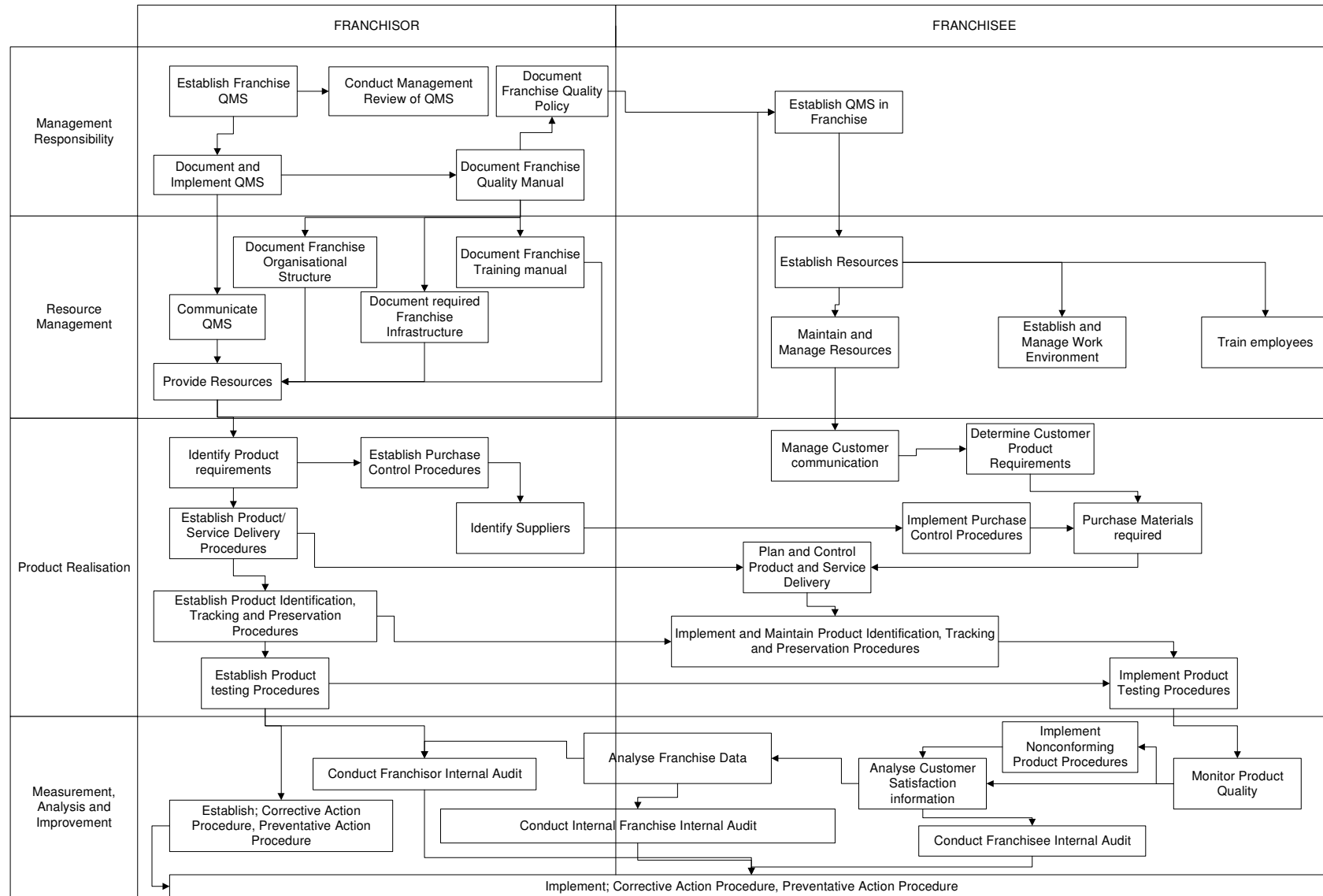




Figure 25: Process Flow Diagram of QMS Procedures (ISO 9001 section constrained)





CMS DEVELOPMENT

It was determined that for the project the CMS should be developed in such a way as to provide a solution of which the administration could be taken over at the end of the project. For this reason the CMS solution was developed with close co-operation with the Franchisor to ensure that it conformed to the set requirements.

The first step was to determine the users of the CMS. This was done by determining the organisational structure of the franchise. During the discussions held with the Franchisor it was determined that only the Franchisor and Franchisees will be assigned Liferay user accounts. The following accounts were to be created

- Franchisor – who would act as the Liferay system administrator after project handover
- Menlyn Franchise
- Midstream Franchise
- Zwartkop Franchise

In order to do so each of the users were assigned email addresses as required by the Liferay system. These email addresses were created through the use of Google's email provider Gmail. After the email accounts were created the Liferay user accounts could be setup.

Each Franchisee user account was created to facilitate ease of use while remaining functional and providing them with the required applications. Liferay provides for the user to have separate public and private pages on the system. The public page can be viewed by members of the same community or users browsing for certain individuals. The public page functions in the same way that a Social Networking site does in that it provides a portal for interaction with other Liferay members and establishes connections with other users.

The public page was therefore designed to facilitate the Franchisee in establishing themselves in the Liferay community and in familiarising themselves with the available applications and functions. The applets that were made available to the Franchisee on the public page are listed in table 15 along with a description of the applet functionality.



Table 15: Applications and associated functionality for Public page of user

	Application	Functionality
1	Document Library Display	Provides a platform to display documents and make them available for view but not changes
2	Friends	Provides an overview of user friends and a friend application function
3	Message Board	Provides a message posting function for the user
4	RSS	Provides an RSS news feed
5	Summary	Provides basic information of the user
6	Wall	Provides a message posting function for user friends

The private page of the Franchisee was created to provide the user with a workspace to manage and maintain Franchise documentation and facilitate the overall Franchise outlet operations. Two separate private pages were created. The first page provides the user with the means to quickly and effectively determine and obtain

- Customer location
- Required procedures
- Required documentation, including templates and forms

The second private page provides the Franchisee with the required applications and functionality to

- Manage Franchise Outlet documentation
- Search for required documents
- Publish assets

The applets that were made available to the Franchisee on the private page are listed in table 16 along with a description of the applet functionality.



Table 16: Applications and associated functionality for Private page of user

	Application	Functionality
1	Calendar	Provides a calendar function and scheduling capabilities
2	Dictionary	Provides a dictionary applet to assist document creation activities
3	Directory	Provides a tool to find and locate people and organisations that also make use of the Liferay system
4	Document Library	Provides a platform to manage and update documentation
5	Google Maps	Provides a tool to geographically locate customer locations
6	Image Gallery	Provides a platform to upload, view and manage product images as well as site visit images
7	Mail	Provides a link to retrieve and send emails from the users email account
8	My communities	Provides a search tool to locate communities on the Liferay system
9	Quick Note	Provides a note writing tool
10	Recent Documents	Provides a document use tracking tool
11	Search	Provides a search tool to locate people, documents and organisations



Figure 26 provides the screen shot for the Public page of the Midstream Franchisee user on the Liferay system along with markers for the different applications. Figure 27 and 28 Provide the Private pages of the Midstream Franchisee user on the Liferay system.

Figure 26: Public page of Midstream Franchisee on the Liferay system

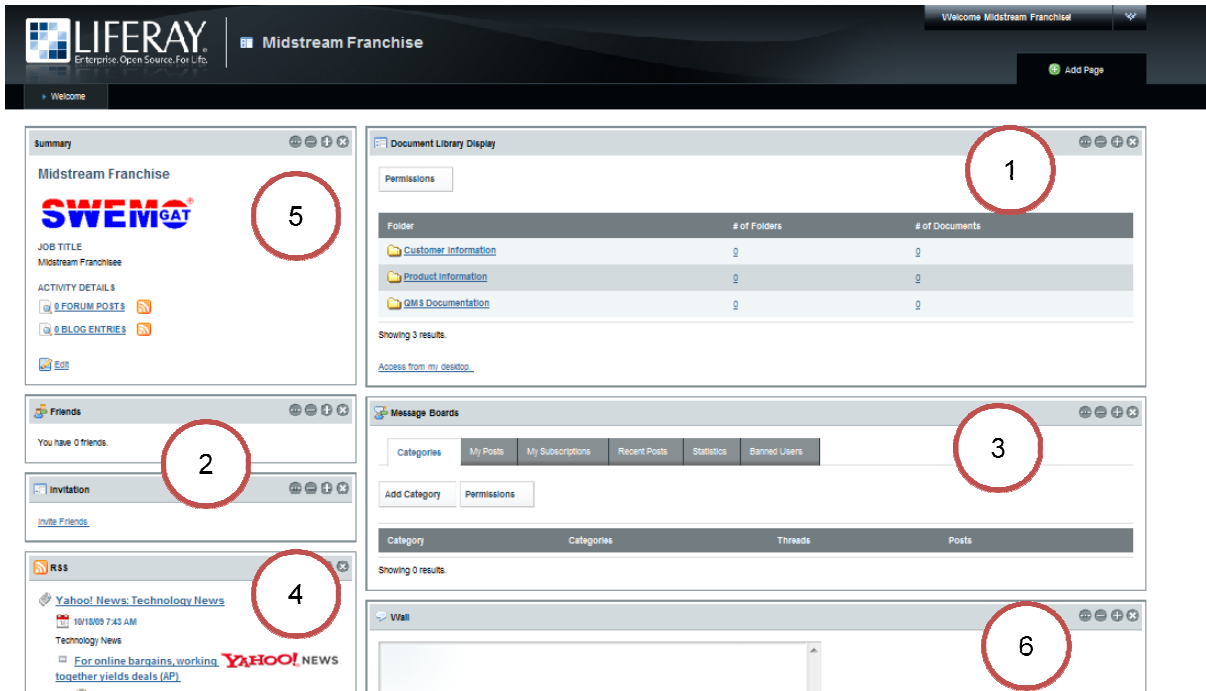


Figure 27: Private page 1 of Midstream Franchisee on Liferay system

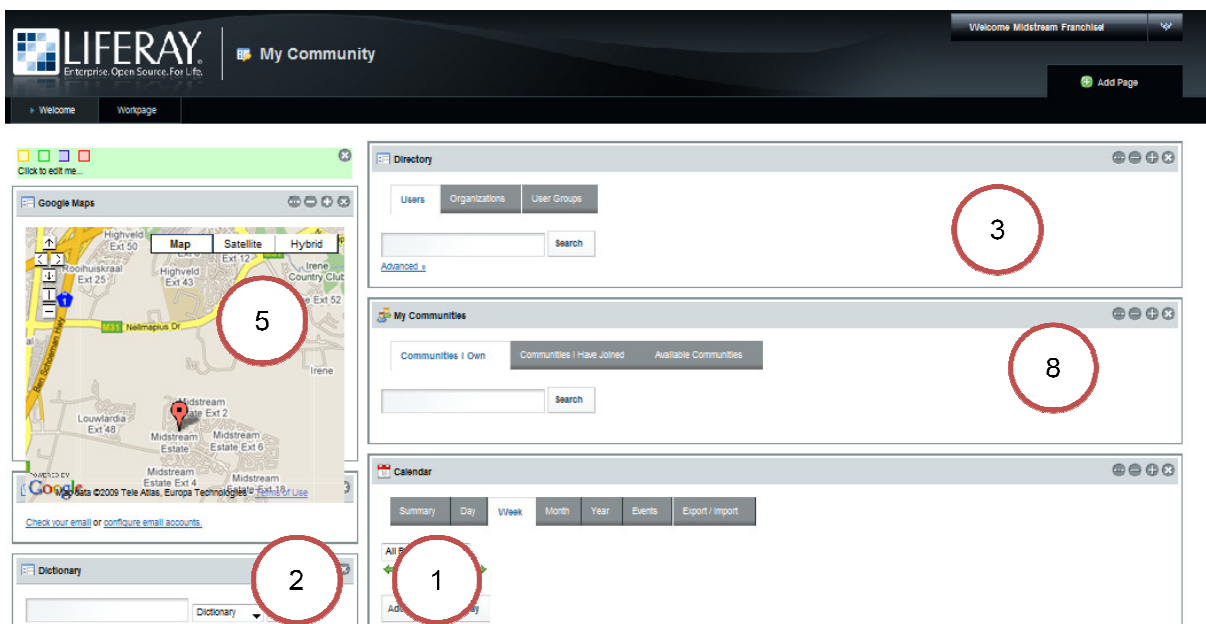
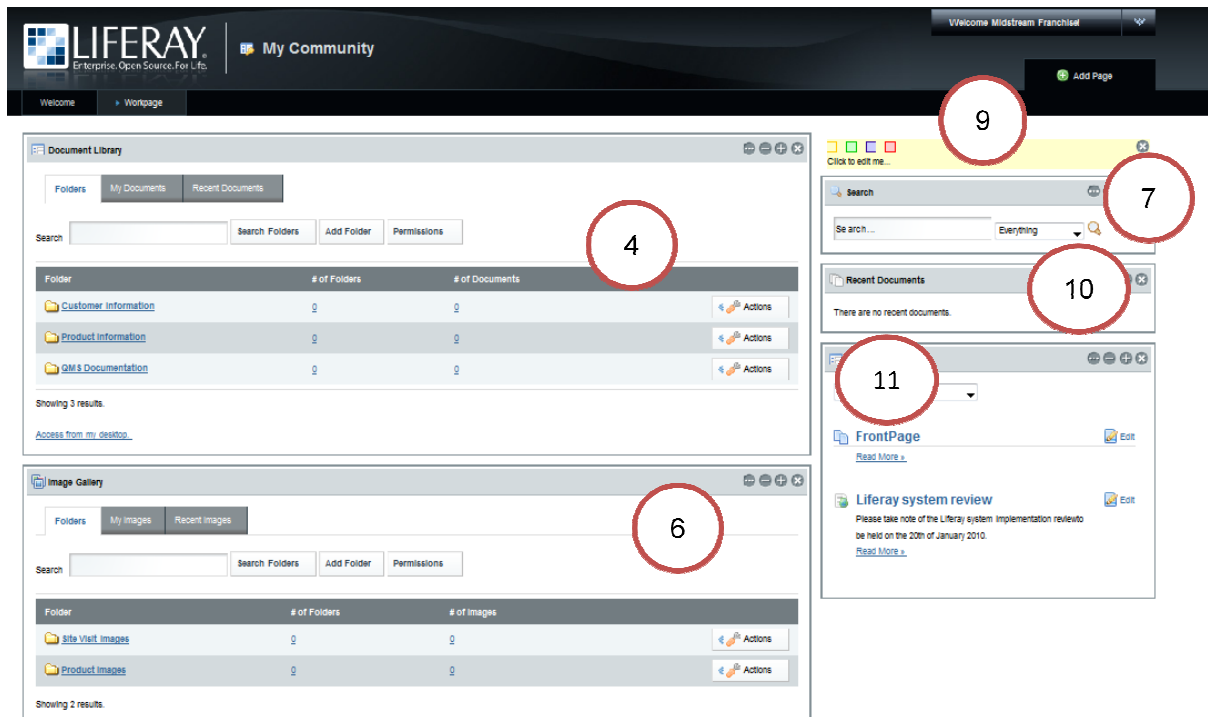


Figure 28: Private page 2 of Midstream Franchisee on Liferay system



The Franchisor account was created to support the QMS and function as a repository and maintenance platform of the QMS documentation. The Franchise Public page has limited functionality and provides the user/viewer with the following functions

- View and retrieve Franchise documentation
- View locations of the Franchise outlets, Supplier locations and the Head office
- View Calendar events
- Receive and Respond to Franchisee messages

The reason for this design decision is discussed in the following section.

The Private page of the Franchisor provides the functionality required to manage and maintain the QMS documentation and workflow process. The Franchisor who acts as the administrator of both the CMS and QMS will have the ability to change, modify and improve the QMS and CMS documentation. The applications and the associated functionalities of the private and public page of the Franchisor on the Liferay system are provided in table 17 and 18.



Table 17: Public page of Swemgat Franchisor on Liferay system

	Application	Functionality
1	Calendar	Provides a tool to view and schedule events
2	Document Library Display	Allows the page user to view the Franchise Documents
3	Google Maps	Provides the tool to locate
4	Message Board	Provides the platform for discussions and Franchisee query handling

Table 18: Private page of Swemgat Franchisor on Liferay system

	Application	Functionality
1	Document Library	Provides a platform to manage and update documentation
2	Image gallery	Provides a platform to upload, view and manage product images as well as site visit images
3	Mail	Provides a link to retrieve and send emails from the users email account
4	My Community	Provides a search tool to locate communities on the Liferay system
5	Recent Documents	Provides a document use tracking tool

Figure 29 and 30 provides the Public and Private page of the Franchisor on Liferay system.



Figure 29: Public page of the Franchisor on the Liferay system

1

Folder	# of Folders	# of Documents
Liferay user manual Contains the user manual for the Liferay CMS system	0	1
Product information Subfolders: Price lists, Products, Services	3	5
QMS - Procedure documentation Contains all QMS procedure documentation Subfolders: Communications Procedures, Customer Quality Procedures, Mandatory Procedures, Product Realisation Procedures, Product Requirements Procedures	5	24
QMS - Quality documents Contains all QMS quality documents	0	13
QMS - Quality templates Contains QMS templates and forms Subfolders: QMS templates, Standard forms	2	25

2

4

Figure 30: Private page of the Franchisor on the Liferay system

1

Folder	# of Folders	# of Documents	Actions
Liferay user manual Contains the user manual for the Liferay CMS system	0	1	Actions
Product information Subfolders: Price lists, Products, Services	3	5	Actions
QMS - Procedure documentation Contains all QMS procedure documentation Subfolders: Communications Procedures, Customer Quality Procedures, Mandatory Procedures, Product Realisation Procedures, Product Requirements Procedures	5	24	Actions
QMS - Quality documents Contains all QMS quality documents	0	13	Actions
QMS - Quality templates Contains QMS templates and forms Subfolders: QMS templates, Standard forms	2	25	Actions

2

3

4

5



ROLES, RESPONSIBILITIES AND AUTHORITY

The Franchise required a method to centrally maintain and store the developed QMS documents. For this reason a Content Management System was investigated and implemented to suite the Franchise requirements. The Liferay CMS solution provides the capabilities to assign the roles, responsibilities and authority to the system users through the innovative use of specified and specialised applets. This section discusses the roles, responsibilities and authorities in the Franchise organisational system relating to the CMS. The solutions implemented to manage and realise the awarded and assigned roles, responsibilities and authority is also discussed.

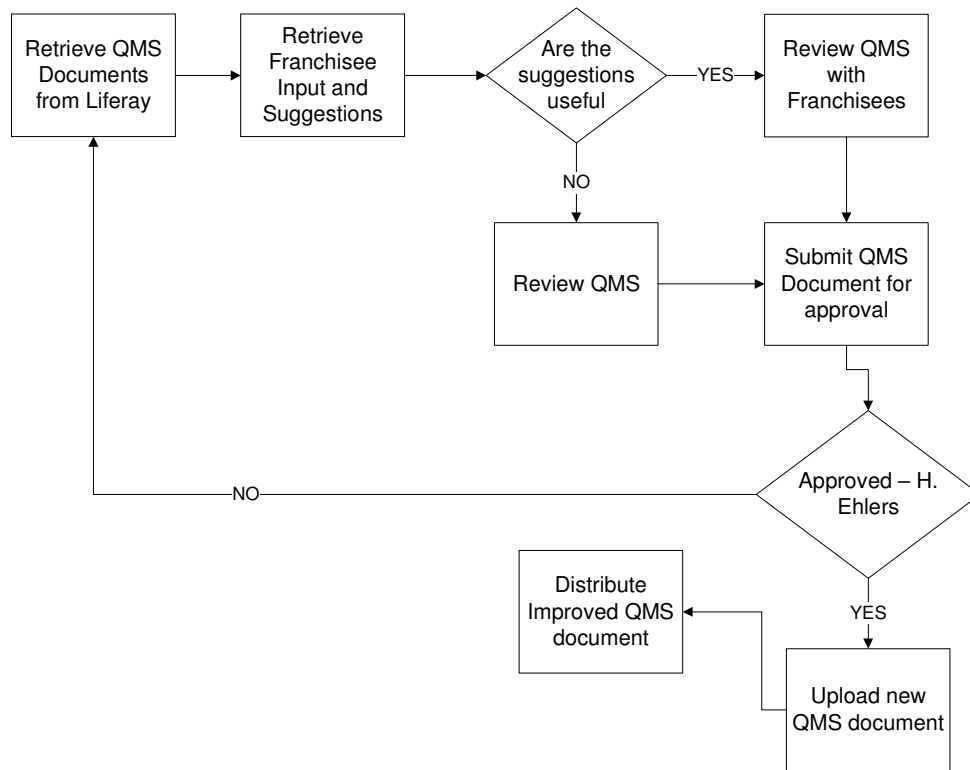
In the Swemgat Franchise the responsibility to maintain the QMS documentation belongs to the Franchisor. The Franchisor also has sole authority to bring on changes to the QMS documentation and QMS procedures. For this reason the Liferay Public page of the Franchisor only contains the Document Library View applet. This applet allows the viewers of the Franchisor Public page to access the documents stored on the centralised server but provides them with no authority to make changes to the viewed and downloaded documents. The applet also does not allow the viewer to upload any documents to the centralised server.

In order to facilitate the Franchisor in performing the responsibility of maintaining and improving the QMS documentation the Private page of the Franchisor was developed to contain the Document Library applet. This applet allows the Franchisor to maintain the QMS documents and provides the authority to change and improve the documents. The applet provides the ability to create separate folders to effectively manage the documentation and ensure compliance with the Document Control Procedure (MQP4230-021) of the Franchise. The updated documentation is stored on the centralised server when uploaded. The applet provides the workflow rules and facilities required.

To comply with the requirements of the ISO standard the workflow rules for the documents of the QMS were created. This process is built into the Liferay system and facilitates the creation, review, approval and distribution of the QMS documents. The process followed can be seen in figure 31.

In order to facilitate input from the Franchisees regarding QMS documents and procedures the workflow takes into account these inputs in the form of reviews and document postings to the Franchisor. This is incorporated into the workflow depicted in figure 31. This process also complies with the ISO standard regarding management review and internal auditing.

Figure 31: Process for QMS Document improvement



The role and responsibility to maintain Records that stem from the QMS procedures are assigned to all Franchisees and the Franchisor as required by the ISO standard. For this reason the Liferay system was designed to provide each user with the facility and tools required to perform this task with ease while ensuring that the records remain

- Maintained
- Identifiable
- Accessible
- Consistent

To facilitate this responsibility each user of the Liferay system had the Document Library applet configured and implemented on the Private page. This applet was configured to conform to the required workflow rules determined for the record maintenance and control. This workflow is depicted in figure 32 along with the QMS procedures from which the records stem and originate. Figure 33 provides the workflow diagram without the reference to the QMS records and ISO sections.



Figure 32: Workflow Diagram for QMS Records

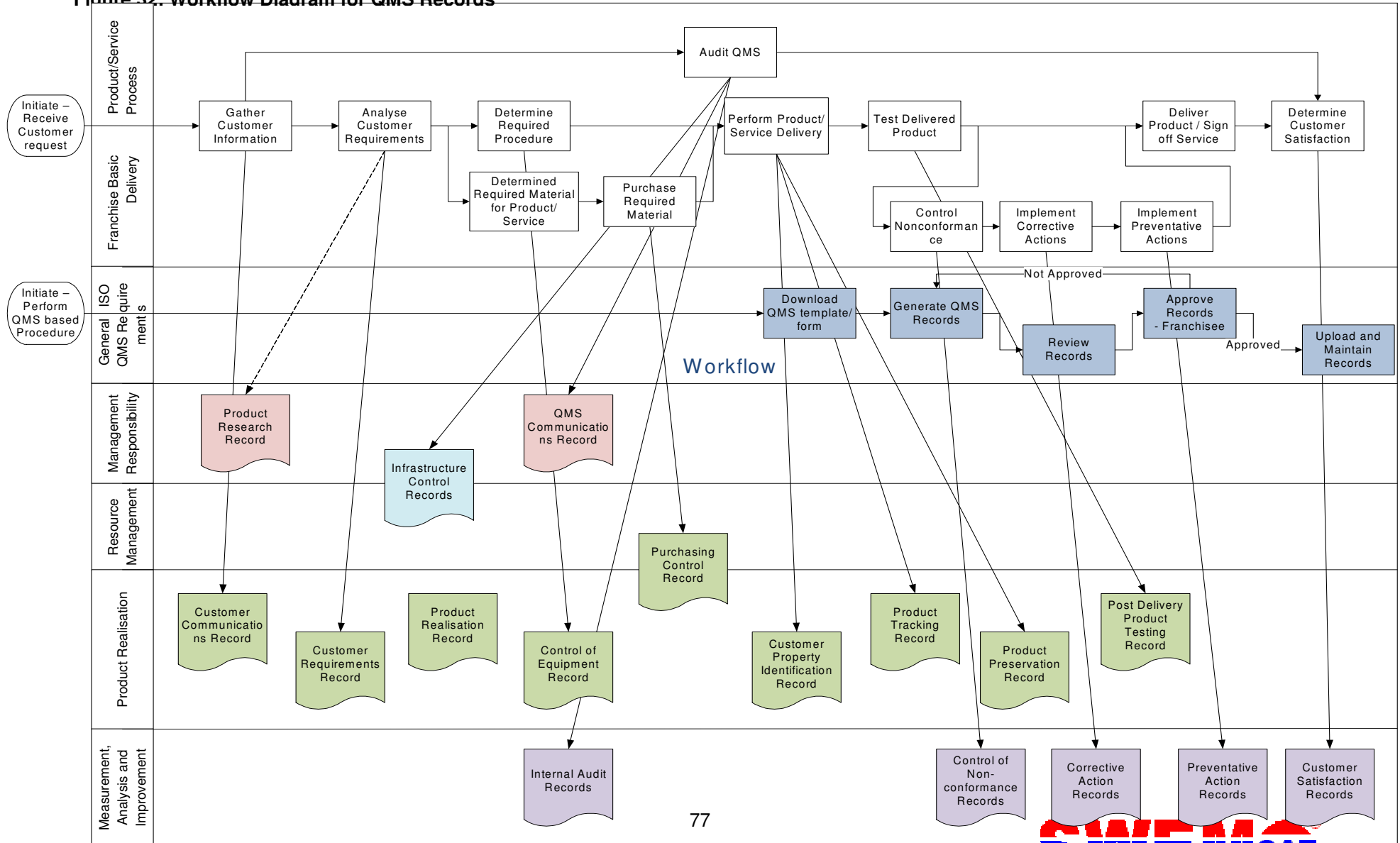
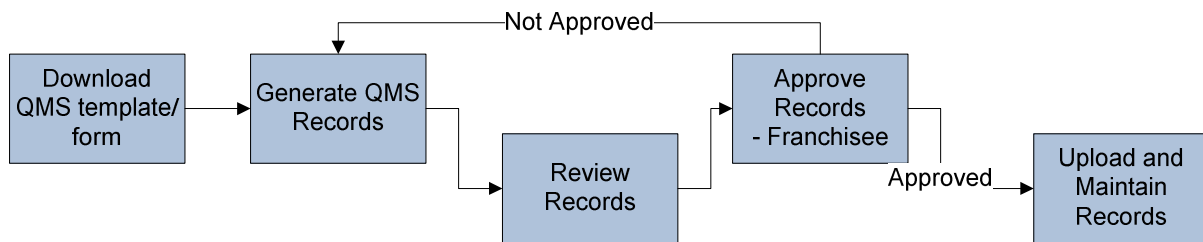


Figure 33: Workflow Diagram for Records Control



VERSIONING AND ORGANISATION CONTROL

The Liferay System was developed to provide the users with the ability to control the versioning of documents in the Franchise organisation. This allows for all documents that are updated, edited or added to be assigned a version number. The versioning rule allows that the first document added to the central server database be assigned a versioning number of 1.0. This version number is updated with 0.1 with every document change applied. This number is applied until the document has been updated 9 times after which the document version number rolls over to 2.0. This process is automated and repeats as many times as required for document updates and changes.

The approval of documents can only be performed by the Administrator of the Liferay system. This role and authority, as discussed in the previous section, is assigned to the Franchisor when the project deliverables are handed over to the Franchisor. This process forms part of the workflow rules built into the Liferay system. Figure 34 provides an example of the versioning and approval process of the workflow functionality.

The system provides the Administrator with the ability to manage the documents contained on the centralised server and provides the authority to approve, expire and delete the specific version of the document. The Administrator can also schedule when the specific document can be viewed, reviewed and expire. The users required for the review process can also be specified if required. The implemented rules and applications provide the full workflow functionality as required by the Franchise to effectively manage and maintain the QMS documentation as required by the ISO 9001:2008 (E) standard.



Figure 34: Versioning and Approval of Documents on the Liferay system

The screenshot shows the Liferay document management interface for a document titled "Quality Manual" (ID: 10177). The interface includes a top navigation bar with "Web Content" and a "Back" button. Below the navigation bar, the document details are displayed: ID 10177, Name "Quality Manual", and Language "English (United States)". A rich text editor is visible, showing the document content: "QUALITY MANUAL", "The Quality Manual forms the core of the Swemgat Quality Management System. This manual provides and outlines the procedures and policies of the Swemgat Quality Management System. This manual should be". To the right of the editor, there are several panels: "Form and Presentation" with "Structure" and "Template" options; "Workflow" with "Version" set to 1.1, "Status Not Approved", and "Increment Version on Save" checkbox; and "Categorization" and "Schedule" sections. At the bottom, there is an "Abstract" section.

COMMUNICATION

To facilitate communication between the users of the Liferay system the Message Board applet was implemented and configured. This applet will ensure that communication between the users is effective and easily maintained. The Message Board will provide the platform for Franchisees to share opinions and suggestions regarding the QMS.

The Message Board complies with the requirement of the ISO standard regarding internal communication.

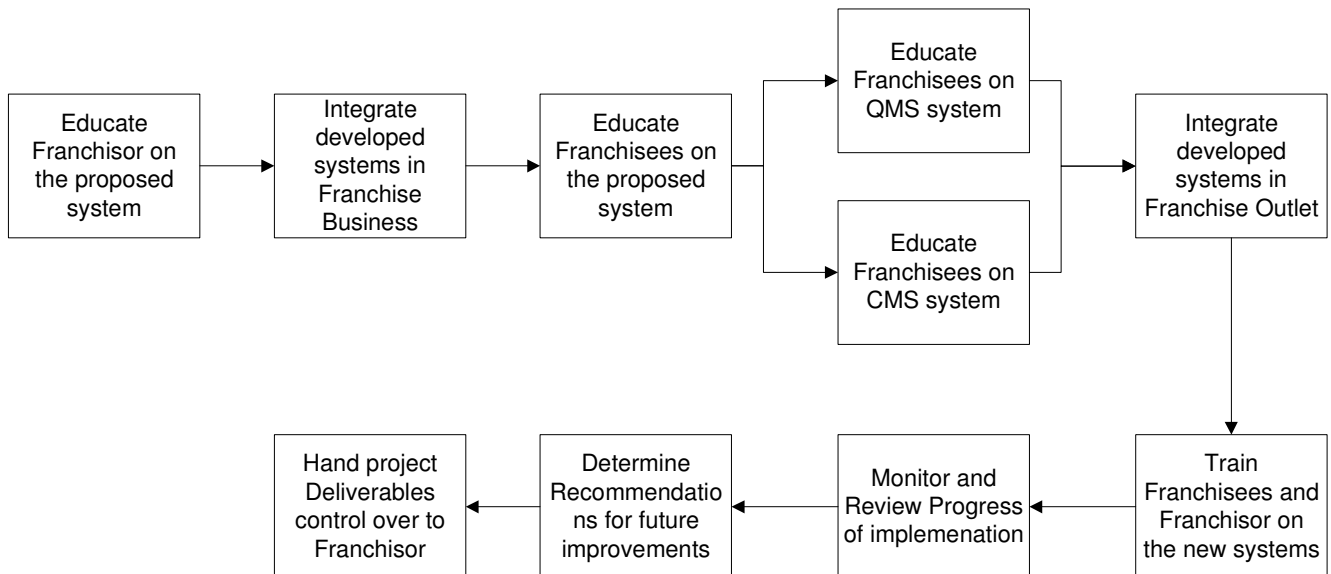
IMPLEMENTATION

The QMS and the identified procedures described in the previous sections were implemented in the Franchise by the student. The implementation of the QMS and the relevant procedures was performed with relative ease due to the commitment of both the Franchisor and Franchisees.

The Liferay CMS development was performed as discussed in the previous section of the document. The CMS was implemented at each Franchise outlet by loading the required software on the Outlet hardware. The implementation of the Liferay CMS was performed and met no resistance from the Franchise management. This was due to proper education on the Liferay system beforehand and providing the Franchisees with the list of benefits offered by implementing such a system.

The implementation process followed is provided in figure 35. The student was assisted by the Franchisor during the implementation steps followed.

Figure 35: Implementation Process for QMS and CMS project



PROJECT DELIVERY

The determined project deliverables were handed over to the Franchisor and control over the QMS and CMS were conceded to Hendrik Ehlers. Recommendations for future improvement to the QMS and CMS were documented and provided.



7. CONCLUSION

The project aimed to provide the franchise with the required tools, methods and techniques to assist them to continually deliver quality products and services. The analysis of available systems and tools indicated that an ISO 9001:2008 (E) based Quality Management System (QMS) would best suite the Franchise. The use of a Content Management System (CMS) to assist the QMS was investigated and a possible solution identified.

The ISO 9001:2008(E) standard was selected as the framework for the QMS developed. This was done due to the simplicity and effectiveness of the standard as a management system. The QMS developed ensures that the products and services provided meet the customer requirements and that the quality and conformity of products are ensured.

The QMS will provide the franchise with the required procedures to improve product quality and allow the Franchise to compete in the marketplace. The QMS will also improve their chances of growing their area of influence and reach their target goal of capturing 2% of the swimming pool and spa market. The implementation and use of the Liferay CMS will improve the control and maintenance of franchise documents and records. The implemented CMS will provide the Franchise with the tools to facilitate effective communication between Franchisee and Franchisor. The implementation of these systems will complement each other and increase the productivity and efficiency of processes performed in the franchise.

Franchise management will be responsible to educate and familiarise themselves with the Quality Manual in order to educate and train their employees to participate in the pursuit of quality. The continuous review and improvement of the QMS will ensure that the franchise remain capable to meet their targets and exceed customer expectations.

The project provided the methods and tools that form the basis from which the franchise can move towards continually and consistently provide quality products and services.



8. RECOMMENDATIONS

The project provided the franchise with the first step towards ensuring the delivery of quality products and services. The QMS will provide the required procedures to assure conformance to customer requirements and expectations. The development and use of the Liferay CMS complements the QMS and provides the tools and techniques to improve efficiency and effectiveness of operations.

The student determined that in order for the franchise to continue on the path of quality the following recommendations should be taken into consideration.

- Educate all employees regarding quality processes and ISO requirements
- Communicate the Quality Policy and Objectives to all employees in the franchise on all levels. Place clearly marked and indicated posters in the franchise store to remind employees of them
- Ensure that detailed records are generated with each procedure performed and maintained, as these will form the basis of QMS improvement
- Ensure that the continuous review of the QMS does take place and that all proposals for improvement be considered and evaluated. Also ensure that any problems with the QMS is immediately resolved and corrected
- Ensure that the CMS is updated and that administrative functions are performed
- Investigate available applications of the CMS and implement applets that could add value to the Franchise



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10. APPENDIX A: QUALITY MANUAL

ISO
9001

SWEMGAT FRANCHISE

QUALITY MANUAL

The Quality Manual forms the core of the Swemgat Quality Management System. This manual provides and outlines the procedures and policies of the Swemgat Quality Management System. This manual should be used to assist the franchise in constantly and continuously providing quality services and products.

FQD4220-010



INTRODUCTION

Swemgat franchise developed and implemented a Quality Management System (QMS) in order to

- document the franchise's best business practices
- increase satisfaction of customer requirements and expectations
- improve the management of the franchise
- assist the start up process of franchise

The Quality Management System of Swemgat franchise was designed and developed to comply with the requirements of the ISO 9001:2008 (E) standard. The developed system addresses the procedures of starting a franchise and the procedures and processes performed in an operating franchise. These procedures include the installation and maintenance services offered by the franchises as well as the mandatory procedures as stated in the ISO 9001:2008 (E) standard.

The Quality Manual forms the core of the Quality Management System. The Quality Manual is divided into 8 sections that correlate to the requirements set out in the ISO 9001:2008 (E) standard. Each of the sections and sub sections are provided with a company policy statement of the franchise. This policy statement expresses the dedication and commitment of Swemgat franchise and their Franchisees to implement and maintain the requirements of the Quality Management System. The procedures and the required information needed to implement the requirements are also provided in each section.

The Quality Manual provides the procedures for the activities and functions relating to the Quality Management System to ensure that the franchise complies with the ISO 9001:2008 (E) standard requirements. The Quality Manual also provides information regarding authorities inside the franchise as a whole and separate operating entity as well as the relationships and responsibilities of the personnel operating within the system and franchise.

The Quality Manual provides the Franchisees and the franchise employees with the required guidelines and procedures to ensure that the requirements of the Quality Management System are met to continuously provide customers with quality products and services. The Quality Manual will also provide the instructions required by Franchisees to effectively operate the franchise and meet the requirements of the ISO 9001:2008 (E) standard.

The Quality Manual will provide customers with the assurance that the products and services provided to them are controlled and conform to the level of quality set by the Swemgat franchise. The Quality Manual can be used to indicate to customers the controls and procedures in place to meet their requirements and expectations.

In essence the Quality Manual describes how ISO 9001 is implemented in the Swemgat Franchise. The accompanying Procedure Manual provides the documented procedures describing what is done, by whom, in what order and to what standard.

LIFERAY CONTENT MANAGEMENT SOLUTION

The Liferay CMS complements the developed QMS and provides the functionality and tools required to perform certain documented procedures. The interaction between the Liferay system and the QMS is discussed in the respective Procedure Documents.

The Franchisor of Swemgat is responsible to introduce the Franchisees to the Liferay system. The Franchisor should create a profile for the Franchisee on the system and educate and inform the user of the available documentation. All reference to the Liferay CMS in the Quality Manual refers to the administrator's public page that acts as the electronic content repository for all documentation relating to the QMS. The Franchisor shall be responsible to train the users of the system

SECTION 1: QUALITY MANAGEMENT SYSTEM SCOPE

GENERAL

This Quality Manual forms part of the requirements of the QMS based on the ISO 9001:2008(E) standard and complies with the standard's conditions and compliances. The Quality Manual is to be used by the Franchisor and Franchisees of Swemgat as a functional tool to control the level of quality in all procedures performed in and by the franchise.

The Quality Manual provides and outlines the procedures and policies of the Quality Management System. This manual should be used to assist the franchise in constantly and continuously providing quality services and products.

SCOPE

The Quality Management System was developed based in the ISO 9001:2008 (E) standard. The requirements of the Franchisor, Franchisees and Franchise were taken into account during the development of the system and the required documentation and processes.

The Quality Manual conforms to the requirements of the ISO 9001:2008 (E). The manual discusses the

- Quality Policy
- Quality Objectives
- Required Documented Procedures and Statements
- Process flows and descriptions

SECTION 2: REFERENCE DOCUMENTS

REFERENCE DOCUMENTS

The documents used as reference during the development of the Quality Management System are

- ISO 9000:2000(E): Quality Management System. Fundamentals and Vocabulary
- ISO 9001:2008(E): Quality Management System. Requirements
- Swemgat Business Charter
- Development and Implementation of a Quality Management System for Swemgat Franchise (FQP0010-010)

The Swemgat Business charter and the Development and Implementation of a Quality Management System for Swemgat Franchise documents can be viewed on the Liferay administrator's public page.

The ISO 9000:2000 (E) and ISO 9001:2008 (E) standard cannot be viewed on the Liferay CMS due to regulations imposed on the distribution of the documents.

SECTION 3: TERMS AND DEFINITIONS

ISO STANDARD TERMS AND DEFINITIONS

Terms and definitions used in the Quality Manual are according to the ISO 9000:2000(E) standard. This standard contains all vocabulary used in the Quality Manual. The standard can be requested by Franchisees from the administrator's page.

The following definitions are included to afford clarity regarding specific procedures and sections discussed.

- Customer property: Any equipment, instrumentation and customer owned land and resources used during product or service delivery
- Outsourced process: Refers to any processes or functions performed in the Franchise required for the QMS that are chosen by the Franchisor or Franchisee to be performed by an outside business entity.
- Product: Can refer to products or services offered. Refers to the end item result of meeting all contract terms and conditions between the customer and the Franchisee

SECTION 4: GENERAL REQUIREMENTS OF THE QUALITY MANAGEMENT SYSTEM

GENERAL REQUIREMENTS

The Swemgat has established documented and implemented a Quality Management System (QMS). This system conforms to the ISO 9001:2008 (E) requirements and specifications. The QMS is maintained and subject to continuous improvement. This is achieved through management review of various audit results, data analyses and analysis of the franchise quality policy and quality objectives. The QMS was developed to provide Swemgat with the desired system and procedures to ensure the consistent delivery of quality products and services.

In order to design and implement the QMS, Swemgat has performed the 6 steps as described by the ISO 9001 standard. Swemgat has:

- Identified the processes needed for the QMS and their application in the entire franchise. These processes have been identified, established, documented implemented and are maintained. A full list of the documented procedures and quality documents are provided in Appendix A of the Quality Manual.
- Determined the sequence and interaction of these processes. The sequence and interaction is documented in a process flow diagram format. This process flow diagram can be viewed in Appendix B of this document
- Determined criteria and methods needed to ensure that the operation and control of the processes are effective..
- Ensured the continuous availability of the required resources and information to achieved the desired results and monitor the processes. These resources have been identified and documented.
- Established processes and systems to monitor measure and analyse the processes performed in the franchise.
- Established processes to identify and implement actions necessary to achieve the desired results and outcomes while continuously improve the QMS processes.

The roles and responsibilities of the QMS was determined and documented. These roles and responsibilities are discussed in the Swemgat Organisational Structure (FQD5510-012).

QMS PRINCIPLES

The ISO standard promotes the use of the process approach for the development, implementation and improvement of the proposed QMS. The process approach lays emphasis on the

- Understanding the QMS requirements
- Meeting the QMS requirements
- Obtaining results from processes to determine performance
- Continuous improvement of QMS processes

The process approach requires that the process inputs, outputs and controls be determined as well as the relationship between QMS processes.

The QMS was built around focusing on eight quality management principles that was used as a framework during the development of the QMS as required by the ISO 9001:2008(E) standard. These principles are:

- Customer Focus

The Swemgat franchise is committed to determining current and future customer needs and requirements. The franchise realizes the importance of the voice of the customer.

- Leadership

Swemgat franchise management is committed to implement and maintain the QMS. Swemgat Franchisees are encouraged to instil a culture of quality among employees.

- Involvement of people

Swemgat franchise management understands that employees play a vital role in the effective and efficient implementation and management of the QMS and the developed procedures. All Swemgat personnel are therefore to be involved in the QMS.

- Process approach

Swemgat franchise management will manage all activities and resources as a process to achieve the desired results.

- Systems approach to management

Swemgat management is committed to identify and manage the interrelated processes as a system to ensure the franchise operates effectively and efficiently to achieve their objectives.

- Continual improvement

Swemgat Franchisees are committed to continuously improve the performance of the franchise. This forms part of the franchise's permanent objectives.

- Factual approach to decision making

Swemgat Franchisees and employees are to make decisions based on the analysis of data and information.

- Mutually beneficial supplier relationships

Swemgat franchise and their suppliers are interdependent and the franchise strives to develop mutually beneficial relationships with their suppliers to enhance the ability to create value.

DOCUMENTATION

The documentation developed for the QMS consists of

A documented quality policy and quality objectives

- This Quality Manual (FQP4220-010)
- Documented Procedures
- Documents and templates identified for the effective operation of the quality processes
- Quality records (obtained from work completed)

QUALITY POLICY

The developed Swemgat Quality Policy (FQD5300-010) is consistent with the purpose of the franchise and indicates Swemgat’s commitment to meeting the customer’s expectations and requirements. The Quality Policy shall be used as a framework in the development of the franchise’s Quality Objectives.

Swemgat Quality Policy

Swemgat is dedicated to quality and continuous process improvement for both their customers and employees. Swemgat strives towards delivering quality products and services to be enjoyed and that will enhance the quality of life of those using them. Our responsibility is to ensure that through established standards and measurements, the level of quality matches or exceeds our customers’ expectations and requirements.

We develop quality awareness through process improvements, training, measurements, continuous reviews and development of our employees. Quality is an integral part of our commitment to products and customer service. Our quality process includes

- Exceed our customer’s needs and expectations
- Verifying and validating both existing and new processes
- Improve quality throughout Swemgat
- Maintain a controlled and winning atmosphere at Swemgat
- Research improvements to add to the quality of our products and services
- Helping to define and improve our products through involvement with our employees and customers
- Conducting internal quality audits and management reviews for an ongoing evaluation and improvement of our quality system

The Swemgat management team is committed to creating a caring and successful environment that encourages all employees to cooperate in achieving our vision and increasing quality.

Swemgat management will review the Quality Policy at regular intervals to ensure that it remains suitable and relevant to the franchise.

Signature.....

Signature.....

Hendrik Ehlers

Franchisee



QUALITY OBJECTIVES

The franchise's Quality Objectives were established by using the developed Quality Policy as reference.

Swemgat Quality Objectives

- To establish and maintain Swemgat's Quality Management System
- To ensure that the QMS conforms to the ISO 9001:2008(E) specification
- To continuously improve customer satisfaction and have at least a 95% success rate
- To ensure that 90% of projects are on time
- To reduce non-conformance
- To reduce incorrect product usage
- To establish a training program and train 80% of the workforce
- To establish and maintain a constant workforce
- To improve the work environment
- To reduce lost sales by 50%
- To increase information sharing by 60%
- To continually review, audit and improve the QMS
- To investigate product and service improvements

DOCUMENT CONTROL

All of the Quality Management System documentation of Swemgat shall be controlled and managed according to the Document Control Procedure (MQP4230-021). This procedure describes the process of

- Approving documents prior to distribution for suitability and adequacy
- Provision of correct versions of documents for use
- Review and approval of documents when updated or changed
- Specification of current revision statuses of documents
- Monitoring and management of documents from external sources
- Ensuring that documents are legible and identifiable
- Prevention of accidental use of obsolete documents
- Preservation of quality documents for usability

The procedure is maintained on the administrator page of the CMS. Hard copies of the latest version are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

RECORDS CONTROL

The Quality Records originating from performed Quality Procedures and Processes are maintained to provide evidence of conformance to the requirements of the Quality Management System.

All Swemgat records are maintained according to the Quality Records Control Procedure (MQP4240-012). The procedure ensures that records shall remain legible, readily identifiable and retrievable. The procedure provides the controls and processes required for

- Identification
- Storage
- Protection
- Retrieval

The procedure also provides the retention time and nature of the Quality Records.

The procedure is maintained on the administrator page of the CMS. Hard copies of the latest version are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

RELATED PROCEDURES AND QUALITY DOCUMENTS

- Document Control Procedures (MQP4230-021)
- Quality Records Control Procedure (MQP4240-012)
- Swemgat Quality Policy (FQD5300-010)

SECTION 5: MANAGEMENT RESPONSIBILITY

MANAGEMENT COMMITMENT

The Franchisor of Swemgat, Hendrik Ehlers, is committed to implementing the Quality Management System. Through communication and participation with Franchisees he will provide the vision and strategic direction of the QMS. The Franchisee shall partake in all specified QMS management activities. Failure to comply and participate will result in an applicable fine and possible denied assistance in QMS implementation and management processes.

The Franchisor shall perform the following in order to show commitment to the implementation and improvement of the QMS

- Communicate the importance of the QMS to Franchisees
- Establish and continuously review and improve the Quality Policy
- Establish and continuously review and improve the Quality Objectives
- Conduct regular and scheduled reviews of QMS implementation in Franchises
- Conduct regular and scheduled reviews of the QMS
- Conduct regular and scheduled management review meetings with Franchisees
- Provide and ensure the availability of resources required by Franchisee to effectively implement and manage the QMS

The Franchisees assume the role of management in the Swemgat Franchise(s) they operate and therefore shall be committed to the implementation and improvement of the QMS. Franchisees are to be actively involved in the QMS processes.

Franchisees shall perform the following in order to show commitment to the implementation and improvement of the QMS

- Communicate the importance of the QMS and the QMS requirements to franchise employees
- Review the QMS at regular and scheduled intervals
- Ensure the availability of required resources to effectively implement the QMS
- Participate in scheduled management review and audit meetings with Franchisor to review the Franchises performance and QMS

Failure to perform these duties can result in a determined fine and possible denied assistance in implementing and managing the QMS.

CUSTOMER FOCUS

Swemgat is committed to delivering products and services that conform and exceed the requirements and expectations of their customers. This is achieved through the identification and documentation of current and future needs of customers.

The Franchisor has implemented a product and research process that will investigate potential new products. The identified products are investigated and analysed to determine whether they can be implemented and used by the Franchise. The Product Research Procedure (QRP7100-010) is to be used for this process.

Customer requirements and specifications regarding projects and services requested shall be determined by Franchisees or their personnel responsible for handling customer orders and sales. The Customer Requirements Process (CQP7210-010) is to be used and followed.

The procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

QUALITY POLICY OF SWEMGAT FRANCHISE

The Quality Policy of Swemgat is subject to regular reviews during the management review and audits held between the Franchisor and Franchisees to ensure that the policy remains suitable and applicable to the Franchise.

The Franchisor shall communicate the Quality Policy to all Franchisees who in turn shall communicate the policy to all employees in the Franchise. The Franchisee shall post the Quality Policy in prominent places in the Franchise offices to ensure the visibility and availability of the policy. The Quality Policy shall be communicated at regular intervals and shall form part of all new employee training. Swemgat Franchisees shall make use of the Quality Policy to guide them in operating the Franchise.

The Quality Policy is provided in this Quality Manual and all Franchisees are required to sign the Quality Policy in their copy of the Quality Manual and also to apply their signature to the

copies placed in the Franchise offices. The Franchisor, Hendrik Ehlers, is required to apply his signature to all Quality Policy copies in use and provided to either Franchisees or Franchise employees.

A soft copy of the Swemgat Quality Policy (FQD5300-010) is provided on the CMS administrator page.

QUALITY OBJECTIVES OF SWEMGAT FRANCHISE

The Quality Objectives of Swemgat is subject to regular reviews and evaluated against specified performance goals at each management review and audit held between the Franchisor and the Franchisees. The reviews shall determine and ensure that the objectives are consistent with the Quality Policy of Swemgat.

The Quality Objectives shall be used by Franchisees to measure and determine the effective implementation of the QMS.

QUALITY MANAGEMENT SYSTEM PLANNING

The Franchisor is responsible for reviewing the outputs of the QMS during management review and audit meetings and comparing the outputs with the Quality Objectives developed for the Swemgat Franchise. Franchisees are responsible for obtaining, documenting and providing the QMS outputs required for review procedures.

All changes and modifications made to the QMS are to be monitored by the Franchisor to ensure that the changes comply with the ISO 9001:2008 (E) standard.

RESPONSIBILITY AND AUTHORITY

An organisational chart has been developed to show the relationship, responsibility and authority of personnel within the Franchise organisation and within the separate Franchise entities¹. Along with the organisational chart standardised job descriptions were developed and are provided to all Franchisees to assist with the recruitment and structuring processes.

The documented organisational chart and standardised job descriptions are contained in the document entitled Swemgat Organisational Structure (FQD5510-012).

The Franchisor shall be responsible to review the organisational chart and the standardised job descriptions to ensure that they remain suitable for the Franchise.

The quality document is maintained on the administrator page of the CMS. Hard copies of the latest version are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

Note 1

The described job descriptions and organisational chart only serve as a guideline to the Franchisees. The Franchisee is not forced to employ personnel to personally fill each role depicted in the organisational structure. The Franchisee shall be responsible to have personnel in place to perform the roles describe in the organisational chart. This implies that one person can be employed to fulfil multiple roles as described in the organisational chart.

MANAGEMENT REPRESENTATIVE

The ISO 9001:2008 (E) standard specifies that a management representative be appointed to perform specific duties and who will have specified responsibilities. Due to the structure of the business this representative function and the responsibilities described are divided between the Franchisor and Franchisees of the Franchise and are not performed by a single representative as described by the ISO 9001:2008 (E) standard.

In the Swemgat Franchise the Franchisor shall

- Ensure that the processes required for the QMS are established and communicated to the Franchisees
- Promote the importance and processes of the QMS
- Act as liaison with auditors on matters pertaining to the QMS

In the Swemgat Franchise the Franchisees shall

- Implement QMS processes within the Franchise
- Report to the Franchisor on the QMS performance
- Promote awareness of the QMS and required processes among employees

INTERNAL COMMUNICATION

The processes required for effective communication within the Franchise and communication between the Franchisor and Franchisees are developed. Communication methods to communicate the QMS include

- Management review audits within the Franchise
- Management review and audits between the Franchisor and Franchisees
- Circulation and distribution of minutes from management review and audits

- Internal Audit review findings
- Employee QMS meetings
- Communication mediums in the Franchise office
- Routine Franchise communications

Several of these processes are discussed in further detail in this section of the Quality Manual. The various documented processes developed are listed at the end of this section of the Quality Manual.

MANAGEMENT REVIEW

The Franchisor shall review the QMS at quarterly intervals to determine the validity, effectiveness and suitability of the QMS. This review shall be used to determine and identify opportunities for improvement and appropriate changes. Refer to the Franchisor Internal Audit Procedure (MQP822a-010) for further information.

The Franchisor and Franchisees shall convene on a monthly basis to perform a managerial review of the QMS. The review shall discuss the suitability and effectiveness of the QMS in the Franchise. The review shall also discuss and examine the implementation and operation of the QMS within the Franchises. Refer to the Intra-Franchise Internal Audit Procedure (MQP822b-010) for further information.

The Franchisee shall implement two (2) weekly reviews to determine the QMS implementation and operation within the Franchise. The review will be used to determine whether the QMS is implemented and operated as required in the Franchise. Refer to the Franchisee Internal Audit Procedure (MQP822c-010) for further information

The procedures describing the Management Reviews performed are developed and documented. These procedures are listed at the end of this section under the Related Procedures and Quality Documents segment.

The procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

RELATED PROCEDURES AND QUALITY DOCUMENTS

- Customer Requirements Process (CQP7210-010)
- Franchisee Internal Audit Procedure (MQP822c-010)
- Franchisor Internal Audit Procedure (MQP822a-010)
- Intra-Franchise Internal Audit Procedure (MQP822b-010)
- Product Research Procedure (QRP7100-010)
- QMS Communication Procedure (QCP5530-010)
- Swemgat Organisational Structure (FQD5510-012)
- Swemgat Quality Policy Document (FQD5300-010)

SECTION 6: RESOURCE MANAGEMENT

PROVISION OF RESOURCES

The implemented QMS requires the provision of certain resources. The Franchisor and Franchisees of Swemgat are to provide the required resources for the effective operation of the QMS. The required resources are determined and shall be provided by the Franchisor and Franchisees.

HUMAN RESOURCES

The ISO 9001:2008 (E) standard requires that the personnel of the Franchise are competent regarding skills, education, training and experience. To ensure this, standardised job descriptions are established and available to all Franchisees to ensure that the employees of the Franchise conform to these standards and requirements. These standardised job descriptions are contained in the Swemgat Organisational Structure (FQD5510-012).

Franchisees shall use the Swemgat Organisational Structure (FQD5510-012) document during the qualifications review upon hiring new employees. The Franchisees shall also make use of the Swemgat Organisational Structure (FQD5510-012) to determine personnel required for effective operation of the Franchise.

Training programs for the personnel of the Franchise and Franchisees are established and subject to continuous improvement to remain suitable regarding the QMS. These training programs are contained in the Franchise Training Manual document (FQD6220-010).

The quality documents are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

INFRASTRUCTURE

The infrastructure required to implement, maintain and continuously improve and review the QMS of the Franchise is determined and established. These requirements are documented in the Required Franchise Infrastructure quality document (FQD6300-010). Franchisees shall use the quality document to determine the required infrastructure needed to be procured and obtained. The maintenance plans of the required infrastructure is also established and documented and discussed in the Required Franchise Infrastructure quality document.

The quality documents are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

WORK ENVIRONMENT

The work environment required to implement and maintain the QMS in the Franchise is determined and the Franchisees shall be committed to provide such a work environment where product conformity is achievable. The Swemgat Quality Policy (FQD5300-010) reflects this commitment.

RELATED PROCEDURES AND QUALITY DOCUMENTS

- Franchise Training Manual (FQD6220-010).
- Required Franchise Infrastructure (FQD6300-010).
- Swemgat Organisational Structure (FQD5510-012)
- Swemgat Quality Policy (FQD5300-010)

SECTION 7: PRODUCT REALISATION

PLANNING OF PRODUCT REALISATION

The ISO 9001:2008 (E) standard requires that quality planning be done for all new products. Quality planning was also done for the existing products of the Franchise. The quality planning of products shall be according to the Product Realisation and Planning Procedure (QRP7100-010). The following Product Realisation Procedures have been completed.

- Automated pool covers installation project: QPR710d-010
- Call-out for repair: QPR710a-010
- Chlorinator installation project: QPR710l-010
- Heat pump installation project: QPR710k-010
- Pool installation project: QPR710b-010
- Pool renewal project: QPR710h-010
- Pool solar heating project: QPR710j-010
- Spa installation project: QPR710c-010
- Spa renewal project: QPR710i-010
- Swimming pool light fixture installation project: QPR710g-010
- Swimming pool net installation project: QPR710f-010
- Water feature installation project: QPR710e-010

These Quality Product Requirements shall be used by Franchisees to perform the specified operations.

The quality documents and procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

CUSTOMER RELATED PROCESSES

Customer requirements and specifications regarding projects and services requested shall be determined by Franchisees or their personnel responsible for handling customer orders and sales. These requirements shall be determined before the order or service request is accepted. The Customer Requirements Process (CQP7210-010) is to be used and followed.

Swemgat Franchisees are to communicate with Franchise customers. These communications can relate to

- Product information
- Current customer orders and project information
- Customer feedback
- Product and project inquiries

Franchisees shall follow the Customer Communication Procedure (CQP7230-010) for effective communication with Franchise customers.

The procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

DESIGN AND DEVELOPMENT

The design and development of products and their relevant procedures are to conform to the ISO 9001:2008 (E) standard. The Product Realisation Procedures completed are to be followed by the Franchisees. The Product Realisation Procedures are to be reviewed during Internal Audits. These audits include the

- Franchisor Internal Audit: The procedures are to be reviewed and their suitability to the QMS determined along with possible improvements and changes.
- Inter-Franchise Internal Audit: The implementation and use of the procedures are to be evaluated and analysed.
- Franchisee Internal Audit: The Franchisee shall determine the effectiveness of the procedures and determine implementation of the procedures

The following procedures are established for product realisation

- Automated pool covers installation project: QPR710d-010
- Call-out for repair: QPR710a-010
- Chlorinator installation project: QPR710l-010

- Heat pump installation project: QPR710k-010
- Pool installation project: QPR710b-010
- Pool renewal project: QPR710h-010
- Pool solar heating project: QPR710j-010
- Spa installation project: QPR710c-010
- Spa renewal project: QPR710i-010
- Swimming pool light fixture installation project: QPR710g-010
- Swimming pool net installation project: QPR710f-010
- Water feature installation project: QPR710e-010

The procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

PURCHASING

In order for the products delivered by the Franchise to conform to the QMS the purchased material and products are to conform to specified criteria and requirements. A documented procedure is established to ensure that the products purchased by the Franchise conform to these specified requirements. The records of the supplier evaluation and product delivery shall be maintained by all Franchisees in order to provide evidence of conformity to the QMS. The Purchasing Control Procedure (PRP7400-010) shall be implemented and maintained by all Franchisees.

The procedure shall assist in determining the purchasing information including

- Approval requirements
- Approval equipment required
- Approval processes
- Personnel requirements
- Documentation requirements
- Verification processes
- Faults and issue handling processes

The records stemming from the Purchasing Control Procedure (PRP7400-010) shall be used to evaluate suppliers for future product and order placements.

The procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

PRODUCT AND SERVICE PROVISION

Swemgat plans and carries out the product and service provision under certain controlled conditions. These include

- the availability of information that describes the characteristics of the product,
- the availability of work instructions, as necessary,
- the use of suitable equipment,
- the availability and use of monitoring and measuring equipment,
- the implementation of monitoring and measurement
- the implementation of product release, delivery and post-delivery activities.

In order for these controlled conditions to exist the following quality documents and procedures shall be used by Franchisees to determine and provide the controlled conditions

- Required Franchise Infrastructure (FQP6300-010)
- Customer Requirements Process (CQP7210-010)
- All documented Product Realisation Procedures (QPR710a-010 to QPR710I-010)

For all products and services delivered of whose which validation and testing can only be performed after delivery has been completed the Franchisees shall make use of the Post Delivery Product Testing Procedure (PRP7520-010) to ensure that the products delivered to the customer conforms to their requirements and needs.

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

IDENTIFICATION, PRESERVATION AND TRACEABILITY

The Franchisees shall make use of the product tracking document to determine and ascertain product statuses during the product delivery. These documents will form records showing compliance with the QMS. The developed quality document to be used is labelled Product Tracking quality document (FQD7530-010). This quality document will allow Franchisees to ensure products are delivered on schedule.

The Franchisees are to exercise care with customer property while under Franchise control. The Customer Property Identification Procedure (CQP7540-010) shall be implemented and used by Franchisees to identify, verify and protect customer property under their control during product delivery. Customers are to be notified of any lost or damaged property as specified in the procedure and records are to be maintained and provided to the customer and Franchisor.

The Franchisee shall preserve the product during delivery to the intended destination as defined in the Product Preservation Procedure (PRP7550-010). This procedure includes and discusses the identification, handling, packaging, storage and protection processes and requirements involved in product delivery regarding the ISO 9001:2008 (E) requirements that are to be met.

The quality documents and procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

CONTROL OF MONITORING AND MEASUREMENT DEVICES

The monitoring and measurement devices required to provide evidence of conformity of delivered products are determined. These devices are listed in the Required Franchise Infrastructure quality document (FQP6300-010). The Franchisee shall make use of the Control of Equipment Procedure (QMP7600-010) to ensure that the measuring and monitoring equipment is

- Calibrated and verified at regular planned intervals

- Adjusted and re-adjusted as required and necessary
- Identified to enable the calibration status to be determined
- Prevent adjustments that will invalidate results
- Protect from damage and deterioration during handling and storage

All calibration and changes made to measuring and monitoring equipment are recorded and used to provide evidence of conformity and correct use.

The Quality Control officer implemented or employed by the Franchisee in the Franchise shall ensure that the measuring and monitoring equipment is controlled and that the Control of Equipment Procedure (QMP7600-010) is followed to ensure that the Quality Control performed on delivered products provide accurate results.

The quality documents and procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

RELATED PROCEDURES AND QUALITY DOCUMENTS

- Automated pool covers installation project (QPR710d-010)
- Call-out for repair (QPR710a-010)
- Chlorinator installation project (QPR710l-010)
- Control of Equipment Procedure (QMP7600-010)
- Customer Communication Procedure (CQP7230-010)
- Customer Property Identification Procedure (CQP7540-010)
- Customer Requirements Process (CQP7210-010)
- Heat pump installation project (QPR710k-010)
- Pool installation project (QPR710b-010)
- Pool renewal project (QPR710h-010)
- Pool solar heating project (QPR710j-010)
- Post Delivery Product Testing Procedure (PRP7520-010)
- Product Preservation Procedure (PRP7550-010)
- Product Tracking quality document (FQD7530-010)

FQP4220-010

- Purchasing Control Procedure (PRP7400-010)
- Required Franchise Infrastructure (FQP6300-010)
- Spa installation project (QPR710c-010)
- Spa renewal project (QPR710i-010)
- Swimming pool light fixture installation project (QPR710g-010)
- Swimming pool net installation project (QPR710f-010)
- Water feature installation project (QPR710e-010)

SECTION 8: MEASUREMENT, ANALYSIS AND IMPROVEMENT

GENERAL

Swemgat Franchises and Franchisees shall implement the monitoring, measurement, analysis and improvement processes developed and required to effectively implement and operate the Swemgat QMS. These processes will

- Demonstrate conformity of products
- Ensure conformity of and to the QMS
- Continually improve the QMS and the effectiveness of the system

The procedures and documentation required to achieve this is discussed in this section of the Quality Manual.

MONITORING AND MEASUREMENT OF CUSTOMER SATISFACTION

The measurement and monitoring of information relating to customer perceptions and satisfaction, regarding the Franchise and its ability to meet customer requirements, forms part of one of the performance measures of the Quality Management System.

The records stemming from the Customer Requirements Procedure (CQP7210-010) and the Customer Communication Procedure (CQP7230-010) are used to obtain information from customers to determine the customer satisfaction level. The Franchisees shall make use of the Customer Satisfaction Procedure (CQP8210-010) to determine customer satisfaction levels and Franchise perception.

The quality procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

MONITORING AND MEASUREMENT OF PROCESSES AND PRODUCTS

The Franchisees shall make use of the developed Product Realisation Procedures (QPR710a-010 to QPR710I-010) to ensure that the processes performed to deliver products conform to the Quality Management System. The Franchisees shall monitor and measure the processes carried out in the Franchise and maintain records of all processes that do not

perform according to the planned procedure. Franchisees shall make use of the Process Monitoring and Measurement quality document (FQD8230-010) to perform the measurement and monitoring of processes performed.

Franchisees shall implement correction and corrective actions if planned and desired results are not achieved. The procedure for corrective action is discussed in this section of the Quality Manual.

Franchisees shall monitor and measure the characteristics of the product to confirm that product requirements are fulfilled as stated in the relevant Product Realisation Procedure. This is carried out at appropriate stages of the product realization process.

Evidence of conformity with the acceptance criteria is maintained. Records shall indicate the person authorizing release of product. Product release and service delivery does not proceed until all the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority, and where applicable by the customer.

The quality documents are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

INTERNAL AUDIT PROCEDURE

The Franchise and the Franchise management shall conduct internal audits at planned intervals as prescribed by the ISO 9001:2008(E) standard. These internal audits are used to determine whether the QMS

- Conforms to the planned arrangements and requirements of the ISO 9001:2008 (E) standard
- Is effectively implemented and maintained in the Franchise

The Franchise has established and implemented audit programs. These documented audit procedures are labelled the

- Franchisee Internal Audit Procedure (MQP822c-010)

- Franchisor Internal Audit Procedure (MQP822a-010)
- Intra-Franchise Internal Audit Procedure (MQP822b-010)

The procedures shall be used by the Franchisees and Franchisor. The procedures shall provide the Franchise management with the audit criteria, scope, frequency, methods, responsibilities and requirements for planning and conducting the audits.

The quality procedures are maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from these procedures shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

CONTROL OF NONCONFORMING PRODUCTS

Swemgat Franchisees shall ensure that products that do not conform to the product requirements are identified and controlled to prevent the unintended use or delivery. The controls and responsibilities dealing with nonconforming products are defined in the Control of Nonconforming Products Procedure (MQP8300-010).

The quality procedure is maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from this procedure shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

CONTINUOUS IMPROVEMENT

The Swemgat Franchisor and Franchisees shall strive to continually improve the effectiveness of the QMS through the use of the Quality Policy, the Quality Objectives, the audit results, the analysis of data, the Corrective and Preventative Actions and the planned Management Reviews and Internal Audits.

CORRECTIVE ACTION

Swemgat Franchisees shall take action to eliminate the causes of nonconformities in order to prevent recurrence. The Franchise has an established and documented Corrective Actions Procedure (MQP8520-010). This procedure shall be used by the Franchisees to

- Reviewing non-conformities including customer complaints
- Determining the cause of non-conformities
- Evaluating the need for action to ensure no reoccurrence of non-conformities
- Designing and implementing appropriate actions
- Record results of actions taken and reviewing the actions

The quality procedure is maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from this procedure shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

PREVENTATIVE ACTION

Swemgat Franchisees shall determine actions to eliminate the causes of potential non-conformance in order to prevent the occurrence. The Franchise has an established and documented Preventative Action Procedure (MQP8530-010). This procedure shall be used by Franchisees to

- Identifying potential non-conformities and their causes
- Evaluation of the need for action to prevent potential non-conformities
- Designing and implementing preventative actions
- Records of the results of actions implemented
- Reviewing the action taken

The quality procedure is maintained on the administrator page of the CMS. Hard copies of the latest versions are provided to Franchisees as required by the Document Control Procedure (MQP4230-021).

All records from this procedure shall be maintained and conform to the Quality Records Control Procedure (MQP4240-012) by the Franchisees to provide evidence of compliance with the QMS.

RELATED PROCEDURES AND QUALITY DOCUMENTS

- Control of Nonconforming Products Procedure (MQP8300-010)
- Corrective Actions Procedure (MQP8520-010)
- Customer Communication Procedure (CQP7230-010)
- Customer Requirements Procedure (CQP7210-010)
- Customer Satisfaction Procedure (CQP8210-010)
- Franchisee Internal Audit Procedure (MQP822c-010)
- Franchisor Internal Audit Procedure (MQP822a-010)
- Intra-Franchise Internal Audit Procedure (MQP822b-010)
- Preventative Action Procedure (MQP8530-010)
- Process Monitoring and Measurement quality document (FQD8230-010)

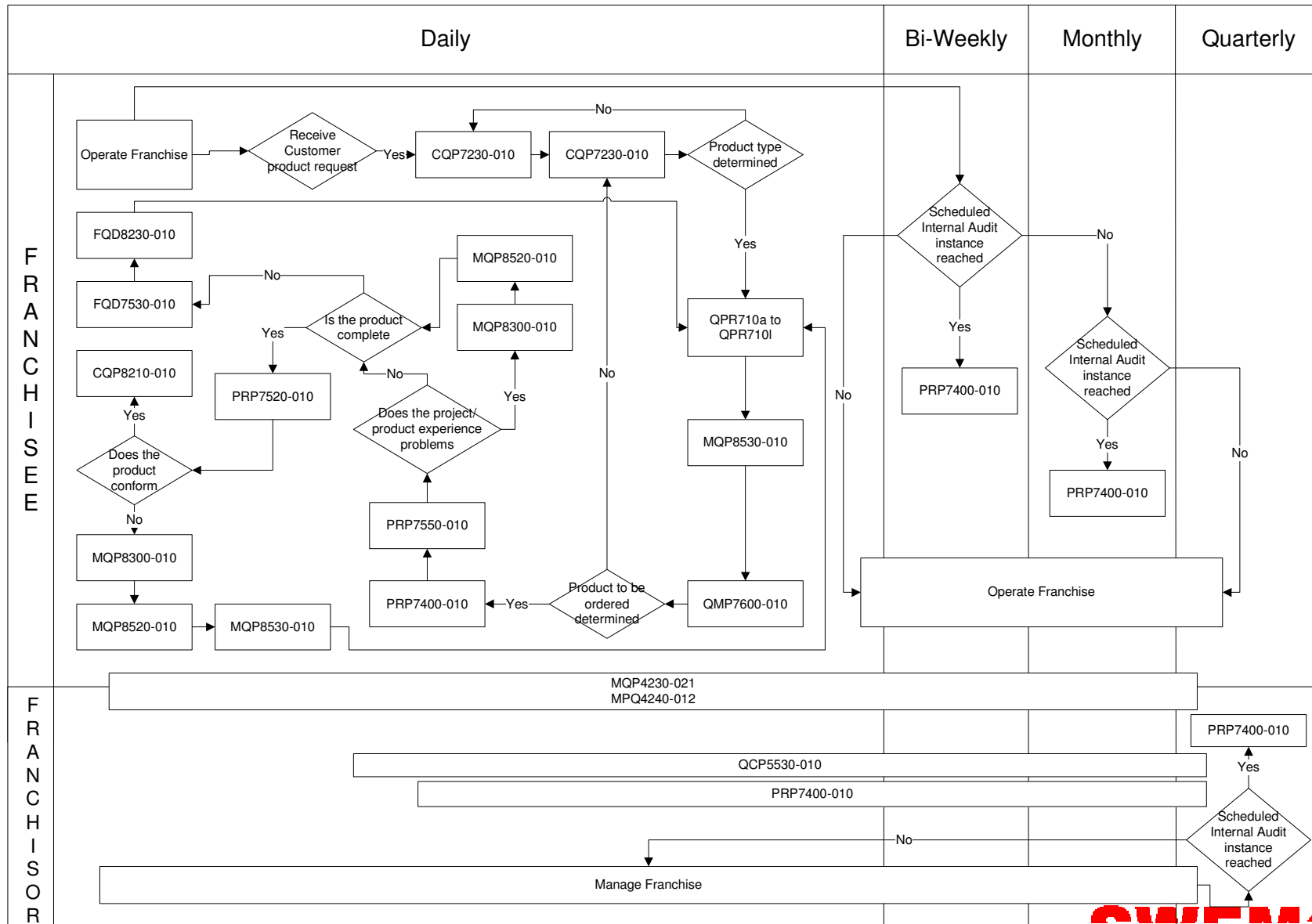
APPENDIX A

CQP7210-010	Customer Requirements Process
CQP7230-010	Customer Communication Procedure
CQP7540-010	Customer Property Identification Procedure
CQP8210-010	Customer Satisfaction Procedure
FQD0010-032	Project document
FQD4420-010	Quality Manual
FQD5300-010	Swemgat Quality Policy
FQD5510-012	Swemgat Organisational Structure
FQD6220-010	Franchise Training Manual
FQD6300-010	Required Franchise Infrastructure
FQD7530-010	Product Tracking quality document
FQD8230-010	Process Monitoring and Measurement quality document
MQP4230-021	Document Control Procedure
MQP4240-012	Quality Records Control Procedure
MQP822a-010	Franchisor Internal Audit Procedure
MQP822b-010	Inter Franchise Internal Audit Procedure
MQP822c-010	Franchisee Internal Audit Procedure
MQP8300-010	Control of Nonconforming Products Procedure
MQP8520-010	Corrective Actions Procedure
MQP8530-010	Preventative Action Procedure

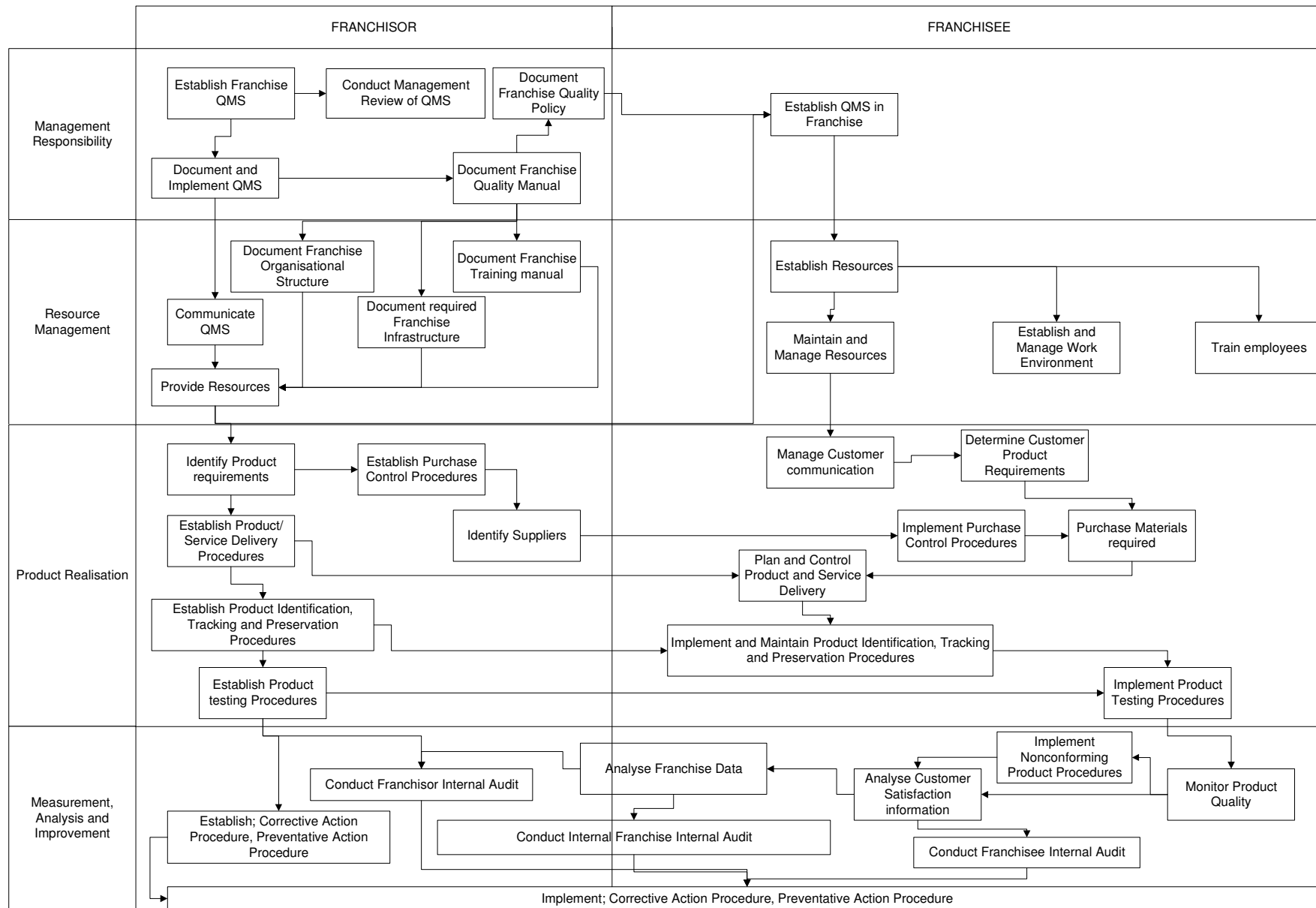
FQP4220-010

PRP7400-010	Purchasing Control Procedure
PRP7520-010	Post Delivery Product Testing Procedure
PRP7550-010	Product Preservation Procedure
QCP5530-010	QMS Communication Procedure
QMP7600-010	Control of Equipment Procedure
QPR710a-010	Call-out for repair
QPR710b-010	Pool installation project
QPR710c-010	Spa installation project
QPR710d-010	Automated pool covers installation project
QPR710e-010	Water feature installation project
QPR710f-010	Swimming pool net installation project
QPR710g-010	Swimming pool light fixture installation project
QPR710h-010	Pool renewal project
QPR710i-010	Spa renewal project
QPR710j-010	Pool solar heating project
QPR710k-010	Heat pump installation project
QPR710l-010	Chlorinator installation project
QRP7100-010	Product Research Procedure

APPENDIX B



FQP4220-010

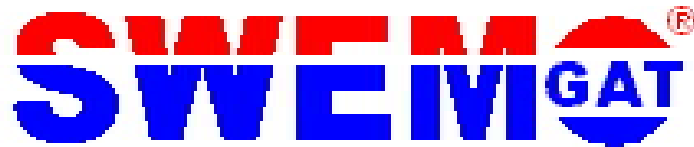


<u>Changes and Revisions</u>	<u>Authorised by</u>	<u>Date</u>



11.APPENDIX B: DOCUMENTED QMS PROCEDURES

Document name	MQP4230-021	Prepared by	SJ Wessels
Revision no.	2.1	Status	Approved
Creation date	22/09/09	Reviewed by	SJ Wessels and H Ehlers
Effective date	01/11/09	Approved by	H Ehlers



Document Control Procedure

MQP4230-021

1. PURPOSE

This documented procedure defines the responsibilities and methods for the preparation, revision, control, release and retention of all Quality Management System documents. This procedure covers all documents created in the Swemgat Franchise for the implemented Quality Management System. The developed procedure conforms to the ISO 9001:2008 requirements relating to the control of quality documents.

2. SCOPE

This procedure is applicable to all documents in the Swemgat Franchise and covers all quality documents, both hardcopy and electronic or other media form, required for effective operation of Swemgat's Quality Management System.

The documented procedure provides the processes to be performed in the Franchise to

- approve documents prior to use
- update and reapprove amended documents
- identify changes to documents
- ensure documents are available
- control documents from external sources
- prevent inadvertent use of obsolete documents

3. DEFINITIONS AND ABBREVIATIONS

Franchisor: Franchisor refers to Hendrik Ehlers the Franchise owner and operator

Franchisee: Franchisee refers to the specific Franchise outlet owner and operator

Liferay: Liferay refers to the implemented Content Management System of the Franchise

QMS: Quality Management System

CMS: Content Management System

4. RESPONSIBILITY AND AUTHORITY

The following responsibilities are identified and the authority associated with the responsibility if implacable assigned.

- Document Controller: The document controller shall be responsible to control the QMS documents and manage the document control system of the Liferay CMS. This role will be the responsibility of the Franchisor, Hendrik Ehlers.
- Document creation: All Franchise management personnel and those members of the Franchise that have an interest in the QMS documents are allowed to develop documents relating to the QMS. These documents shall be forwarded to the responsible authority for review and approval such documents.
- Document review: The QMS documentation shall be reviewed at planned intervals as required by the ISO 9001:2008 standard. The following reviews are identified with the respective responsibility
 - Continuous review: The responsibility to continuously review the QMS documents shall be the responsibility of the Franchisor, Hendrik Ehlers.
 - Monthly review: The responsibility of reviewing the QMS documentation on a monthly basis shall be shared by the Franchisor and Franchisees and shall be performed during the scheduled review meetings as stated in the Inter Franchise Internal Audit Procedure (MQP822b-010).
- Document approval: The approval of prepared, created and modified QMS documents shall be the responsibility of the Franchisor, Hendrik Ehlers. The Franchisor shall have the sole authority to approve QMS documents prior to implementation and use.
- Declaring documents obsolete: Documents found to be obsolete during review shall be declared obsolete and indicated as such by the Document Controller. The Franchisor, Hendrik Ehlers, shall have sole authority to declare QMS documents obsolete and perform the required actions to indicate this and inform the QMS document users of such an event.
- Document upload to the CMS: The Document Controller shall be responsible to upload the QMS documentation to the Liferay system.

- QMS Document implementation: The responsibility of implementing the QMS developed documents shall belong to the Franchisees or Management member of the respective Franchise outlets.

5. QMS DOCUMENTATION REQUIREMENTS AND SPECIFICATIONS

QMS documents of the Franchise shall conform to the specified document naming convention developed and provided.

DOCUMENT NAMING CONVENTION

1. The standard naming convention for QMS procedure documents include
 - <CCC>: this is an acronym that represents the QMS procedure type. The QMS procedure type acronyms are provided in the table 1 below.

Table 1: QMS Procedure acronyms

CQP	Customer Quality Procedure
MQP	Mandatory Quality Procedure
PRP	Product Requirements Procedure
QCP	Quality Communications Procedure
QMP	Quality Measurement Procedure
QRP	Product Realisation Procedure
QRP	Quality Research Procedure

- <XXX>: this sequence of numbers indicates the ISO 9001 standard section that is referenced or complied with by the specific QMS procedure document.
- <n>: this denominator is used in the event that a specific section of the ISO 9001 standard is referenced by more than one documented QMS procedure (where n = {0, a, b, c,...,z} and 0 indicates that the QMS procedure only references one ISO 9001 specific section).
- - <VVV>: this indicates the version number of the specific QMS procedure document.

The QMS procedure document naming structure can therefore be compiled as follows

<CCC><XXX><n> - <VVV>

2. The standard naming convention for QMS quality documents include

- <FQD>: this is an acronym that represents the QMS quality document and stands for 'Franchise Quality Document'.
- <XXX>: this sequence of numbers indicates the ISO 9001 standard section that is referenced or complied with by the specific QMS quality document.
- <n>: this denominator is used in the event that a specific section of the ISO 9001 standard is referenced by more than one QMS quality document (where n = {0, a, b, c,...z}) and 0 indicates that the quality document only references one ISO 9001 specific section.
- - <VVV>: this indicates the version number of the specific QMS quality document.

The QMS quality document naming structure can therefore be compiled as follows

<FQD><XXX><n> - <VVV>

3. The standard naming convention for QMS records generated from QMS procedures related to customers include

- <QSR>: this is an acronym that indicates the document is a QMS record. The acronym stands for Quality System Record.
- <CCC>: this is an acronym that represents the QMS procedure type. The QMS procedure type acronyms are as indicated in table 1.
- <XXX>: this sequence of numbers indicates the ISO 9001 standard section that is referenced or complied with by the specific QMS record.
- - <Client number>: this indicates the customer number.
- <Client initials>: this indicates the customer initials.

The QMS record relating to customer procedures naming structure can therefore be compiled as follows

<QSR><CCC><XXXX> - <Client number><Client Initials>

4. The standard naming convention for QMS records relating to procedures not connected with customer procedures include

- <QSR>: this is an acronym that indicates the document is a QMS record. The acronym stands for Quality System Record.
- <CCC>: this is an acronym that represents the QMS procedure type. The QMS procedure type acronyms are as indicated in table 1.
- <XXX>: this sequence of numbers indicates the ISO 9001 standard section that is referenced or complied with by the specific QMS record.
- - <identification number>: this indicates the identification number for the specific record
- <yyyymmdd>: this indicates the date of the record compilation and refers to the year, month and date in numeric format

The QMS record relating to non-customer based QMS procedures can therefore be compiled as follows

<QSR><CCC><XXXX> - <identification number><yyyymmdd>

FONT

All QMS documents should be created in Microsoft Office 2007 (Word, Excel, PowerPoint, etc) and make use of Arial font size 11 with one and a half spacing for the document body. The document headings shall use Bold Arial font size 12 with full capitalisation. Sub headings will make use of Bold Arial font size 11 with full capitalisation.

DOCUMENTATION LAYOUT

- All QMS documentation shall contain the purpose and scope of the specified QMS document. QMS documents shall have the standardised cover page containing the Document Information table at the top of the QMS document cover page. The Document Information block shall be updated as required when changes are applied to the specified document.
- The Franchise logo shall appear on the QMS document cover page.
- The QMS document name shall appear on the cover page in Bold Arial font size 24
- The QMS document code shall appear directly below the QMS document name. The status indication convention shall be used. The standard naming convention for QMS documents shall be used to create the document name.
- The document code shall appear in the header of the QMS document.

- Document page numbers shall be applied.

6. VERSIONING AND STATUS IDENTIFICATION

The Liferay CMS system shall assist the Franchise in maintaining the QMS documentation. The versioning of the QMS documents will be automated and maintained by the Liferay system built in versioning rules. Documents that are submitted to the centralised database server will be automatically assigned a version number. Changes to the specific document will result in the versioning number to increase numerically to indicate the changes brought on to the QMS document. This process is indicated in figure 1.

The status of QMS documents shall be indicated. This status of documents can be

- pending approval
- reviewed
- approved
- obsolete

This status is indicated by making use of the Liferay system built in status indication rules. The status of uploaded QMS documents shall be set by the person authorised to perform QMS documentation status selection.

The status of documents will also be indicated on supplied hardcover copies of the QMS documentation through the use of font colour. The document name code as indicated on the QMS document cover will appear in the following colours to indicate the document status

- Orange :pending approval
- Blue :reviewed
- Green :approved
- Red :obsolete

Document status shall also be indicated in the Status indication block located on the right hand side corner of QMS documents.

The Document Controller shall be responsible to indicate this on the QMS documentation.

7. DOCUMENT MANAGEMENT PROCEDURES

The Document Control Procedure provides the procedure for

- Identifying document proposals and changes
- Reviewing document change proposals
- Approve document changes
- Identify obsolete documents
- Maintain approved documents
- Inform Franchise of document changes

The document flow process or workflow is indicated in figure 1. This process shall be followed by the Franchise personnel in dealing with QMS documentation.

Document change proposals shall be identified and reviewed to determine approval. Records shall be maintained of all review procedures carried out.

A document draft will be developed to accommodate the proposed changes. The version and status of the specified QMS document shall be updated accordingly through use of the Liferay system rules. Draft documents will be reviewed to determined approval and modifications. Required templates shall be determined and reviewed for suitability.

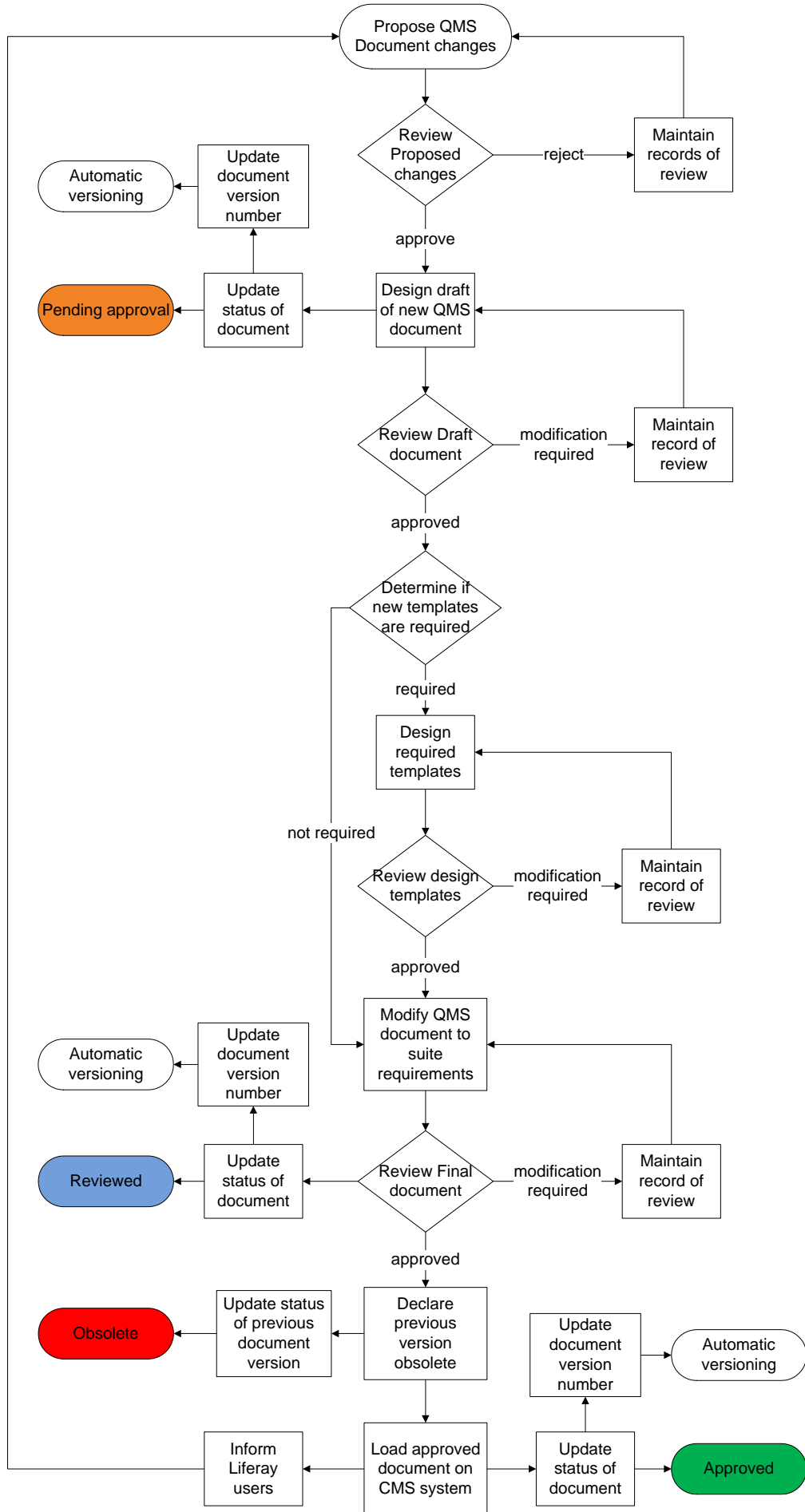
Draft documents will be modified and completed for final review to be approved or modified. Previous version will be declared obsolete and indicated appropriately by making use of the Liferay system built in functions and rules.

Franchisee Liferay users will be informed of the developed QMS document. The developed document version and status will be updated accordingly after document approval.

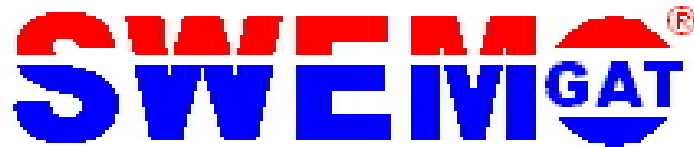
8. REFERENCES

- ISO 9001:2008 standard
- Swemgat Quality Manual (FQD4420-010)

Figure 1: Document Control Procedure



Document name	MQP8530-010	Prepared by	SJ Wessels
Revision no.	2.1	Status	Approved
Creation date	24/09/09	Reviewed by	SJ Wessels and H Ehlers
Effective date	01/11/09	Approved by	H Ehlers



Preventative Action Procedure

MQP8530-010

1. PURPOSE

This documented procedure defines the responsibilities and methods for the development and implementation of Preventative Actions to eliminate the cause of a potential nonconformity or other undesirable potential situation. The developed procedure conforms to the ISO 9001:2008 requirements relating to the control of quality documents.

2. SCOPE

This procedure provides the required method that the Franchise and Franchisees shall implement to conform to the requirement of the ISO 9001:2008 standard regarding the control of potential nonconformities. The procedure provides the process to be followed to

- review potential problems
- decide potential causes of problems
- decide on an appropriate course of action to stop problem occurring
- putting the developed plan into action
- ensuring that preventative action has solved potential problem

The procedure follows the Failure Mode and Effects Analysis process and provides the steps and actions required to perform this process

3. DEFINITIONS AND ABBREVIATIONS

Franchisor: Franchisor refers to Hendrik Ehlers the Franchise owner and operator

Franchisee: Franchisee refers to the specific Franchise outlet owner and operator

Liferay: Liferay refers to the implemented Content Management System of the Franchise

CMS: Content Management System

FMEA: Failure Mode and Effects Analysis

QMS: Quality Management System

RPN: Risk Priority Number

4. RESPONSIBILITY AND AUTHORITY

The following responsibilities are identified and the authority associated with the responsibility if implacable assigned.

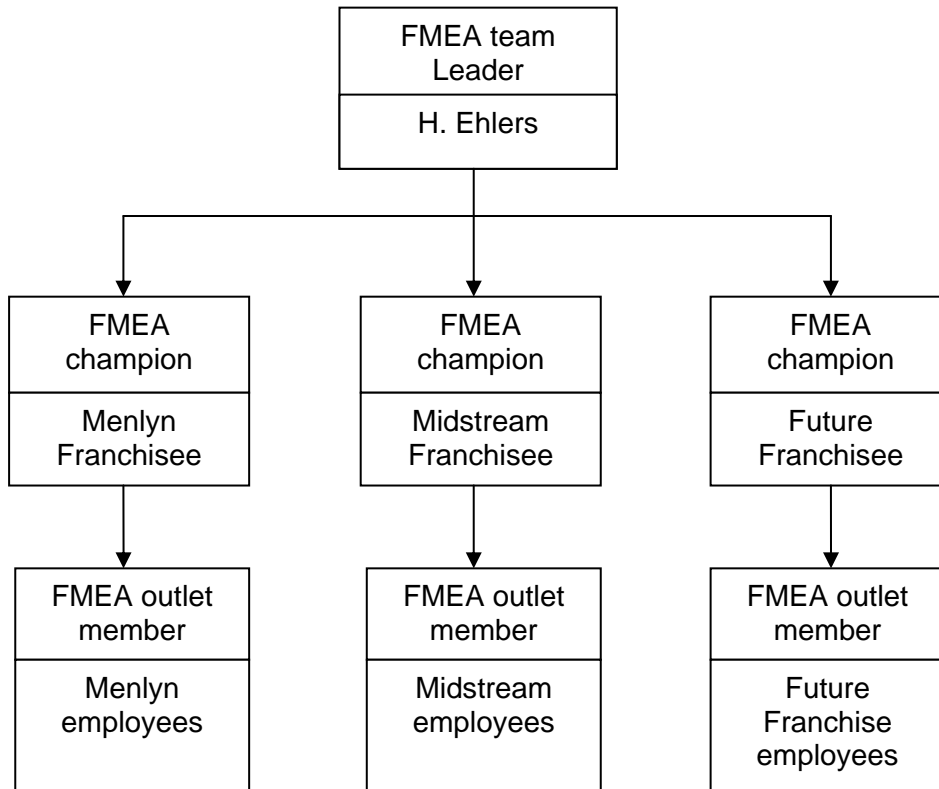
- FMEA team leader: The FMEA team leader will be responsible to organise Inter Franchise Internal Audit meetings to discuss and investigate potential nonconformities, develop and investigate possible preventative actions and implement preventative actions. The FMEA team leader will have the responsibility to head the scheduled Internal Audit meetings and authorise the proposed preventative actions. The FMEA team leader position is assigned to the Franchisor, Hendrik Ehlers.
- FMEA champions: FMEA champions are responsible to attend and participate in scheduled Inter Franchise Internal Audit meetings. The FMEA champions will be responsible to identify potential events that could lead to nonconformities, record such events and present them for discussion during FMEA meetings. The FMEA champions are responsible to provide possible solutions and preventative actions to curb potential nonconformities. The Franchisees of the Franchise are each assigned the role of FMEA champions.

The FMEA champions are also responsible to schedule and head Franchise outlet Internal Audit meetings to discuss preventative actions developed and approved during the Inter Franchise FMEA meetings. The champions shall have the authority to implement approved preventative actions in the Franchise outlet. The champion will be responsible for capturing and analysing the data obtained from corrective actions implemented in the Franchise outlet.

- FMEA outlet members: The FMEA outlet members shall have the responsibility of attending and participating in scheduled Franchise outlet Internal Audit meetings. The outlet members shall be responsible to capture and record data relating to procedures performed and nonconforming products. The outlet members shall provide possible suggestions, solutions and actions to prevent potential non-conformance. The role of FMEA outlet member is assigned to all employees of the Franchise outlet.

Figure 1 illustrates the organisational setup of the FMEA team.

Figure 1: Organisational setup of FMEA team



5. FMEA PROCEDURES

FMEA is a team based process activity that is used to identify and assess potential problems. The activity is used to assign a risk factor to potential problems and decide on the possible course of action to ensure that the potential problem is stopped and controlled.

The Failure Mode and Effects Analysis provides a method to

- Identify the potential failures and the associated relative risks in a product or process
- Prioritise action plans to reduce those potential failures with the highest relative risk
- Track and evaluate the results of those actions

The FMEA procedure process flow is indicated in figure 2.

FMEA OUTLET MEMBER

The FMEA outlet member shall perform the following tasks

- Use provided forms to capture information and data related to the performed process
- Maintain the created procedure records
- Provide the procedure records to the Franchisee as required
- Implement approved Corrective Action procedures in the event of product non-conformance
- Capture information on corrective actions taken
- Provide records of corrective action to Franchisee
- Identify potential non-conformances and report them to the Franchisee
- Clarifying customer requirements during requirements gathering

FMEA CHAMPION

The FMEA champion shall be responsible to perform the following tasks in the FMEA process

- Pertain records of procedures performed from Outlet employees
- Analyse record data and information to identify potential nonconformities
- Ensure employees use updated QMS procedures
- Apply approved Corrective Action Procedures to product nonconformities
- Be aware of the customer requirement changes
- Clarify customer requirements

The FMEA champion shall make use of the FMEA Preventative Action template (FQD8530-010) to determine potential events of non-conformance. The template is available on the Liferay system. The template shall be used to describe the function of the process or procedure performed. The FMEA champion shall then determine the following

- Failure: the manner in which the system, procedure, product or service can potentially fail to meet the specified requirements. This champion should list the criteria for which the product or service could be rejected.
- Effects: the potential non-conformance stated in terms of the product or service delivery performance
- Causes: the potential reasons behind a failure or non-conformance event

- Severity: the perceptive assessment of the seriousness of the stated effect of the potential stated failure from the perspective of both the customer and QMS

The FMEA champion shall determine the Risk Priority Number (RPN) by determining the following values for the factors on a scale of 1 to 10

- Severity of occurrence (where 1 is low and 10 is high)
- Likelihood of failure occurring (where 1 is unlikely and 10 is inevitable)
- Likelihood of failure detection (where 1 is high and 10 is highly unlikely)

The RPN number is determined by multiplying the 3 calculated values.

$$\text{RPN} = \text{Severity} \times \text{Likelihood of Occurrence} \times \text{Likelihood of Detection}$$

The higher the RPN value the more attention must be given to the potential problem. The potential problem with the highest RPN number will be dealt with first during the Franchise outlet Internal Audit meeting.

The FMEA champion shall schedule and implement Franchise outlet Internal Audit meetings every two weeks, during which the results of the FMEA analysis will be discussed and possible solutions and preventative actions developed to stop the potential nonconformities from occurring.

The FMEA champion shall attend the scheduled Inter Franchise Internal Audit meetings to discuss findings of the FMEA processes and determine possible solutions and preventative actions

FMEA TEAM LEADER

FMEA team leader shall review the records provided by the Franchisees as well as the records generated from the QMS performed procedures to identify and determine potential system, product or service nonconformities. The FMEA team leader will use the FMEA Preventative Action template (FQD8530-010) to determine potential events of non-conformance. The template is available on the Liferay system. The template shall be used to describe the function of the process or procedure performed. The FMEA champion shall then determine the following

- Failure: the manner in which the system, procedure, product or service can potentially fail to meet the specified requirements. This champion should list the criteria for which the product or service could be rejected.
- Effects: the potential non-conformance stated in terms of the product or service delivery performance
- Causes: the potential reasons behind a failure or non-conformance event
- Severity: the perceptive assessment of the seriousness of the stated effect of the potential stated failure from the perspective of both the customer and QMS

The FMEA champion shall determine the Risk Priority Number (RPN) by determining the following values for the factors on a scale of 1 to 10

- Severity of occurrence (where 1 is low and 10 is high)
- Likelihood of failure occurring (where 1 is unlikely and 10 is inevitable)
- Likelihood of failure detection (where 1 is high and 10 is highly unlikely)

The RPN number is determined by multiplying the 3 calculated values.

$$\text{RPN} = \text{Severity} \times \text{Likelihood of Occurrence} \times \text{Likelihood of Detection}$$

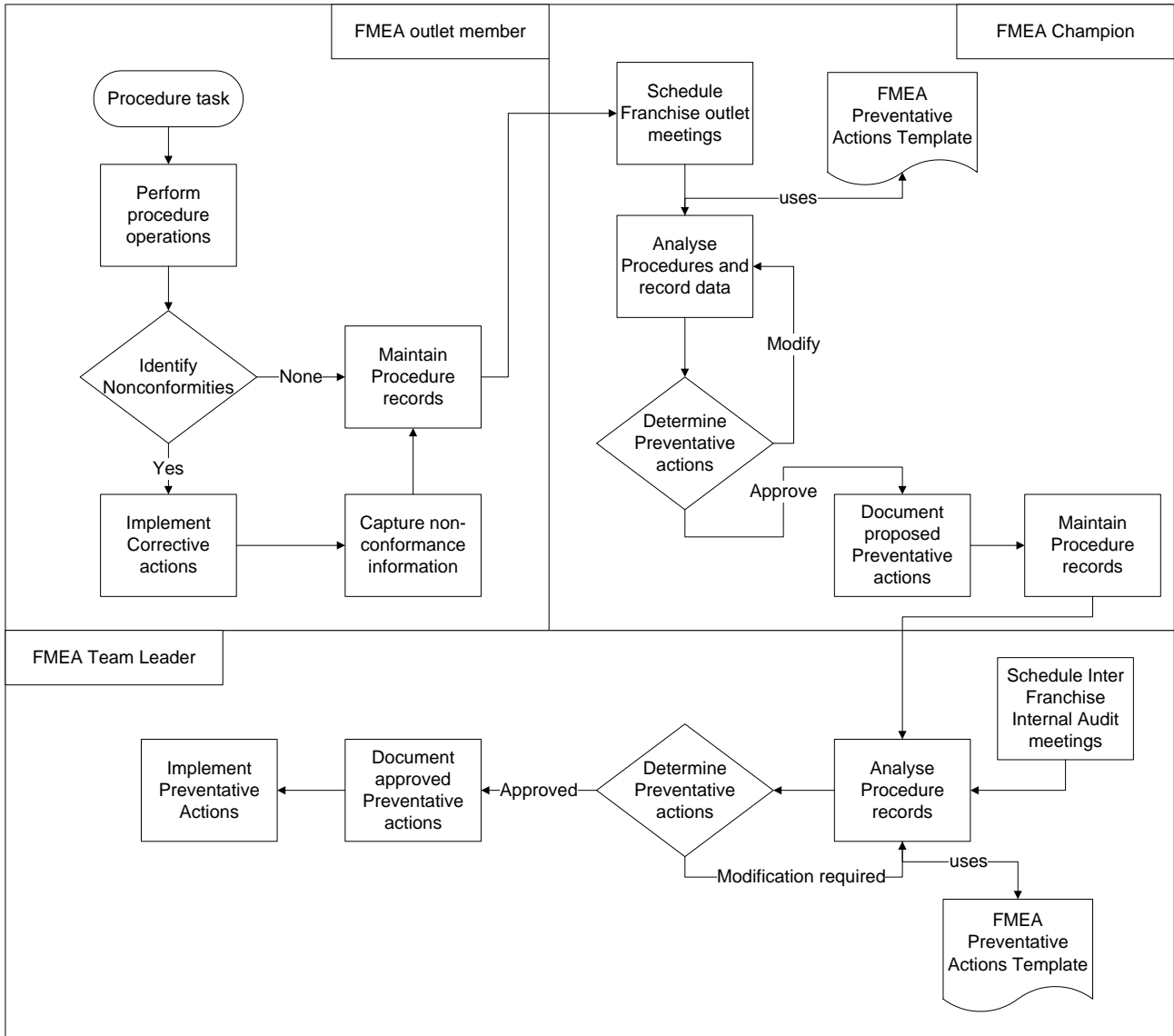
The higher the RPN value the more attention must be given to the potential problem. The potential problems with the highest RPN number shall be dealt with first during the Inter Franchise Internal Audit Meetings.

FMEA team leader shall review and approve or modify the proposed and possible preventative actions determined during the Inter Franchise Internal Audit.

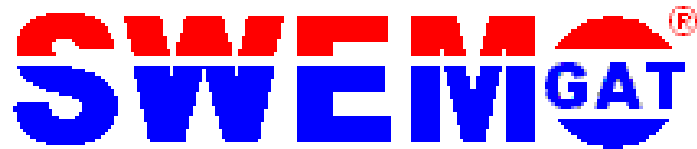
6. REFERENCES

- FMEA Preventative Action Template (FQD8530-010)
- Inter Franchise Internal Audit Procedure (MQP822b-010)
- Franchisee Internal Audit Procedure (MQP822c-010)
- ISO 9001:2008
- Swemgat Quality Manual (FQD4420-010)

Figure 2: Process flow for Preventative Action Procedure



Document name	QPR710j-010	Prepared by	SJ Wessels
Revision no.	2.1	Status	Approved
Creation date	22/09/09	Reviewed by	SJ Wessels and H Ehlers
Effective date	01/11/09	Approved by	H Ehlers



Pool Solar Heating Project Procedure

QPR710j-010

1. PURPOSE

This documented procedure defines the responsibilities, resources and methods for the delivery of the Pool Solar Heating Installation Procedure. The developed procedure conforms to the ISO 9001:2008 requirements relating to the control of quality documents.

2. SCOPE

This procedure is applicable to the installation of Pool Solar Heating units and provides the

- quality objectives of the specified product or service delivered
- resources required for the delivery of the specified product or service
- verification, validation and testing of the specified product or service for acceptance
- basic process to deliver the specified product or service

3. DEFINITIONS AND ABBREVIATIONS

Franchisor: Franchisor refers to Hendrik Ehlers the Franchise owner and operator

Franchisee: Franchisee refers to the specific Franchise outlet owner and operator

Liferay: Liferay refers to the implemented Content Management System of the Franchise

QMS: Quality Management System

CMS: Content Management System

4. RESPONSIBILITY AND AUTHORITY

The following responsibilities are identified and the authority associated with the responsibility if implacable assigned.

Expert technician: The procedure shall be carried out by the Expert Technician and three assistants. The Expert Technician will be responsible for the installation process and testing procedures. The Expert technician will have the authority to sign off on the delivered product. The Expert technician shall have the responsibility to ensure that the product is preserved during installation. The Expert technician shall be responsible for communicating with the customer during the product delivery. The Expert technician shall be responsible and have the authority to initiate the Customer Satisfaction Procedure (CQP8210-010) to capture customer feedback regarding the product or service delivery. The Expert technician shall

have the responsibility to ensure that the product complies with the specified customer requirements and that the required QMS procedures have been followed. The Expert technician shall be responsible for generating and maintaining the records stemming from the procedure and providing the records to the Franchisee upon project completion. These records from required procedures can include but is not limited to

- records for customer property identification procedures
- records form product tracking procedures
- records from product preservation procedures
- records from control of non-conformance procedures
- records from corrective actions procedures
- records from identified preventative action procedures
- records from product testing procedures
- records from control of equipment procedures

Technical assistant: The technical assistant will be responsible for providing the Expert technician with the required services and assistance to complete the product delivery.

Franchisee: The Franchisee shall be responsible for ensuring that the Expert technician is provided with the required resources to perform the product or service delivery. The Franchisee shall accept responsibility to communicate with the Expert technician to ensure that product delivery is completed and to inform the Expert technician of the customer requirements. The Franchisee shall have the authority to initiate product delivery and product termination in the event that the customer specifies the requirement.

Call centre operative: The Call centre operative shall be responsible to perform a follow up call on the delivered product five (5) days after product delivery. The Call centre operative shall have the responsibility to capture customer satisfaction regarding the delivered product or service. The Call centre operative shall be responsible for uploading the specific customer feedback on the Liferay system. The Call centre operative shall have the authority to direct the customer to the Franchisee if requested by the customer.

5. RESOURCE REQUIREMENTS

The Pool Solar Heating project requires the following resources

- Standardised equipment specified in the Required Franchise Infrastructure (FQD6300-010)
- Expert Technician
- 3 Assistant technicians
- Solar panels
- PVC piping of approximately 400mm diameter
- PVC connection points
- Multiport pipe connector
- Bypass valve
- Vacuum breaker

The solar panels required for specific pool sizes can be calculated from table 1.

Table 1: Solar Panel requirements

Item Code	Number of panels	Panel Width	Panel Length	Space required	Approx. Pool surface area
SKY300P1	1	1.2m	3m	1.7m X 3.5m	8m ²
SKY300P2	2	1.2m	3m	3.0m X 3.5m	17m ²
SKY300P3	3	1.2m	3m	4.3m x 3.5m	25m ²
SKY300P4	4	1.2m	3m	5.5m x 3.5m	32m ²
SKY300P5	5	1.2m	3m	6.7m x 3.5m	40m ²
SKY300P6	6	1.2m	3m	8.0m x 3.5m	48m ²
SKY300P7	7	1.2m	3m	9.2m x 3.5m	55m ²
SKY300P8	8	1.2m	3m	10.5m x 3.5m	60m ²

PROJECT DELIVERY TIME FRAME

The project should follow the determined time frame as indicated. Deviation to the product delivery time frame should be prevented.

Installation Lead time	: 5 to 14 days from confirmation of order
Installation and testing	: 1 to 3 days
Conditional carry-in warrant	: 5 years

6. PRODUCT DELIVERY PROCEDURE

The project is initiated through the confirmation of the customer order. The customer requirements for the project are captured through the Customer Requirements Process (CQP7210-010). The requirements are used to determine the resources required to deliver the product. The determined supplies are ordered and controlled as specified by the Purchase Control Procedure (PRP7400-010).

The Expert technician shall determine the customer owned property that might be utilised during the installation procedure upon arrival of the installation premises by using the Customer Property Identification Procedure (CQP7540-010). The Expert technician and Assistant technicians shall perform the required installation procedure as required. The current pump used by the pool will be utilised to run the solar heating system. The pump is to be turned off and disconnected for the duration of the installation procedure.

The Expert technician shall install the solar heating panels at a location that will ensure optimal sun exposure. The PVC piping length requirements shall be determined by the Assistant technician and cut to the desired length. The pipe flowing to the panels is to be connected in front of the Non-return valve and the Vacuum breaker installed. The pipe is to be connected to the solar panel pipe connection point that indicates "flow in" or "in". A pipe connecting to the "flow out" or "out" connection point of the solar panel is to be installed. The Bypass valve shall be installed between the pipe flowing towards the panels and the pipe flowing towards the pool. This will form the Changeover section required to connect the pipe flowing towards the pool with the existing pipe extending from the weir to the pool.

Figure 1 is to act as a graphic guideline for the basic installation of the solar panels.

The Expert technician shall test the installed product to determine whether the product performs as required. This is done by a touch test. The Expert technician shall touch the panels after 2 to 3 hours of installation and if the panels are cold to the touch the installed product is functioning as required.

The Expert technician shall obtain customer feedback regarding the product and maintain all records generated from the procedures performed. The records are to be provided to the Franchisee after project completion. The Expert technician shall inform the customer of the product operations and warranty. The installed product generally takes 4 days to indicate an increase of between 8 and 12 degrees Centigrade.

The Call centre shall perform a follow up and call the customer 5 days after the product was installed to determine customer satisfaction levels and inquire whether the product functions as required.

Figure 2 provides the basic process flow for the product delivery. Figure 3 provides the Product delivery procedure.

Figure 1: Basic graphical representation of Solar Panel installation

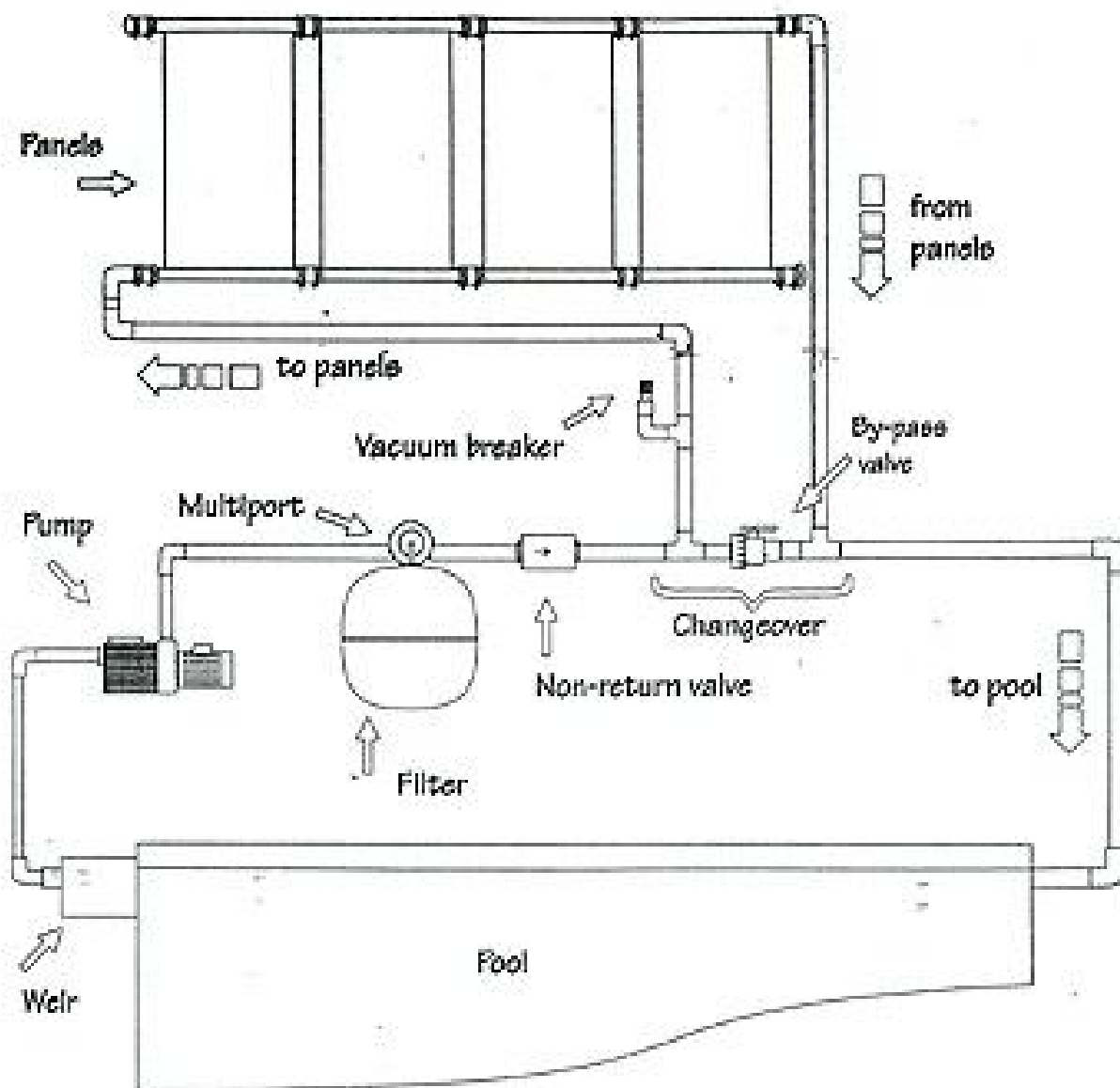


Figure 2: Basic process flow of Product delivery operations

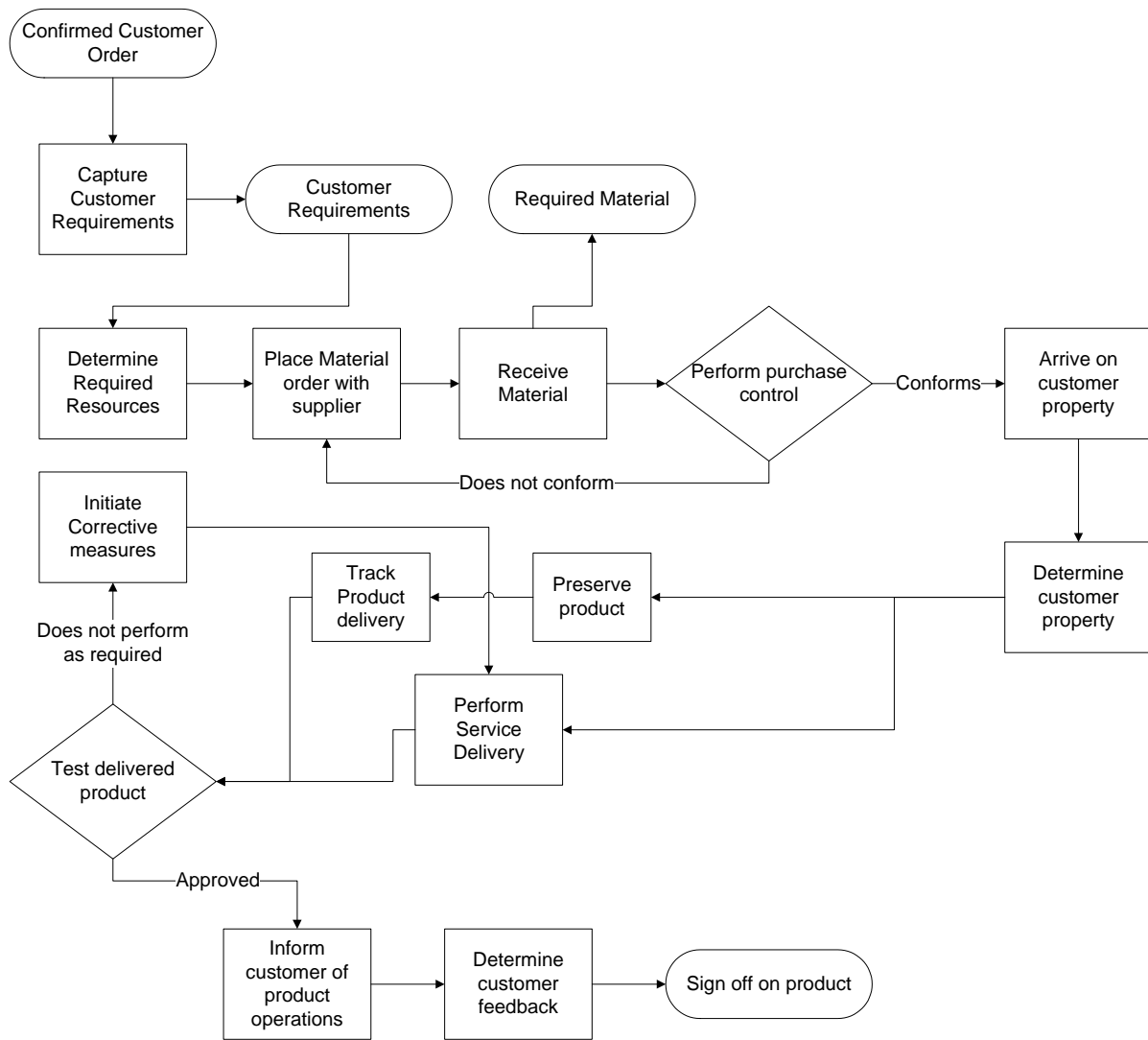
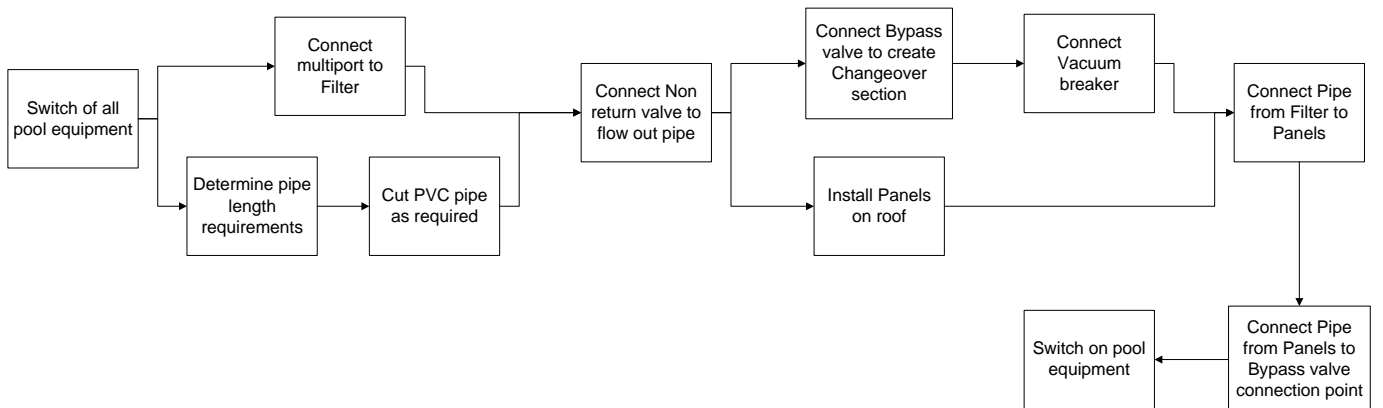


Figure 3: Process flow for Product installation



7. REFERENCES

- Control of Nonconforming Products Procedures (MQP8300-010)
- Customer Property Identification Procedure (CQP7540-010)
- Customer Satisfaction Procedure (CQP8210-010)
- ISO 9001:2008 standard
- Post Delivery Product Testing Procedure (PRP7520-010)
- Product Tracking quality document (FQD7530-010)
- Purchase Control Procedure (PRP7400-010)
- Quality Records Control Procedure (MQP4240-012)
- Required Franchise Infrastructure (FQD6300-010)
- Swemgat Quality Manual (FQD4420-010)



12. APPENDIX C: QMS TEMPLATES AND FORMS

FMEA PREVENTATIVE PROCEDURE FORM TEMPLATE

FMEA Preventative Actions			SWEMIGAT [®]	
FQD8530-010		Record no		
Performed by		Date		
Product or Service description				
Potential Failure				
Effects of failure				
Customer Perspective			QMS perspective	
Potential Causes of failure				
Severity of potential failure event				
Scale				
Severity	1 to 10		RPN <input type="text"/>	
Likelihood that failure occurs	1 to 10			
Likelihood that failure is detected	1 to 10			
Recommendations				



CUSTOMER SATISFACTION TEMPLATE

Customer Satisfaction form				
CQP8210-010		Record no		
Performed by		Date		
Customer Information	Product delivered			
	Product or service comments			
Name				
Address				
Phone no.				
Cellphone no.				
e-mail Address				
How did you experience the following?				
	Poor	Average	Good	Excellent
Time to respond to your request for quotation or service				
Efficiency of service and/or construction process				
Overall product quality				
Price				
General safety and housekeeping on site				
Would you recommend Swemgat	Yes		No	
Customer Comments				
Customer Signature		Technician Signature		



CUSTOMER PROPERTY IDENTIFICATION TEMPLATE

Customer Property Identification form			
CQP7540-010		Record no	
Performed by		Date	
Customer Information		Product delivered	
		Product or service comments	
Name			
Address			
Phone no.			
Cellphone no.			
e-mail Address			
Property Information			
Property utilised			
Condition of property before Product or Service delivery			
Condition of property after Product or Service delivery			
Customer Comments			
Customer Signature		Technician Signature	





CUSTOMER REQUIREMENT TEMPLATE

Customer enquiry registration form



CQP7210-010		Record no					
Performed by		Date					
Has Swemgat services been used before	YES		NO		UNSURE		
Name							
Address							
Suburb							
City							
Phone no.							
Fax no.							
Cellphone no.							
e-mail Address							

Product or Service Requirements

for officail use

	Callout for quote		or repair		e-Quote		Tel-quote	
Pool			Spa			Water feature		
Light			Annual Service			Water balancing		
Solar Heating			Heatpump			Chlorinator		
Cover			Pump			Net		

Signature





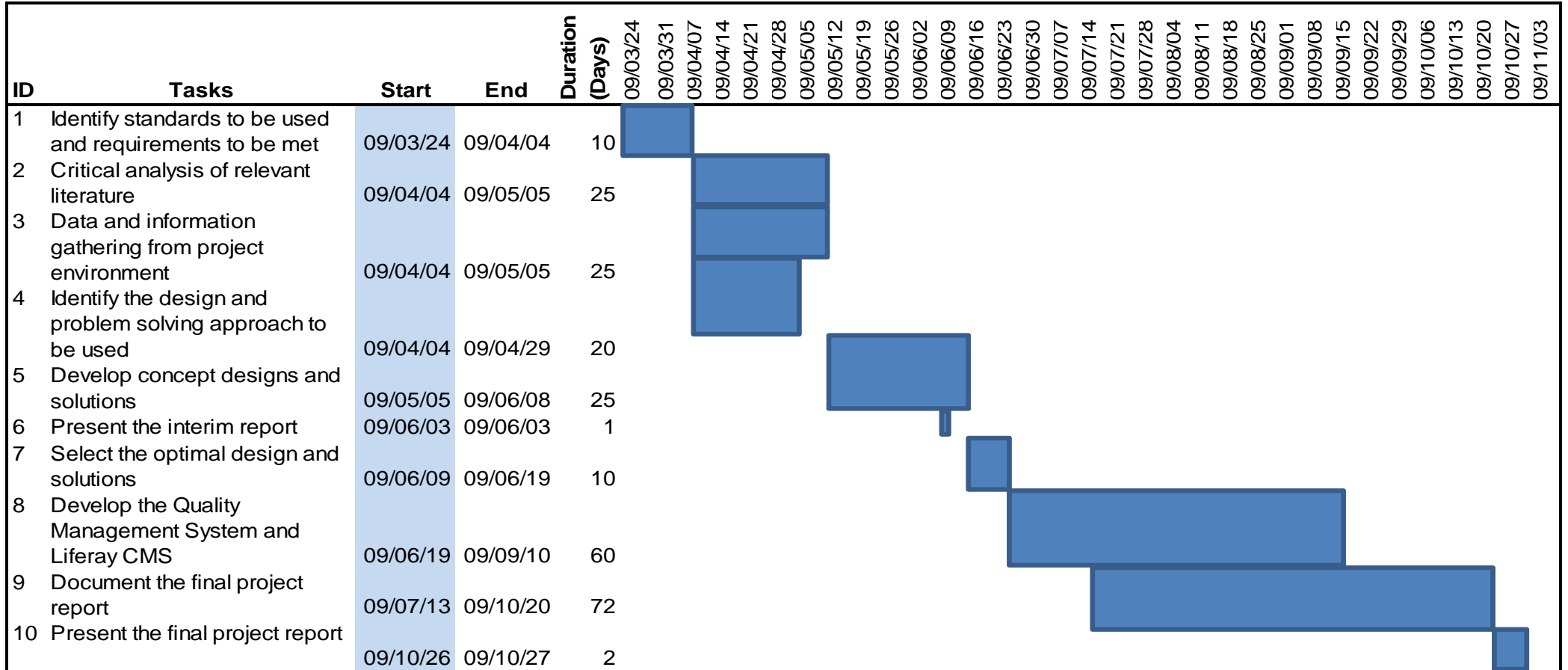
PURCHASE CONTROL TEMPLATE

Purchased products control form					
PRP7400-010		Record no			
Perfomed by		Date			
Supplier details		Product supplied			
name					
address					
phone no.					
fax no.					
e-mail address					
Product type					
Product description					
Product quantity					
Product condition upon delivery		Poor	Average	Good	Excellent
Product Delivery Description					
Signature of Delivery person		Signature of Purchase controller			



13.APPENDIX D: PROJECT GANTT CHART

Figure 36: Project Gantt chart





14. APPENDIX E: ORGANISATIONAL STRUCTURE OF FRANCHISE

Figure 37: Organisational Diagram of Swemgat Business

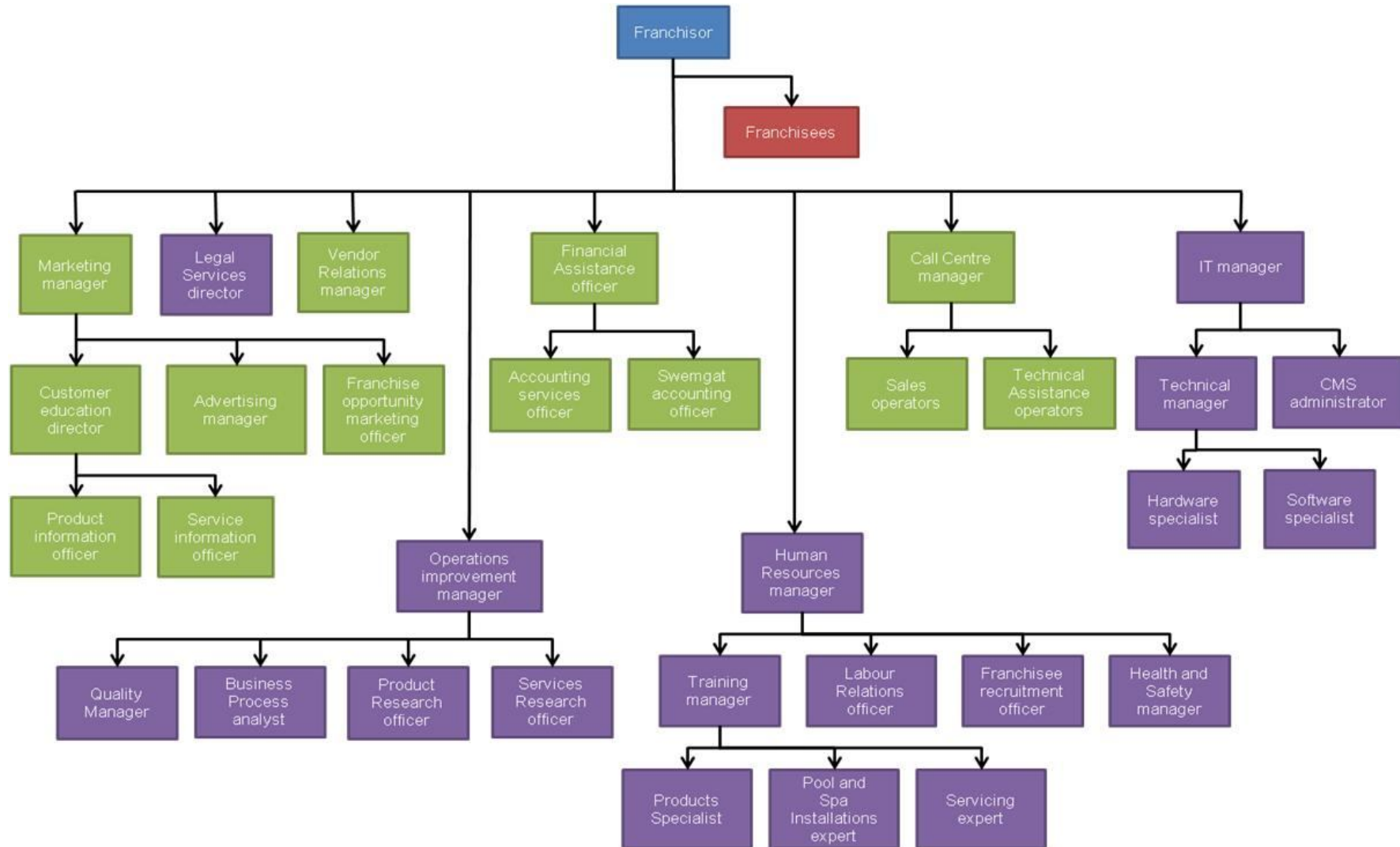




Figure 38: Organisational Diagram of Franchise Outlet

