HEALTHCARE ENVIRONMENTAL SERVICES
HESAS
AUTOMATION SOICETY

Environmental Services Quality Management Process

Draft - December 2020

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HESAS EMS Standards Document

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Message from the chairman

It is vividly evident that the world witnessed the worst public health and economic crisis due to COVID-19 pandemic. This inevitably mobilized the international community to act seriously and swiftly. However, the mortalities and morbidities induced by healthcare-acquired infections (HAI) are equally fatal, but the international community did not act similarly. Consequently, we are continuously and chronically suffering from HAI.

The current intervention for HAI is merely based on passively-set standards and enforcing these standards via regulatory agencies such as the centre for disease control and prevention (CDC), joint commission international (JCI), ministries of health, and other regulatory agencies. To efficiently address HAI, we inevitably need to mobilize the international community because HAI traverses a multitude of epistemological dimensions, requiring multidisciplinary tacit knowledge, and mandates active international collaboration. Besides, we believe that we can efficiently traverse deeply into the root-causes and solution landscapes by automating the entire healthcare environmental services and infection control within healthcare institutions using the latest advancements in computational epistemology, computational infection control models, computational epidemiological models, artificial intelligence, machine learning, distributed ledger technology, collective intelligence, cognitive technologies, internet of things, ubiquitous technologies, intelligent micro-measurement frameworks, artificial life, evidence-based program implementation, patient-centric care, strategy anchored execution, and symbiotic healthcare ecosystem services. Consequently, we developed these open standards that were tailored from diverse international standards to promote the automation of healthcare environmental services and infection control processes and best practices.

The Healthcare Environmental Services Operational Map (HESOM) and other standards were developed to efficiently leverage multidisciplinary experts and practitioners to contribute towards the eradication of HAI-induced mortalities and morbidities. Using ReXcels research and innovation environment, we cultivate collective intelligence by bringing together these multidisciplinary experts to iteratively develop these standards and adaptively support the innovation of computational technology that automates the execution and enforcement of these standards. As such, we cordially invite you to use these documents and participate actively in the further development of these standards to significantly reduce HAI-induced mortalities, morbidities, and their enormous negative economic externalities.

Hamid Adem
Interim Chairman, and Chief R&D Officer

Change Control

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Version:	Date:	Changes:

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Purpose

1 Purpose

1. PURPOSE

The purpose of this document is to establish a standard quality management process (and sub processes) based on best practices and standards (lean six sigma) for the King Fahd Medical City (Organization) Environmental services.

Efficient environmental services quality management process would assure:

- Time reduction and more availability of hospital services and prompt care
- Better patient outcomes and increased patient satisfaction
- Elimination of wastes and hence improved financial viability
- Improved patient throughput
- Higher employee involvement and satisfaction
- Reduction of total costs

This process is based on international well acclaimed standards like:

- *NHS- National Health Services Standard*
- *OSHA- Occupational Safety and Health Administration standard*
- *CDC- Centers for Disease Control and Prevention standard*
- *Lean six sigma- Quality Standard*
- *JCI- Journal of Clinical Investigation standard*
- *JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO)*
- *EPA- US Environmental Protection Agency*
- *HCAHPS - Hospital Consumer Assessment of Healthcare Providers and Systems*
- *HIPA- Health Information Privacy Act standard.*

*P.S: This process is a derivation from **ESM (Environmental Service Map),** which is a holistic and a comprehensive model for Environmental Services Management.*

2 Environmental Services Quality Management Process

Structure of the Document

2 Structure of the Document

2. STRUCTURE OF THE DOCUMENT

The Environmental services quality process management document comprises the following chapters:

Chapter–3: *Scope*: This chapter describes the scope of the document and the Cleaning process.

Chapter–4: *General Assumptions*: This chapter describes the underlined assumptions made for both the document and Cleaning process.

Chapter–5: *Cleaning Framework***:** This chapter exhibits the interaction of Quality process with other related processes and also describes the process sequence for cleaning process.

Chapter–6: *Cleaning Management Process***:** In this chapter Quality process and sub processes (if any) will be depicted and specified using rigorous BPMN and process specification templates.

Chapter–7: *References***:** This chapter serves as a prime reference to Quality process and presents the details supporting it in tabular formats. The chapter describes relevant Business Rules, Risks, Quality Attributes, Data Quality Dimensions, Operation Policies, KPIs, CTQs, Abstract Time-scales and SLAs terms specific to cleaning process.

This Quality process is supposed to be a living document and consists of various variable values which would frequently evolve or change as Organization's Quality process matures or changes

3 Environmental Services Quality Management Process

Scope

3 Scope

3. SCOPE

This process is applicable to all environmental services.

4 Environmental Services Quality Management Process

General Assumptions

4 General Assumptions

4. GENERAL ASSUMPTIONS

Following are general assumption made for the Quality management process.

- Senior Management Support is available throughout this process.
- Any activity related assumptions are explicitly identified in related Process Specification table in Chapter 6.

5 Environmental Services Quality Management Process

Quality Management Framework

5 Quality Management Framework

5.1 Quality Management Interactions

The following depiction shows the points of interaction of Organization Environmental services Quality Management process with other related House Keeping processes. All the processes depicted below are defined in their own respective dedicated documents.

5.2 Quality Process

The Quality process comprises of following sequence of activities:

1. **Define Phase**
2. **Measure Phase**
3. **Analyze Phase**
4. **Improve Phase**
5. **Control Phase**

5 Quality Management Framework

Section 5.2.1-5.2.5 describes the flow of high level process sequence for Organization Quality management based on NHS standards. **Section 6.1** Process Model sheds more light on the entire flow of quality process.

5.2.1 Define Phase

Organization's Quality Initiative would never thrive unless and until it has a proper support from the top management. Although there may be barriers to implementation external to the Organization ability to control, the quality program should enjoy total commitment from senior management.

At the outset this would require establishing a proper sound strategy for definition of the quality management framework would comprise of:

- **Development of Project Charter.** This comprises of Scope, supporting structure, Problem, goal, business objectives.
- **Voice of Customer.** In-depth process of capturing a customer's expectations, demand preferences and aversions.
- **High level process Map.** Higher level representation of entire environmental services.
- **Value Stream Mapping.** Technique used to analyze and design the flow of materials and information required to bring a product or service to a consumer.

5.2.2 Measure

The Measure phase is where quantitative and qualitative data is gathered to get a clear view of the current state. This serves as a baseline to evaluate potential solutions and typically involves study related to current performance (time, volume, frequency, impact, etc.).

This phase comprises of following:

- **Identification of parameters.** This involves identification of :
    - Population. The actual target audience of the data collection.
    - Sampling. The sample representation of the population.
    - Hypothesis. Test to ensure that the sample selected is actual representation of the population.
    - Sample size. The optimal sample size to establish purposeful results
- **Data collection.** This comprises of following:
    - Instantaneous data collection. This refers to a conditions where by certain events can result into instantaneous data collection, for example a patient profile shows TB, would be a instantaneous data source rather than identification of microbes in the environmental conditions

- Implicit plan. This refers to the computer generated automated plan.
- Explicit plan. This refers to the scenario whereby data collection is done for certain situations such as infection outbreaks and requires human intervention.

- **Sampling techniques.** This comprise of following:
  - **Simple random sampling:**
    In a simple random sample ('SRS') of a given size, all such subsets of the frame are given an equal probability. Each element of the frame thus has an equal probability of selection: the frame is not subdivided or partitioned
  - **Systematic sampling**
    Systematic sampling relies on arranging the target population according to some ordering scheme and then selecting elements at regular intervals through that ordered list.
  - **Stratified sampling**
    Where the population embraces a number of distinct categories, the frame can be organized by these categories into separate "strata." Each stratum is then sampled as an independent sub-population, out of which individual elements can be randomly selected
  - **Line-intercept sampling**
    Line-intercept sampling is a method of sampling elements in a region whereby an element is sampled if a chosen line segment, called a "transect", intersects the element
- **Establish CTQ.** Critical to quality conveys quality of a product or service that is derived from the voice of the customer
- **Definition performance standards**. What is acceptable and what is not acceptable.
- **Measurement system analysis**. An analysis seeks to identify the components of variation in the measurement. A Measurement Systems Analysis evaluates the test method, measuring instruments, and the entire process of obtaining measurements to ensure the integrity of data used for analysis
- **Value Added Analysis.** Process in which a good or service is stripped down to its essential attributes or benefits. This comprises of identifying following services:
  - Non Value add
  - Value Add
  - Business Value add

  Those that contribute to the customer appeal are enhanced; the others are reduced or eliminated.

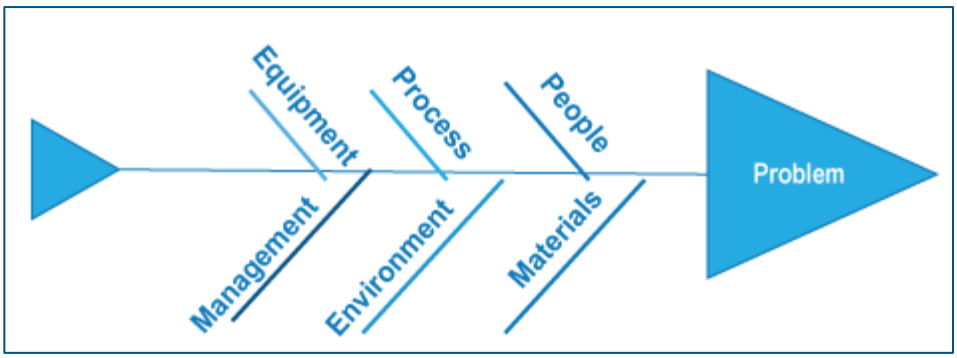
5.2.3 Analyze Phase

In the Analyze phase, information gathered in the Measure phase, is analyzed to pinpoints the bottlenecks, and identifies improvement opportunities where non-value-add tasks can be removed. This phase comprises of following:

- **Root cause analysis of defect/ problems.** Problem solving methods aimed at identifying the root causes of problems or events. This involves using following tools and techniques:
  - Perform FMEA. Failure mode effect analysis for analysis of potential failures. This comprises of following:
    - Reviewing the process
    - Brainstorming potential failure modes
    - Listing potential effects of failures
    - Assign severity, occurrence, detection ranking
    - Calculate RPN (Risk Priority Numbers)
    - Develop action plan
    - Implementation of action plan
    - Calculation of resulting RPN
  - **Ishikawa Diagram.** This method can be useful in helping identify where something may be going wrong, or be improved. Such a diagram is typically the outcome of a brainstorming session where problem solvers can offer suggestions. The main goal is represented by the trunk of the diagram, and primary factors are represented as branches. Secondary factors are then added as stems, and so on. Creating the diagram stimulates discussion and often leads to increased understanding of a complex problem.

    Causes are usually grouped into major categories to identify the sources of problem. The categories typically include:
    - **People**: Anyone involved with the process
    - **Process**: How the process is performed and the specific requirements for doing it, such as policies, procedures, rules, regulations and laws
    - **Equipment**: Any equipment, computers, tools etc. required to accomplish the job
    - **Materials**: Raw materials, parts, pens, paper, etc. used to produce the final product
    - **Management**: Management related issues, decisions.
    - **Environment**: The conditions, such as location, time, temperature, and culture in which the process operates.

5 Quality Management Framework



- **Pareto Analysis.** This is a technique for separating important potential causes from more trivial issues. The following steps should be taken:
  - Form a table listing the causes and their frequency as a percentage.
  - Arrange the rows in the decreasing order of importance of the causes, i.e. the most important cause first.
  - Add a cumulative percentage column to the table

  Pareto Analysis signifies 80-20 rule, meaning that by doing 20% of work, 80% of the advantage of doing the entire job can be generated. Or in terms of Problem Management, a large majority of problems (80%) are produced by a few key causes (20%).This technique helps to identify the top 20% of causes that needs to be addressed to resolve the 80% of the problems. Once the top 20% of the causes are identified, then tools like the Ishikawa diagram or Fish-bone Analysis to be used to identify the root causes of the problems.
  - **5 whys.** The 5 Whys is a questions-asking method used to explore the cause/effect relationships underlying a particular problem. Ultimately, the goal of applying the 5 Whys method is to determine a root cause of a defect or problem. Following are the steps for performing 5 whys:
  - Step 1. Write down the specific problem.
  - Step 2. Ask Why the problem happened and identify the answer to the problem.
  - Step 3. If the answer does not identify the root cause of the problem in step 1, ask why again and write that answer down.
  - Step 4. Loop back to step 3 until the team is in agreement that the problem's root cause is identified.

5.2.4 Improve Phase

The Improve phase is when findings are implemented, workflows are streamlined. This phase comprises of establishing following:

- **Seven types of wastes analysis.**
  This step involves minimization and control of wastes with regards to supplier management. Wastes can lead to variation which can lead to supplier management quality degradation. Following are the various wastes that this quality process would effectively control.
  - **Minimizing Inventory Wastes.** Unneeded supplies lead to most costs in terms of space occupation and supplies expiration concerns. The best method to deal with this is to enforce JIT inventory (Just in time inventory). Just-in-Time inventory system focus is having the right material, at the right time, at the right place, and in the exact amount.
  - **Minimizing Motion Wastes.** This refers to reducing unorganized movement (spaghetti motion) of supplies and staff, which can lead to budget over runs.
  - **Minimizing Over production**. This refers to reduction of unnecessarily over working or over doing of things which results into over budgeting. For example over processing of supplier selection formalities beyond the required baseline would result into over budgeting.
  - **Minimizing Over processing.** This refers to the removing the tendency of over complicating things that what is required e.g., filling out extra paperwork by supplier.
  - **Minimizing Transportation.** Unnecessary movement of supplier equipment (round traffic) would result into fatigue for the employees and also waste their precious time which can be utilized for some other productive work.
  - **Minimizing Rework/ Correction.** This refers to doing the correct thing at the first time. Reworks in terms of Paperwork, supplier management errors would result into reworking time which would affect the overall variation (sigma) and deter the supplier control process quality.
  - **Minimizing Idle time.** This refers to the time spend in waiting for critical input or resource for the process, without which the process can't proceed. For example, time spend in waiting for arrival of supplies would result into idle time.
- **5 S.**
  5S is a workplace organization methodology, which comprises of following:
  - **Sort**- eliminate all unnecessary tools, parts, and instructions
  - **Set In Order** - organize, identify and arrange everything in a work area
  - **Shine** - regular cleaning and maintenance

- **Standardize** - make it easy to maintain - simplify and standardize
- **Sustain** -maintaining what has been accomplished

- **Just in time inventory**. JIT is a production strategy that strives to improve a business' return on investment by reducing in-process inventory and associated carrying costs
- **Pilot**. This involves developing a project plan is developed and put into action, beginning with a pilot program and culminating in full-scale, enterprise-wide deployment
- **Establish Continuous Improvement practice**
- Quality improvement consists of a wide array of managerial and organizational activities designed to streamline production processes, to remove waste and unpredictability, and to achieve previously unprecedented levels of performance.
  This comprises of establishing various continuous improvement practices, for following continuous improvement domain.

Continuous Improvement Domains	Improvement Areas	Continuous Improvement Practices
Management	• Leadership • Mission and shared vision • Targets • Resources • Favourable changes in organisation	• Set targets based on realistic expectations towards practice development and long term policy of the professional organisation • Make plans on improvement • Establish priorities towards subjects that particularly need improvement • Designate a staff as the quality coordinator • Hold quality meetings with all staff at regular intervals (for example, once a month) • Establish a quality board in practice • Integrate the activities in daily work
Record keeping	• Performance measures • Analysis of the organisation • Satisfaction	• Collect data on specific subjects (according to priorities set or projects run and including patient satisfaction), if possible form electronic medical files (other sources include insurers, laboratories, pharmacists, appraisals, etc)

		• Make annual / monthly/ quarterly reports on outcomes of care • Make annual reports on improvement activities
Systematic approach	• Planned activities • Use of the quality cycle • Use of specific tools and techniques • Learn from experience	• Run small improvement projects on prioritised issues (management of chronic disease, preventive activities, accessibility, workload) • Use tools and techniques that are simple to use and not time consuming (brainstorming, analysis of strengths and weaknesses, flow charts, cause and effect diagrams, etc) • Aim at changes in which existing processes are adapted or re-engineered (and build on experience) (ideas to improve processes can come from peer review, continuing medical education, guidelines, publications, etc)
Collaboration	• Everyone involved • Positive attitude towards continuous • quality improvement • Team building • Participation	• Involve everyone in quality improvement activities (everyone is aware of tasks and responsibilities) • Build teams for systematic improvement activities • Involve patients (and other external customers) in improvement activities

5.2.5 Control Phase

Once a solution is implemented, the next step is to place the necessary “controls” to assure improvements are maintained long-term. This phase comprises of following

- **Update of relevant documentation.** This includes work instructions and procedure, quality system documentation, training procedures etc.

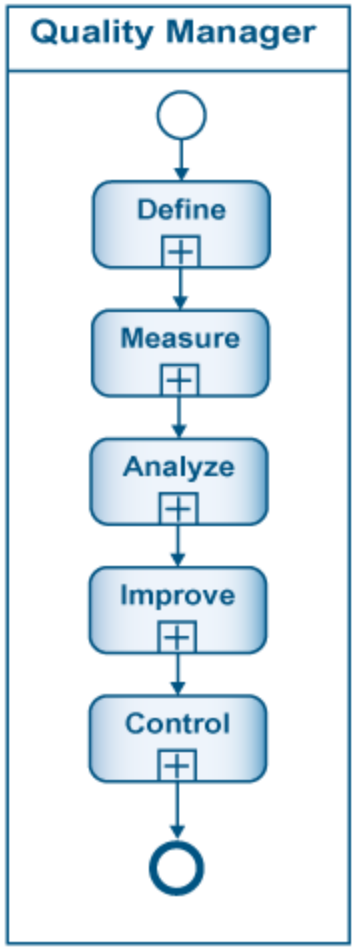
- **Establish control plan.** The control plan is the centralized document to keep track of the status of all significant process characteristics. It specifies the process variables and the required characteristics of the product, and how they are to be measured and controller

6 Environmental Services Quality Management Process

Quality Management Process

6 Quality Management Process

6.1 Process Model



6 Quality Management Process

6.2 Process Specification

Specification	Description
Summary/Purpose	To establish Organization's environmental services quality management process.
Scope	This is a Level 1 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Cost Effectiveness • Better Customer satisfaction • Reduction of wastes
Related Operational Policies	OP-001, OP-002, OP-003, OP-004, OP-005, OP-006(Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimensions	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	• Periodic review
Basic Course of Event	**Environmental Services Management Process** 1. Quality Manager performs defines phase 2. Quality Manager performs measure phase 3. Quality Manager performs analyze phase. 4. Quality Manager performs improve phase. 5. Quality Manager performs control phase. 6. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	None
Preconditions	Senior Management should be supportive of this initiative.
Post -conditions	Quality Management process is established.
Related Business Rules	BR-001, BR-002, BR-003, BR-004 (Ref 7.1)
Related Risks	RR-001, RR-002, RR-003 (Ref 7.2)

6 Quality Management Process

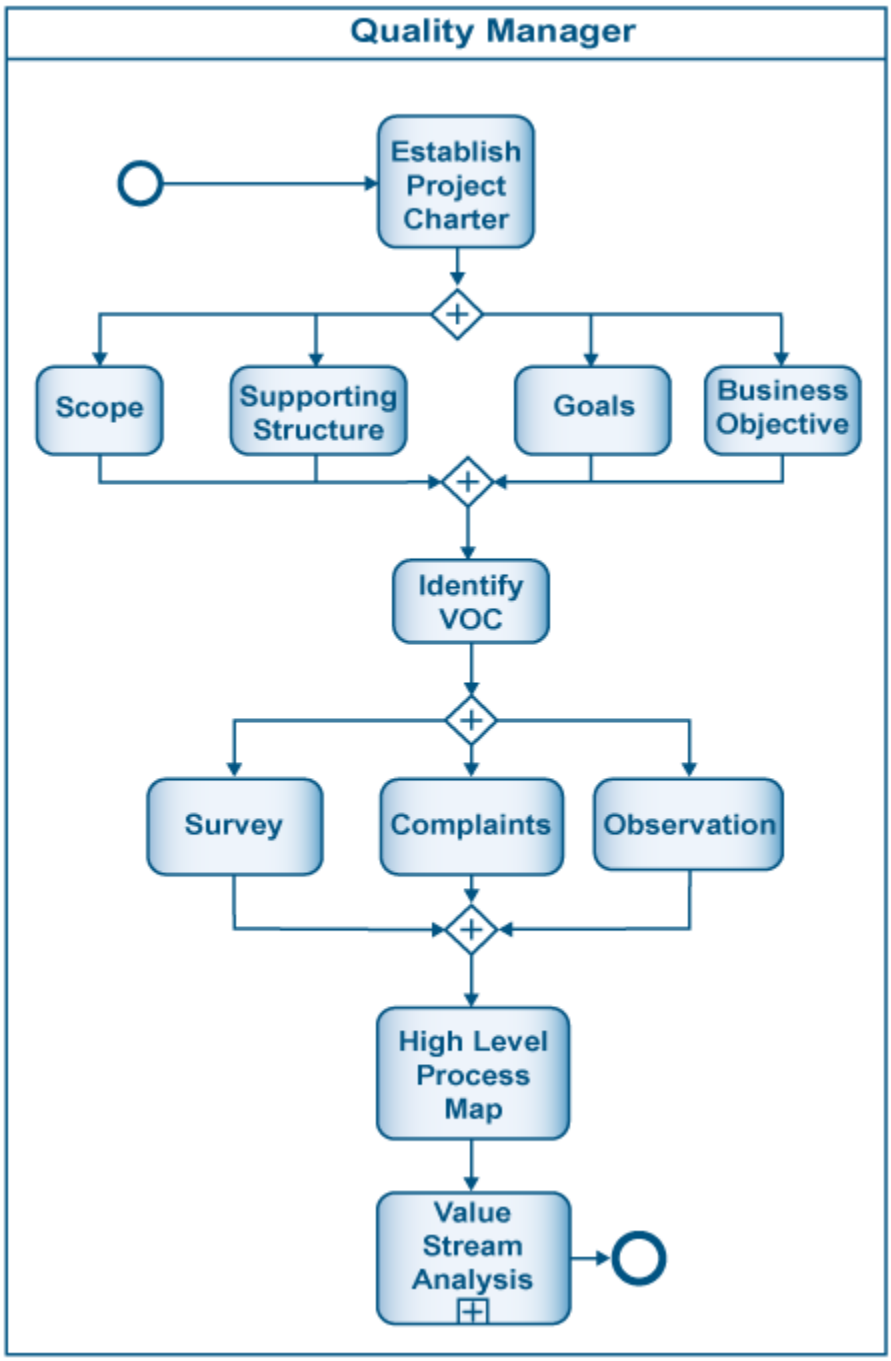
Related Quality Attributes	Reliability, Service Reliability, Usability, Normal Usability Operations, Confidentiality, Authenticity, Data Integrity, Non-repudiation, Accountability, Security Integration, Performance, Scalability, Extensibility, Adaptability, Testability, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Believability, Reputation, Objectivity, Free-of-Error, Value Added, Relevance, Completeness, Timeliness, Appropriate Amount, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	Ref7.8
Related KPIs	VSAR, PRR, IR, CPRR, QNCR , PCRR, CGR, ITR(Ref 7.6)
Related CTQs	VSARV, PRRV, IRV, PCRRV, CGRV,CPRRV, QNCRV, MOM, PWOM, CTQ, IOM, TOM, WRM, DRM, ITRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.1
Other References	Appendix A: Business Process Notation Reference

6 Quality Management Process

6.3 Roles and Responsibilities

Roles	Responsibilities
Quality Manager	• Quality Manager performs defines phase • Quality Manager performs measure phase • Quality Manager performs analyze phase. • Quality Manager performs improve phase. • Quality Manager performs control phase.

6.4 Sub Process – Define Phase



6 Quality Management Process

6.5 Sub Process – Define Phase Specification

Specification	Description
Summary/Purpose	To establish the process of define phase of environmental services quality management process.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Cost Effectiveness • Better Customer satisfaction • Reduction of wastes
Related Operational Policies	OP-001 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Periodic Activity</td></tr>
<tr><td>Basic Course of Event</td><td>Define Phase Process
1. Quality Manager establishes the project charter (scope, supporting structure, problem, goals, and business objectives)
2. Quality Manager identifies VOC (survey, complaints, observation)
3. Quality Manager makes high level process map
4. Quality Manager performs value stream analysis
5. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>None</td></tr>
<tr><td>Extension points</td><td>Measure Phase</td></tr>
<tr><td>Preconditions</td><td>This process uses automated tools to facilitate its operation.</td></tr>
<tr><td>Post -conditions</td><td>Project charter is established</td></tr>
<tr><td>Related Business Rules</td><td>BR-002 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref 7.2)</td></tr>
<tr><td>Related Quality Attributes</td><td>Reliability, Service Reliability, Availability, Usability, Normal Usability Operations, Confidentiality, Authenticity, Non-repudiation, Accountability, Security Integration, Performance, Scalability, Auditability, Operability and Deployability (Ref 7.3)</td></tr>
</table>

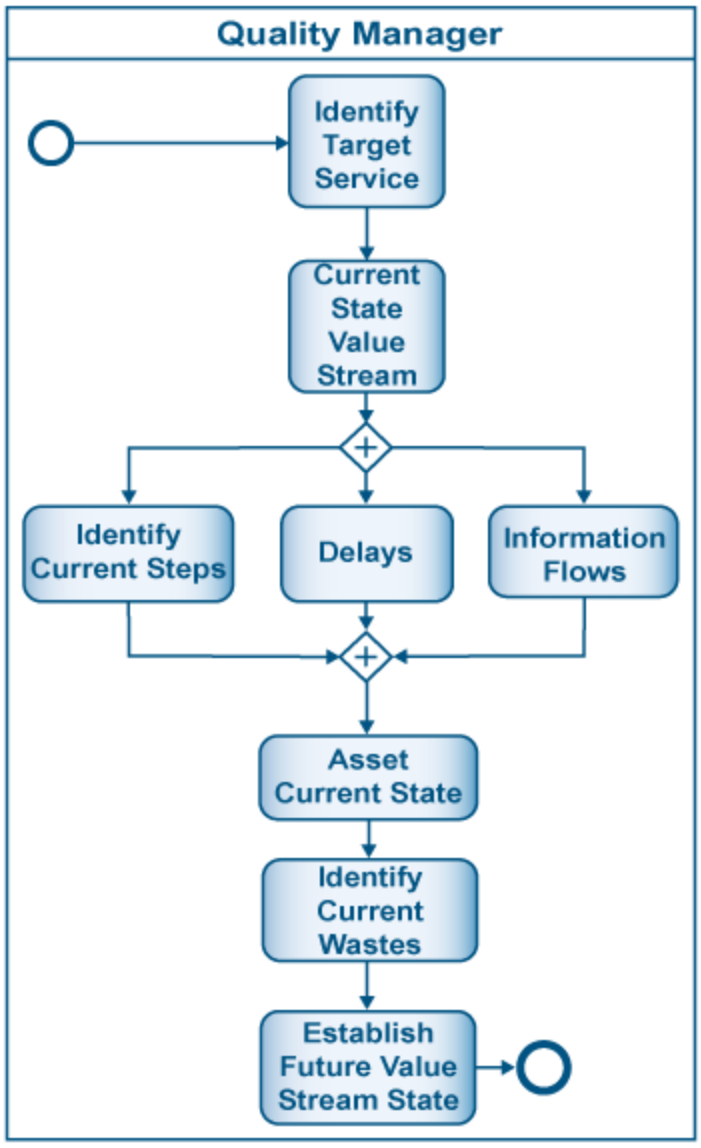
6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Appropriate Amount, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	Ref (7.6)
Related KPIs	PCRR Ref (7.7)
Related CTQs	PCRRV Ref (7.8)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.4
Other References	Appendix A: Business Process Notation Reference

6.6 Roles and Responsibilities – Define Phase

Roles	Responsibilities
Quality Manager	• Quality Manager establishes the project charter (scope, supporting structure, problem, goals, and business objectives) • Quality Manager identifies VOC (survey, complaints, observation) • Quality Manager makes high level process map • Quality Manager performs value stream analysis.

6.7 Sub Process – Value Stream Analysis



6.8 Sub Process – Value Stream Analysis Specification

Specification	Description
Summary/Purpose	To establish the process of value stream analysis
Scope	This is a Level 3 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Cost Effectiveness • Better Customer satisfaction • Reduction of wastes
Related Operational Policies	OP-005 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• High level process map</td></tr>
<tr><td>Basic Course of Event</td><td>Value Stream Analysis Process
1. Quality Manager identifies target service
2. Quality Manager identifies the current state value stream (identifies current steps, delays, information flows)
3. Quality Manager assess current state
4. Quality Manager identifies current wastes
5. Quality Manager establishes future value stream state.
6. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Measure Phase.</td></tr>
<tr><td>Preconditions</td><td>Project charter has been established, and VOC analysis has been performed.</td></tr>
<tr><td>Post -conditions</td><td>Value stream analysis is performed.</td></tr>
<tr><td>Related Business Rules</td><td>BR-003 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref 7.2)</td></tr>
</table>

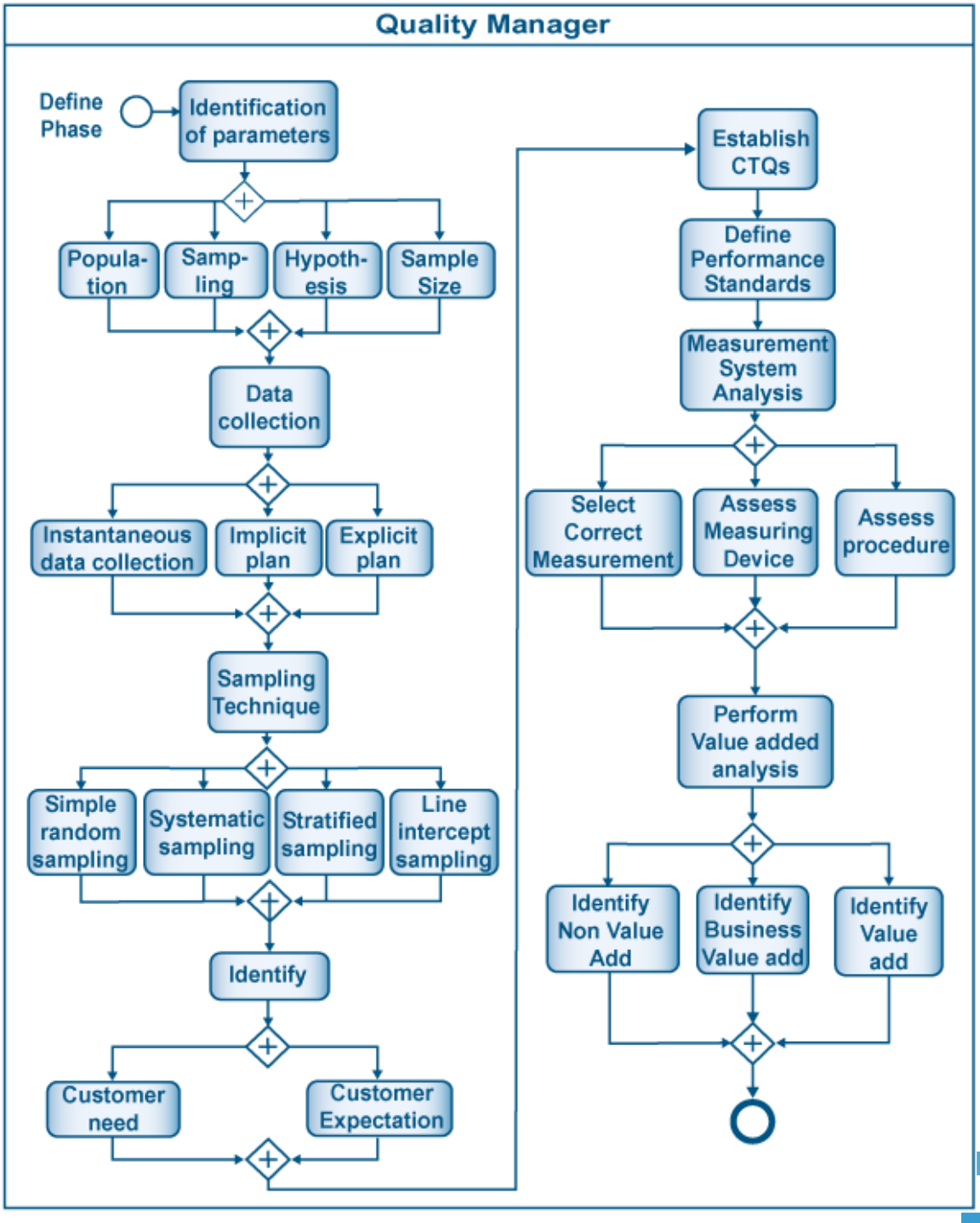
6 Quality Management Process

Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Scalability, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	Ref 7.8
Related KPIs	VSAR (Ref 7.6)
Related CTQs	VSARV(Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.7
Other References	Appendix A: Business Process Notation Reference

6.9 Roles and Responsibilities – Value Stream Analysis

Roles	Responsibilities
Quality Manager	• Quality Manager identifies target service • Quality Manager identifies the current state value stream (identifies current steps, delays, information flows) • Quality Manager assess current state • Quality Manager identifies current wastes • Quality Manager establishes future value stream state.

6.10 Sub Process – Measure Phase



6 Quality Management Process

6.11 Sub Process – Measure Phase Specification

Specification	Description
Summary/Purpose	To establish the measure phase for the environmental services quality management process
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Cost Effectiveness • Better Customer satisfaction • Reduction of wastes
Related Operational Policies	OP-005 Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>Design Process</td></tr>
<tr><td>Basic Course of Event</td><td>Measure Process
1. Quality Manager establishes measure phases(identification of parameters (population, sampling, hypothesis, sample size)
2. Quality manager identifies data collection categories (instantaneous data collection, implicit plan and explicit plan)
3. Quality Manager identifies sampling techniques (simple random sampling, systematic sampling, stratified sampling, line intercept sampling)
4. Quality Manager identifies customer need and customer expectations
5. Quality Manager establishes CTQs
6. Quality Manager defines performance standards
7. Quality Manager performs measurement system analysis (selects correct measurement, assesses measuring devices, assesses procedure)
8. Quality Manager performs value added analysis (identifies non value add, identifies business value add and identifies value add).
9. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Analyze process.</td></tr>
</table>

6 Quality Management Process

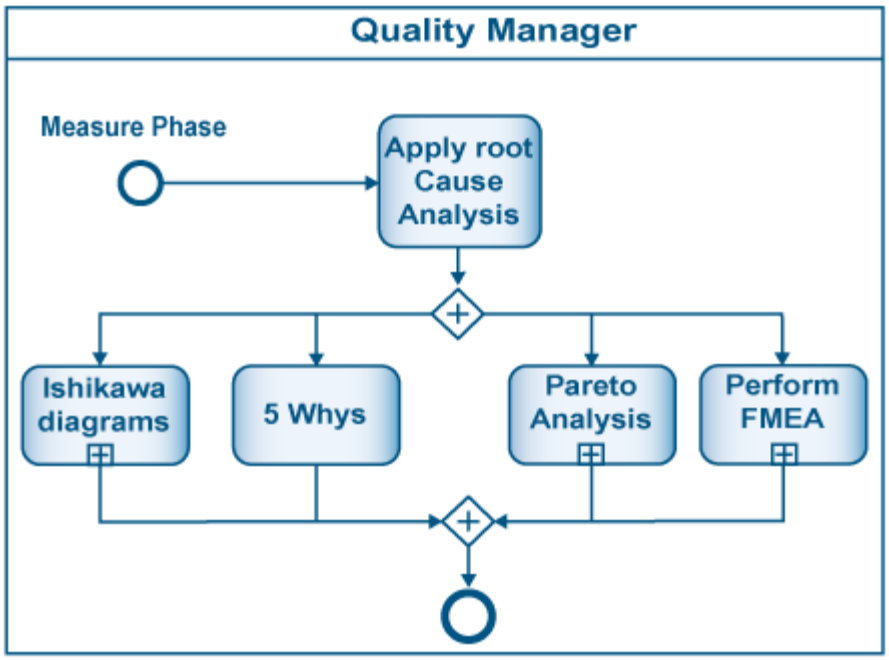
Preconditions	Define phase has been established.
Post -conditions	CTQ are established, Valued added analysis is done.
Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-002(Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Scalability, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	CGR(Ref 7.6)
Related CTQs	CGRV(Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1

Process Model	Section 6.10
Other References	Appendix A: Business Process Notation Reference

6.12 Roles and Responsibilities – Measure Phase

Roles	Responsibilities
Quality Manager	• Quality Manager identifies customer need and customer expectations • Quality Manager establishes CTQs • Quality Manager defines performance standards • Quality Manager performs measurement system analysis (selects correct measurement, assesses measuring devices, assesses procedure) • Quality Manager performs value added analysis (identifies non value add, identifies business value add and identifies value add).

6.13 Sub Process – Analyze Phase



6 Quality Management Process

6.14 Sub Process – Analyze Phase Specification

Specification	Description
Summary/Purpose	To establish the Analyze phase for the environmental services quality management process
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Cost Effectiveness • Better Customer satisfaction • Reduction of wastes
Related Operational Policies	OP-002 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimension	**Type** / **Normal** **Average** / 30 min **Std** / 12 min
Trigger	Improvement Phase
Basic Course of Event	**Analyze Process** 1. Quality Manager Applies root cause analysis (ishikawa diagrams, 5 whys, pareto analysis, FMEA) 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Improve Phase
Preconditions	Measure phase has been established.
Post -conditions	Analysis happens.
Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-002 (Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)

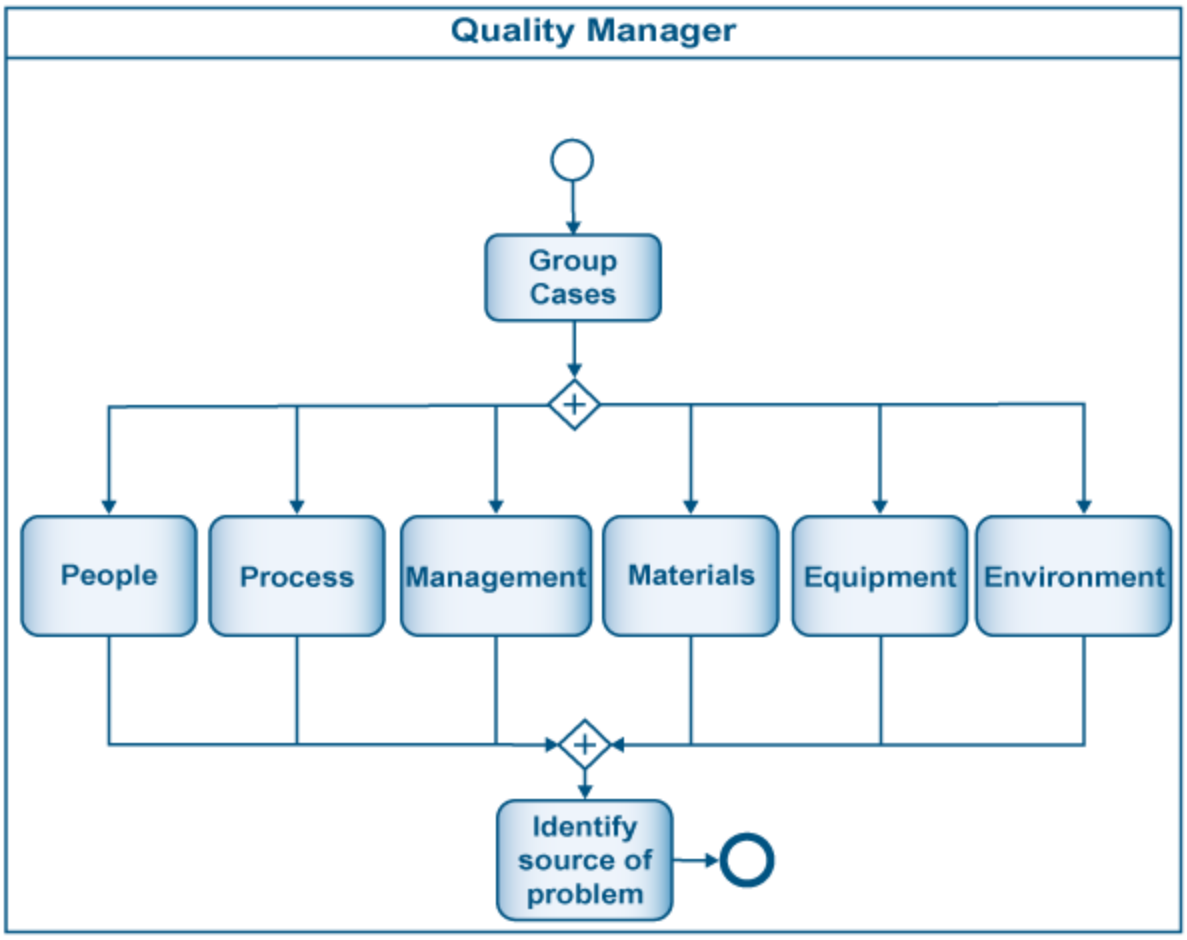
6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	(Ref 7.6)
Related CTQs	(Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.13
Other References	Appendix A: Business Process Notation Reference

6.15 Roles and Responsibilities – Analyze Phase

Roles	Responsibilities
Quality Manager	Quality Manager Applies root cause analysis (ishikawa diagrams, 5 whys, pareto analysis, FMEA)

6.16 Sub Process – Ishikawa Diagram



6.17 Sub Process – Ishikawa Diagram Specification

Specification	Description
Summary/Purpose	To establish the process for ishikawa diagram.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Identifying root cause
Related Operational Policies	OP-002 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimension	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	Root cause Analysis
Basic Course of Event	**Ishikawa Process** 1. Quality manager groups all causes into people, processes, management, materials, equipment's, and environment. 2. Quality Manger identifies source of problem. 3. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Improve Phase
Preconditions	Measure phase has been established.
Post -conditions	Ishikawa diagram is established.
Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-002 (Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)

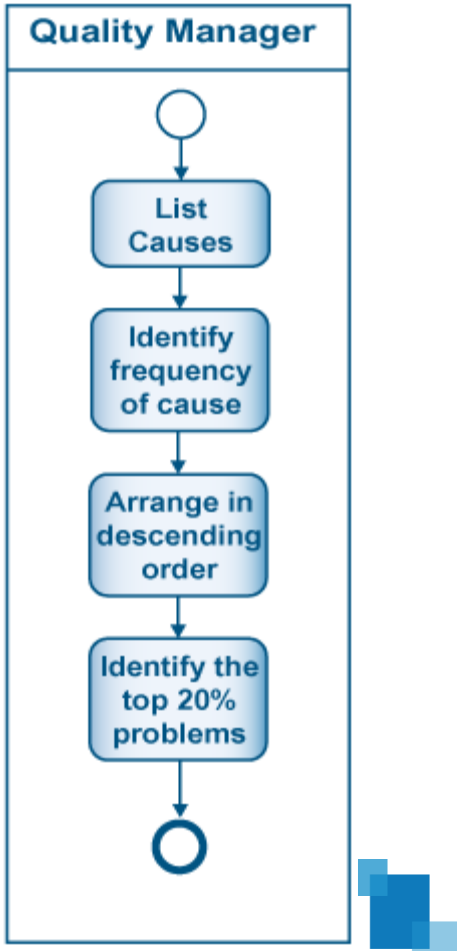
6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	None
Related KPIs	PRR (Ref 7.6)
Related CTQs	PRRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.16
Other References	Appendix A: Business Process Notation Reference

6.18 Roles and Responsibilities – Ishikawa Diagram

Roles	Responsibilities
Quality Manager	• Quality manager groups all causes into people, processes, management, materials, equipment, and environment. • Quality Manger identifies source of problem.

6.19 Sub Process – Pareto Diagram



6.20 Sub Process – Pareto Diagram Specification

Specification	Description
Summary/Purpose	To establish the process for pareto diagram.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Identifying root cause
Related Operational Policies	OP-002 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Root cause Analysis</td></tr>
<tr><td>Basic Course of Event</td><td>Pareto diagram Process
1. Quality manager lists causes.
2. Quality Manger identifies frequency of cause
3. Quality Manager arranges the list in descending order.
4. Quality manager identifies the top 20% of problems.
5. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Improve Phase</td></tr>
<tr><td>Preconditions</td><td>Measure phase has been established.</td></tr>
<tr><td>Post -conditions</td><td>Pareto diagram is established.</td></tr>
<tr><td>Related Business Rules</td><td>BR-002(Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref 7.2)</td></tr>
</table>

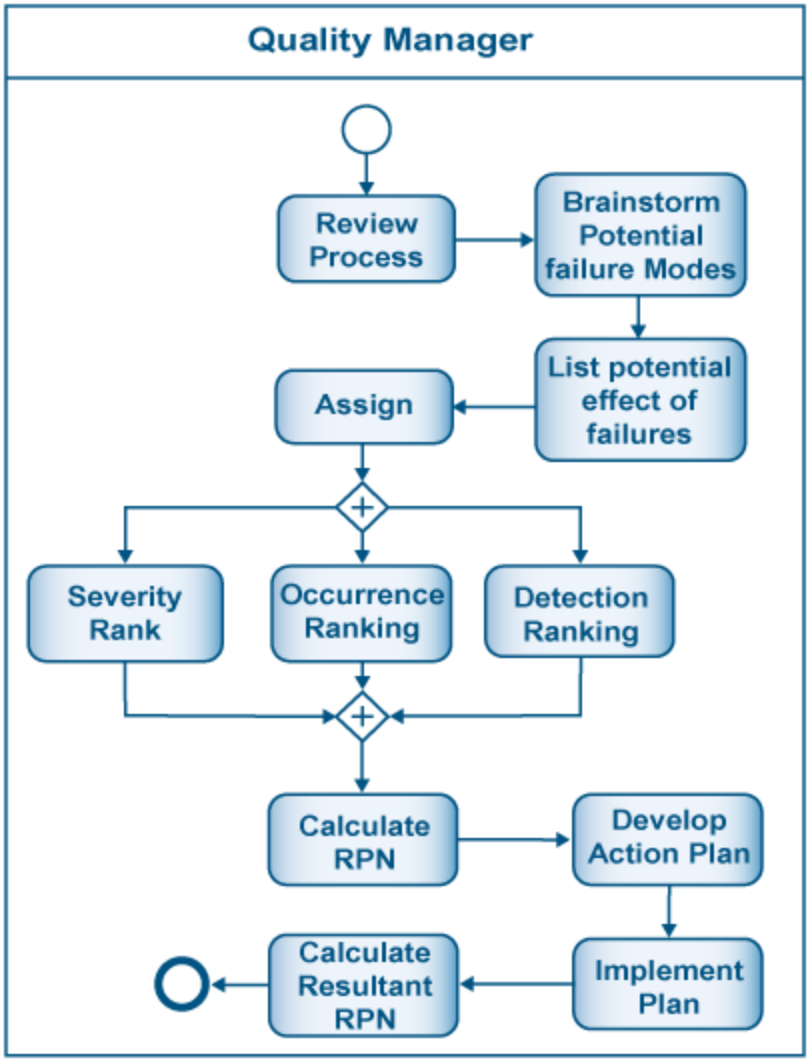
6 Quality Management Process

Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	PRR (Ref 7.6)
Related CTQs	PRRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.19
Other References	Appendix A: Business Process Notation Reference

6.21 Roles and Responsibilities – Pareto Diagram

Roles	Responsibilities
Quality Manager	• Quality manager lists causes. • Quality Manger identifies frequency of cause • Quality Manager arranges the list in descending order. • Quality manager identifies the top 20% of problems.

6.22 Sub Process – Failure Mode Effect Analysis



6.23 Sub Process – Failure Mode Effect Analysis Specification

Specification	Description
Summary/Purpose	To establish the process for FMEA diagram.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	• Identifying root cause
Related Operational Policies	OP-002 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>Root cause Analysis</td></tr>
<tr><td>Basic Course of Event</td><td>FMEA Process
1. Quality manager reviews the process.
2. Quality Manger brain storms the potential failure modes
3. Quality Manager lists potential effects of failures.
4. Quality manager assigns severity ranks, occurrence ranking, and detection ranking.
5. Quality manager calculates RPN
6. Quality Manager develops action plan.
7. Quality Manager Implements plan.
8. Quality Manager calculates RPN.
9. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Improve Phase</td></tr>
<tr><td>Preconditions</td><td>Measure phase has been established.</td></tr>
<tr><td>Post -conditions</td><td>Failure mode effect analysis is established.</td></tr>
</table>

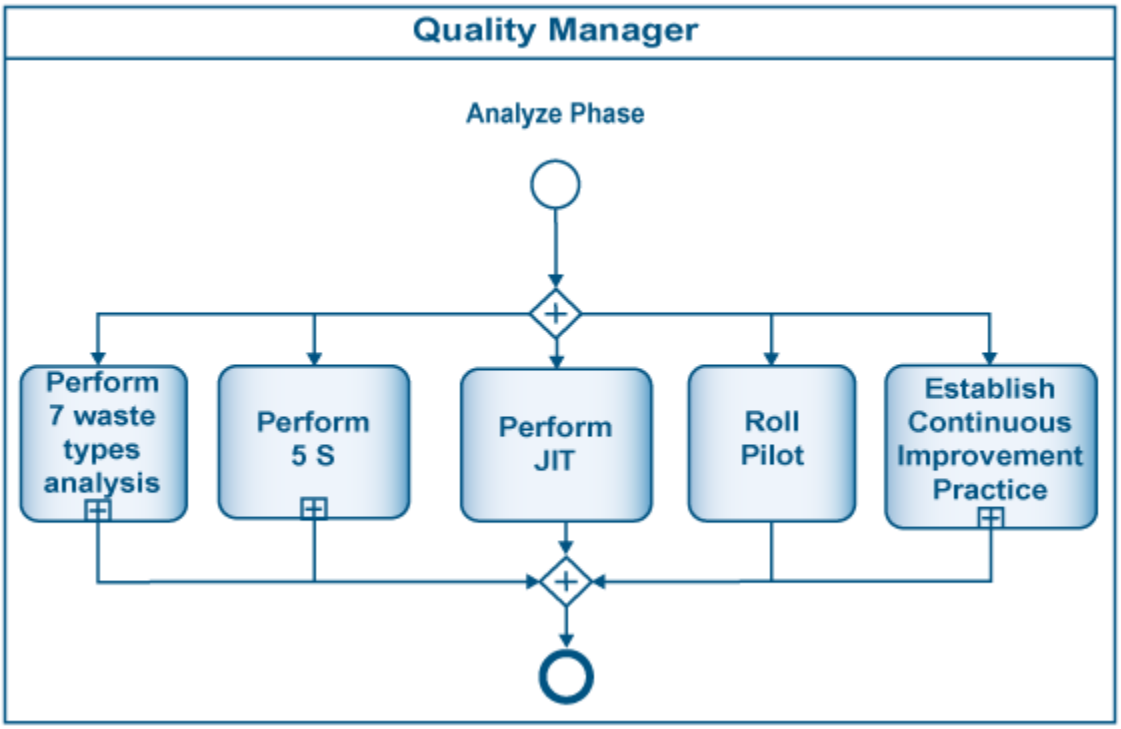
6 Quality Management Process

Related Business Rules	BR-002 (Ref 7.1)
Related Risks	RR-002 (Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	PRR (Ref 7.6)
Related CTQs	PRRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.22
Other References	Appendix A: Business Process Notation Reference

6.24 Roles and Responsibilities – Failure Mode Effect Analysis

Roles	Responsibilities
Quality Manager	• Quality manager reviews the process. • Quality Manger brain storms the potential failure modes • Quality Manager lists potential effects of failures. • Quality manager assigns severity ranks, occurrence ranking, and detection ranking. • Quality manager calculates RPN • Quality Manager develops action plan. • Quality Manager Implements plan. • Quality Manager calculates RPN.

6.25 Sub Process – Improve Phase



6 Quality Management Process

6.26 Sub Process – Improve Phase Specification

Specification	Description
Summary/Purpose	To establish the improve phase process for environmental services quality management process.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	Quality Improvement
Related Operational Policies	OP-003 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>Analyze Phase.</td></tr>
<tr><td>Basic Course of Event</td><td>Improve phase Process
1. Quality manager performs seven waste type analysis, 5 S analysis, JIT, rolls out the pilot implementation and performs continuous improvement practices.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Control Phase process</td></tr>
<tr><td>Preconditions</td><td>Analyze processes have been established.</td></tr>
<tr><td>Post -conditions</td><td>Improve phase is established</td></tr>
<tr><td>Related Business Rules</td><td>BR- 002(Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref 7.2)</td></tr>
<tr><td>Related Quality Attributes</td><td>Reliability, Availability, Usability, Confidentiality, Authenticity, Non-repudiation, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)</td></tr>
</table>

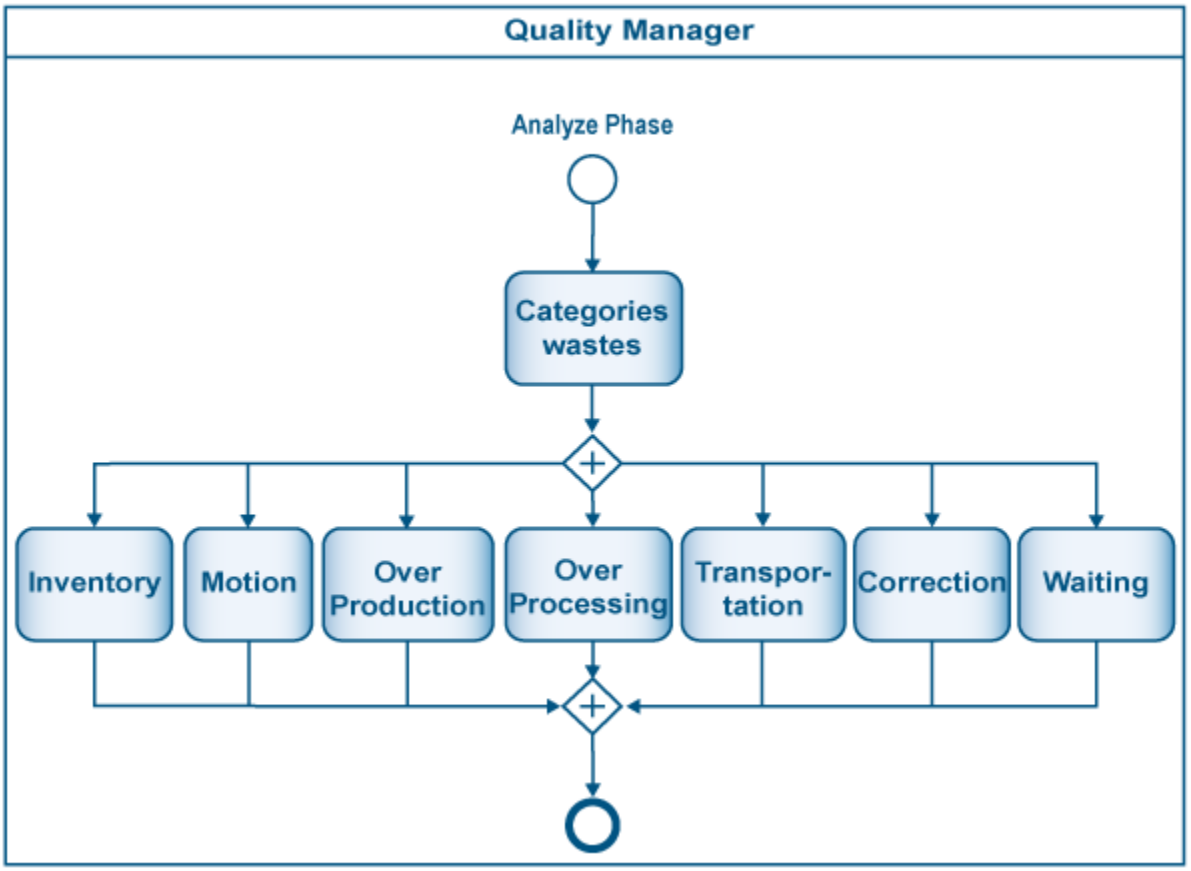
6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.7)
Related KPIs	IR (Ref 7.6)
Related CTQs	IRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.25
Other References	Appendix A: Business Process Notation Reference

6.27 Roles and Responsibilities – Improve Phase

Roles	Responsibilities
Quality Manager	• Quality manager performs seven waste type analysis, 5 S analysis, JIT. • Quality Manager rolls out the pilot implementation

6.28 Sub Process – Seven Wastes



6.29 Sub Process – Seven Wastes Specification

Specification	Description
Summary/Purpose	To establish seven wastes process.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	Quality Improvement
Related Operational Policies	OP-003 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimension	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	Analyze phase
Basic Course of Event	**Seven wastes Process** 1. Quality manager categorizes wastes into inventory, motion, over production, transportation, correction, waiting 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Control Phase process
Preconditions	Analyze processes have been established.
Post -conditions	Improve phase is established
Related Business Rules	BR-003(Ref 7.1)
Related Risks	RR-002 (Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)

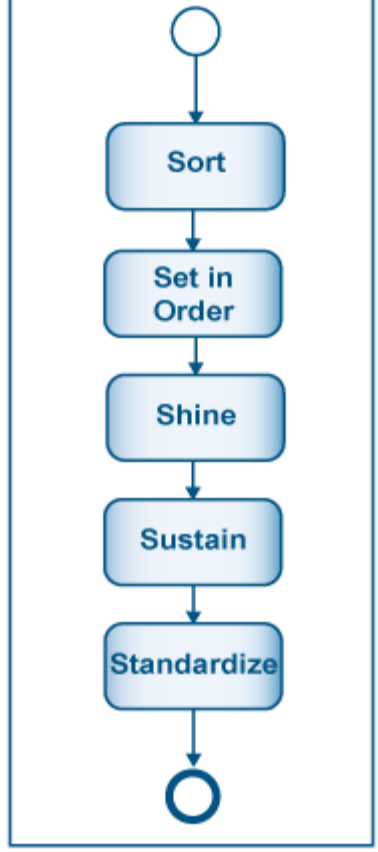
6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	IR (Ref 7.6)
Related CTQs	IRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.1
Other References	Appendix A: Business Process Notation Reference

6.30 Roles and Responsibilities – Seven Wastes

Roles	Responsibilities
Quality Manager	• Identifies seven wastes.

6.31 Sub Process – Five S



6.32 Sub Process – Five S Specification

Specification	Description
Summary/Purpose	To establish five S process.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	Quality Improvement
Related Operational Policies	OP-003 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>Analyze process</td></tr>
<tr><td>Basic Course of Event</td><td>Five 5 Process
1. Quality manager sorts.
2. Quality manager sets in order
3. Quality manager shines
4. Quality manager sustains
5. Quality Manager standardizes.
6. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Control Phase process</td></tr>
<tr><td>Preconditions</td><td>Analyze processes have been established.</td></tr>
<tr><td>Post -conditions</td><td>Improve phase is established</td></tr>
<tr><td>Related Business Rules</td><td>BR-003(Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref 7.2)</td></tr>
</table>

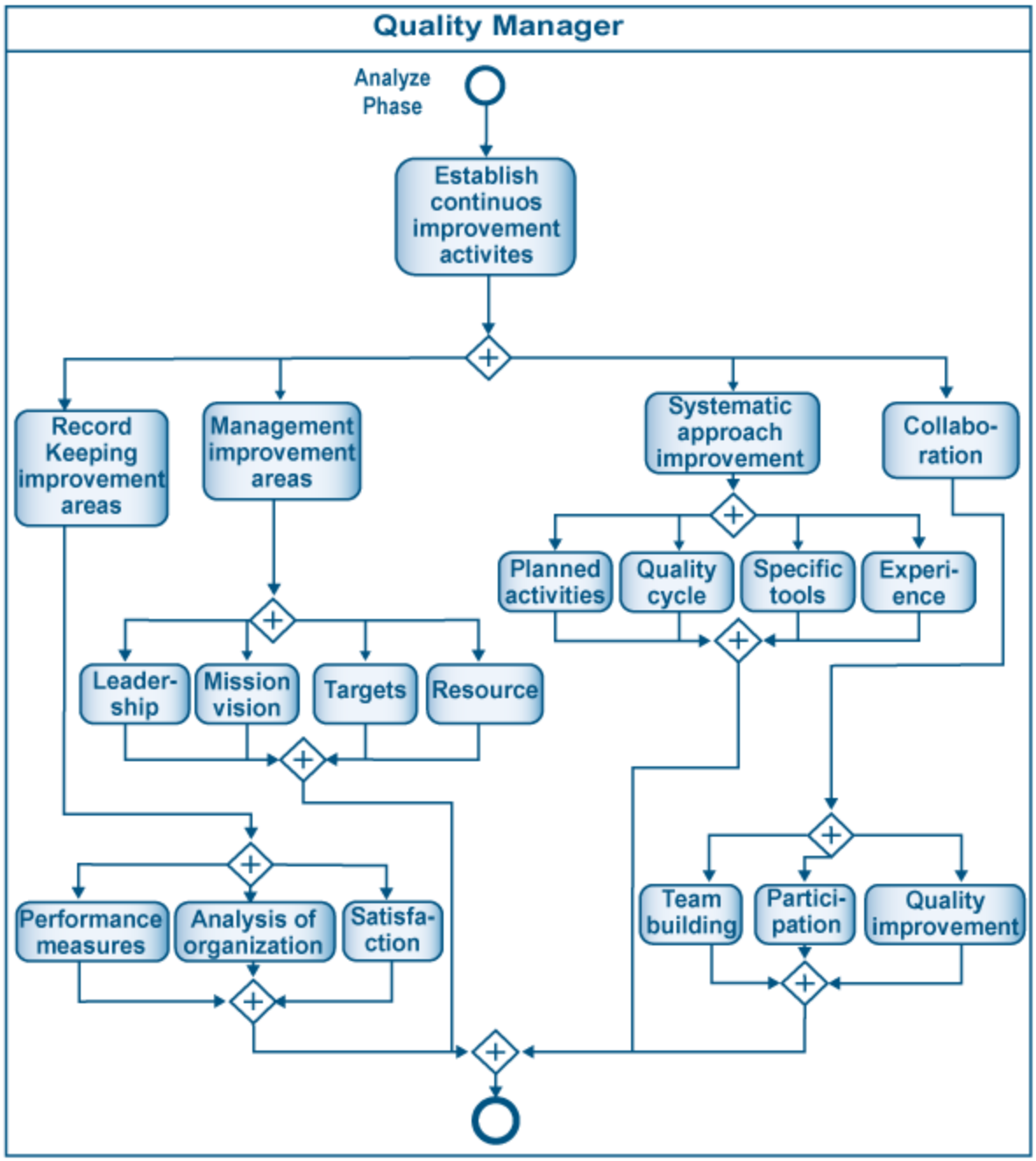
6 Quality Management Process

Related Quality Attributes	Reliability, Availability, Usability, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	IR (Ref 7.6)
Related CTQs	IRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.30
Other References	Appendix A: Business Process Notation Reference

6.33 Roles and Responsibilities - Five S

Roles	Responsibilities
Quality Manager	• Establishes 5 S process.

6.34 Sub Process – Establish Continuous Improvement Practices



6.35 Sub Process – Establish Continuous Improvement Practices Specification

Specification	Description
Summary/Purpose	The purpose of this process is to establish continuous improvement practices.
Scope	This is a level 1 Process Specification.
Primary Reference	• Lean waste minimization • Six sigma quality model
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	Continuous improvement
Related Operational Policies	OP-006 (Ref 7.5)
Assumptions	Senior Management Support exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for quality Management,

6 Quality Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Analyze phase</td></tr>
<tr><td>Basic Course of Event</td><td>Continuous Improvement process
1. Quality manager establish continuous improvement activities for record keeping improvement areas (performance measures, analysis of organization, satisfaction), management improvement areas (leadership, mission & vision, targets, resource), systematic approach improvement (planned activities, quality cycle, specific tools, experience) and collaboration (team building, participation, quality improvement)
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Control phase</td></tr>
<tr><td>Preconditions</td><td>There exists a capability to monitor the quality performance.</td></tr>
<tr><td>Post -conditions</td><td>A continuous improvement practice gets formulated.</td></tr>
<tr><td>Related Business Rules</td><td>BR-004 (Ref 7.1)</td></tr>
</table>

6 Quality Management Process

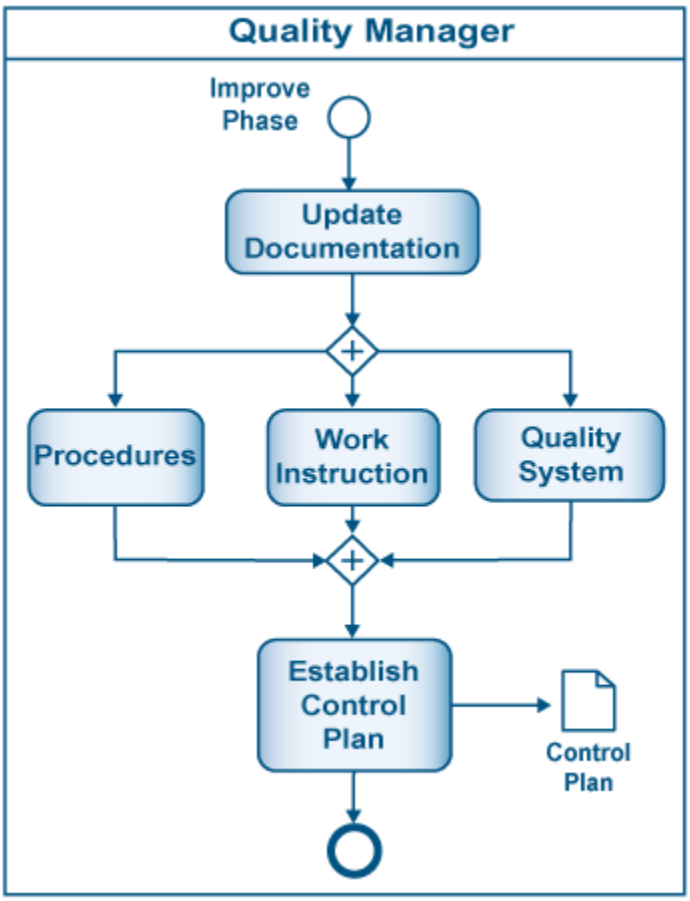
Related Risks	RR-003 (Ref. 7.2)
Related Quality Attributes	Reliability, Usability, Data Integrity, Non-repudiation, Accountability, Performance, Auditability, Service reliability, confidentiality, authenticity, availability, non repudiation, testability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Relevance, Completeness, timeliness, Understandability, interpretability, Reputation, Objectivity, Free-0f Error, Relevance, Completeness, Timeliness, Concise Representation (Ref 7.4)
Related Primary SLA Terms	TBD (Ref 7.9)
Related KPIs	ITR (Ref 7.6)
Related CTQs	ITRV (Ref 7.7)
Actors/Agents	Quality Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.34
Other References	Appendix A: Business Process Modeling Notation Reference

	Appendix B: Chain of Infection

6.36 Sub Process – Establish Continuous Improvement Practices Roles and Responsibilities

Roles	Responsibilities
Quality Manager	Quality manager establish continuous improvement activities for record keeping improvement areas (performance measures, analysis of organization, satisfaction), management improvement areas (leadership, mission & vision, targets, resource), systematic approach improvement (planned activities, quality cycle, specific tools, experience) and collaboration (team building, participation, quality improvement)

6.37 Sub Process – Control Phase



6.38 Sub Process – Control Phase Specification

Specification	Description
Summary/Purpose	To establish the improve phase for environmental services quality process.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six sigma.
Related ESM Practices	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Related Business Driver	Control quality.
Related Operational Policies	OP-005 (Ref 7.5)
Assumptions	Senior Management support is available throughout this process.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality management.

6 Quality Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimension	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	Improve Phase
Basic Course of Event	**Control Process** 1. Quality manager updates documentation (procedures, work instruction, quality system). 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Transportation Management, Maintenance Management, Service Strategy & planning, laundry Management, Waste Management, Project Management, Infection Management, Activity Based Management, House Keeping Management
Preconditions	All other phases of this process are established.
Post -conditions	Control Plan is established.
Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-001 (Ref 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Accountability, Performance, Auditability, Operability and Deployability (Ref 7.3)

6 Quality Management Process

Related Data Quality Dimensions	Accuracy, Objectivity, Free-of-Error, Relevance, Completeness, Timeliness, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.8)
Related KPIs	CPRR (Ref 7.6)
Related CTQs	CPRRV (Ref 7.7)
Actors/Agents	Quality Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.37
Other References	Appendix A: Business Process Notation Reference

6.39 Roles and Responsibilities – Control Phase

Roles	Responsibilities
Quality Manager	• Quality manager updates documentation (procedures, work instruction, quality system).

7 Environmental Services Quality Management Process

Reference

7 Reference

This chapter serves as a prime reference to Chapter 6 and presents the details supporting Chapter 6 in tabular formats. This chapter consists of various variable values which would frequently evolve or change as Organization's Quality process matures or changes.

At minimal this document should be updated biannually. However, if need arises this document may be updated earlier than its prescribed revision period

7.1 Business Rules

BR ID	Description	Context	Rule	Source
BR-001	All process have to undergo the quality management process.	TBD	TBD	NA
BR-002	All quality initiative would have a project charter.	TBD	TBD	NA
BR-003	Quality program would be implemented to remove wastes, solve quality problem and improve performance.	TBD	TBD	NA
BR-004	All quality initiatives should be improvised.	Business	TBD	TBD

7.2 Risk

Risk ID	Description	Source	Severity Level	Status	Resolution
RR-001	Quality targets identified cannot be measured	TBD	High	TBD	Facility/ technology to measure quality targets should be provided by the management.

RR-002	Measurement and analysis is not accurate	TBD	High	TBD	The quality should use automated tools to measure and analyse as the degree of error would be less in them
RR-003	The improvement practices are not in line with the goals	NA	High	TBD	The improvement practices should be aligned to the target objective via proper discussion so that it is acceptable to all.

7.3 Quality Attribute

QA ID	Description	Threshold
QA-001	Interoperability	TBD
QA-002	Reliability	TBD
QA-003	Service Reliability	TBD
QA-004	Availability	TBD
QA-005	Usability	TBD
QA-006	Normal Usability Operations	TBD
QA-007	Confidentiality	TBD
QA-008	Authenticity	TBD
QA-009	Data Integrity	TBD
QA-010	Availability	TBD
QA-011	Non-repudiation	TBD
QA-012	Accountability	TBD
QA-013	Security Integration	TBD
QA-014	Performance	TBD

QA-015	Scalability	TBD
QA-016	Extensibility	TBD
QA-017	Adaptability	TBD
QA-018	Testability	TBD
QA-019	Auditability	TBD
QA-020	Operability and Deployability	TBD

7.4 Data Quality Dimension

DQ ID	Description	Threshold
DQ-001	Accuracy	TBD
DQ-002	Believability	TBD
DQ-003	Reputation	TBD
DQ-004	Objectivity	TBD
DQ-005	Free-of-Error	TBD
DQ-006	Value Added	TBD
DQ-007	Relevance	TBD
DQ-008	Completeness	TBD
DQ-009	Timeliness	TBD
DQ-010	Appropriate Amount	TBD
DQ-011	Understandability	TBD
DQ-012	Interpretability	TBD
DQ-013	Concise Representation	TBD

7 Reference

7.5 Operation Policy

Policy ID	Description	Context	Importance (1-5)
OP-001	All quality initiative would have a project charter.	TBD	TBD
OP-002	For measure phase atleast three different techniques would be applied for root cause analysis	TBD	TBD
OP-003	for Improvement phase atleast three different techniques would be applied for root cause analysis	TBD	TBD
OP-003	Control plan would be reviewed at least once in a year.	TBD	TBD
OP-005	Automation would be used wherever feasible to ensure accuracy of results	TBD	TBD
OP-006	Improvements should be monitored regularly	TBD	TBD

7.6 KPI

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Quality Non conformance rate	**QNCR**	Number of quality non conformance rate per audit	NA	TBD	TBD	TBD

7 Reference

Project Charter Review rate	**PCRR**	Number of review done to project charter	NA	TBD	TBD	TBD
Value stream analysis rate	**VSAR**	Number of values stream analysis done per year	NA	TBD	TBD	TBD
Problem resolution rate	**PRR**	The percentage of problems solved per iteration	NA	TBD	TBD	TBD
Improvement rate	**IP**	The percentage improvement per iteration	NA	TBD	TBD	TBD
Control Plan review rate	**CPRR**	Number of reviews done to control plan per year	NA	TBD	TBD	TBD
CTQ generation rate	**CGR**	CTQ generated per process	NA	TBD	TBD	TBD
Improvement Target rate	**ITR**	Number of improvement targets met per month	NA	TBD	TBD	TBD

7 Reference

7.7 CTQ

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Quality Non conformance rate variation	**QNCRV**	Standard deviation of QNCR	NA	TBD	TBD	TBD
Project Charter Review rate	**PCRR**	Number of review done to project charter	NA	TBD	TBD	TBD
CTQ generation rate	**CGR**	CTQ generated per process	NA	TBD	TBD	TBD
Value stream analysis rate variation	**VSAR**	Standard deviation VSAR	NA	TBD	TBD	TBD
Problem resolution rate variation	**PRR**	Standard deviation PRR	NA	TBD	TBD	TBD
Improvement rate variation	**IP**	Standard deviation IP	NA	TBD	TBD	TBD
Control Plan review rate variation	**CPRR**	Standard deviation CPRR	NA	TBD	TBD	TBD
Motion Optimization Measure	**MOM**	Management of motion	NA	TBD	TBD	TBD

		optimization measure				
Paper work Optimization Measure	**PWOM**	Management of Paper work Optimization Measure	NA	TBD	TBD	TBD
Correction reduction measure	**CRM**	Management of Correction reduction measure	NA	TBD	TBD	TBD
Inventory Optimization Measure	**IOM**	Management of Inventory Optimization Measure	NA	TBD	TBD	TBD
Transportation Optimization Measure	**TOM**	Management of Transportation Optimization Measure	NA	TBD	TBD	TBD
Waiting Reduction Measure	**WRM**	Management of Waiting reduction Measure	NA	TBD	TBD	TBD
Improvement Target rate variation	**ITRV**	Standard deviation of ITR	NA	TBD	TBD	TBD

7 Reference

7.8 Abstract Time – Scale

Name	Acronym	Description	Quantification
TBD	TBD	TBD	TBD

7.9 SLA Terms

SLA ID	Description	Context	KPI	CTQ
TBD	**TBD**	**TBD**	**TBD**	**TBD**

7.10 Voice of Customer

VOC	Customer	Description	Perceived Value
Hygiene	Doctors, Patients, Nurses, Housekeeping Supervisors, Housekeepers, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker.	The environment should be attributing with great hygiene level.	• High quality healthcare services • Safe environment • Low infection rate • Low risk
High and Consistent	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management,	High and Consistent Quality of standards.	• Reputation of organization or hospital • Professionalism

Quality of standards	Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers		• Trust • Positive psychological bias
Free of Infections	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Infections free and healthy environment.	• Safe environment • Reputation of hospital or organization • Trust • Quick healing • Positive psychological bias • Low risk
Timely Services	Doctors, Patients, Nurses, Housekeeping Supervisors, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The response time for any request should be very short.	• Professionalism • Trust • Positive psychological bias • Reputation of hospital or organization • Safe environment
High Coordinating	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste	There should be high level of coordination between hospital employees and departments.	• Professionalism • Trust • Low risk • Excellent Ergonomic

	management worker, Housekeepers		
Remove Waste	Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Wastes should be either removed or minimized.	• Safe environment • Low infection rate • Low risk • Reputation of hospital or organization • Low cost • Timely response • High quality
Excellent Ergonomic	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The hospital environment and policy should comply with physical, organization and cognitive ergonomics.	• Professionalism • Trust • Job accuracy • Excellent communication • Low risk • Reputation of hospital or organization
Safety	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Hospital environment should comply with occupational health and safety procedures.	• Safe environment • Professionalism • Low risk

Appearance	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The appearance of the workers, supervisors and manager should induce positive biases.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias
Excellent Worker Attitude	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The environment service employee should be free from negative attitudes.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias • Minimum disputes • Less employee turn over

7.11 Customer Context Matrix

Name of Customer	Acronym	Context of Customer	Coordination Process Area
Doctors	**DOC**	Direct	HIS Coordination
Patients	**PAT**	Direct	HIS Coordination
Nurses	**NUR**	Direct	HIS Coordination, Nurse Coordination
Housekeeping Supervisors	**HKS**	Direct	Quality Coordination, Nurse Coordination, infection control coordination
Clerks	**CLR**	Direct	HIS Coordination
Visitors	**VIS**	Indirect	HIS Coordination

Environmental Services Management	**ESM**	Direct	Nurse Coordination, infection control coordination
Other hospital workers	**OHW**	Indirect	Security coordination
Laundry worker	**LDW**	Direct	Nurse Coordination, HIS Coordination
Transportation worker	**TRW**	Direct	Quality Coordination, HIS Coordination
Maintenance worker	**MAW**	Direct	Quality Coordination, HIS Coordination
Waste management worker	**WMW**	Direct	Quality Coordination, HIS Coordination
Infection control professional	**ICP**	Indirect	Infection Control Coordination
Housekeepers	**HK**	Direct	HIS Coordination, Nurse Coordination

7.12 MSD Attributes

MSD Attribute	Description
Lifting/carrying	Large vertical movements, long carry distances.
Disability	Pose a risk to those with a health problem or a physical or learning disability.
Force	High initial forces to get the load moving.
Loaded motion	High forces to keep the load in motion.

7 Reference

Physical ergonomics	Constraints on body posture/positioning, confined spaces/narrow doorways.
Posture change	Strong force and awkward movement/posture. E.g. bent wrists.
Excessive force	Excessive force to grip raw materials, product or tools
Scarceness	Inadequate tools for repetitive use screwdrivers, pliers, hammers.
Noise	Noise which cause stress and muscle tension.
Concentration	Tasks require high levels of attention/concentration especially where the worker has little control over allocation of effect to the task.
Floor hazards	Remove slip and trip hazards through provision of appropriate floor surfaces and good keeping.
Clothing	Clothing/PPE may prevent sufficient movement for the task or reduce capability. E.g. to grip consider handling needs when selecting work wear/gloves.
Psychosocial factors	Adverse psychosocial factors can increase the potential for manual handling injuries. A workers psychosocial response to work and the workplace conditions can affect their health in general and MSDs in particular. The factors include the content, design, organization and management of the work

8 Environmental Services Quality Management Process

Glossary / Acronyms

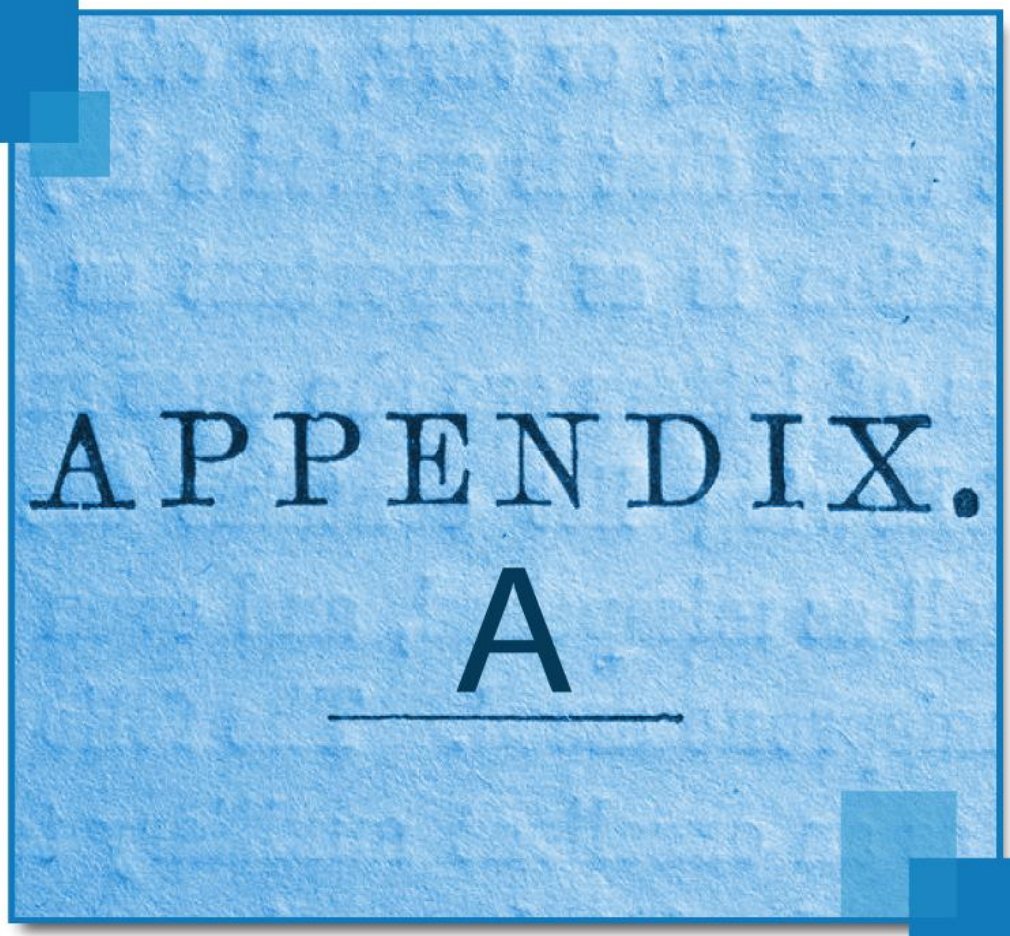
8 Glossary / Acronyms

Terminology	Description
Abstract Time Scale	Time Scale that will be quantified both during operations and continuous process improvement. These time identifiers are correlated with the soft thresholds that are dynamically specified during life span of the process.
BPMN	**Business Process Modelling Notation** Business Process Modelling Notation is the practice of documenting an organisation's key business processes in a graphical format.
Business Rules	Business Rules are intended to assert business structure or to control or influence the behaviour of the Business. Business rules describe the operations, definitions and constraints that apply to an organization
CRR	Contract Review Rate
CRRV	Contract Review rate Variation.
CTQ	**Critical to Quality** Critical To Quality (CTQ) is continuous measuring and monitoring tool agreed between the internal processes to achieve greater customer satisfaction.
Data Quality Dimensions	The totality of features and characteristics of data that bears on their ability to satisfy a given purpose
EBC	Evidence based Cleaning
ESM	Environmental services Map
KPI	**Key Performance Indicator** A metric that is used to help manage a process, IT service or activity. Many metrics may be measured, but only the most important of these are defined as KPIs and used to actively manage and report on the process, IT service or activity. KPIs should be selected to ensure that efficiency, effectiveness, and cost effectiveness are all managed.
MSD	Macro skeleton Disorder
OLA	**Organization level Agreement**

8 Glossary / Acronyms

	An Agreement between an IT Service Provider and another part of the same Organization
Operational Policy	Rules defined to operate the process.
Quality Attributes	Quality attributes are non-functional requirements used to evaluate the performance of a process.
Risk	A possible event that could cause harm or loss, or affect the ability to achieve Objectives. A risk is measured by the probability of a threat, the vulnerability of the asset to that threat, and the impact it would have if it occurred.
SLA	**Service Level Agreement** An Agreement between an IT Service Provider and a Customer. The SLA describes the IT Service, documents Service Level Targets, and specifies the responsibilities of the IT Service Provider and the Customer
VOC	**Voice of Customer**

Appendix A: Business Process Modeling Notation Reference



9 Appendix A: Business Process Modeling Notation Reference

INTRODUCTION

Business Process Modelling ("BPM") is the practice of documenting an organisation's key business processes in a manner which:

- Is highly graphical
- Focuses on business terminology rather than technical
- Allows all business steps/tasks to be included, not just those which involve a computer system

Mentioned below are the various core concepts of BPMN with the relevant definition and graphic notation.

PROCESS START

All processes have to start somehow, general notation for a process models commence with the START event, is a circle.	
One can use simply the *basic unmarked* start event as above, or one of the different types of start event, to provide more detail as described below.	
If a process starts when some sort of message arrives, mail, email, text. Following notation can be used	**Message start** 
If a process starts by virtue of the passage of time – e.g. 1st Jan review or 4 days after the purchase order is sent, following notation can be used	**TIMER Start** 
If the process starts when a rule/condition is met – e.g. when Incident Impact is more than 100,000.	**RULE Start** 
If a process starts when another process finishes. Following notation can be used	**LINK Start** 
If there is more than one 'trigger' for a process to start. Following notation can be used	**MULTIPLE Start** 

9 Appendix A: Business Process Modeling Notation Reference

TASK AND SUB PROCESS

Task	Task is a lowest level activity in a process map. A task is used when the work is not broken down to a finer level of detail	
Sub Process	A Sub-process is a compound activity which can be broken down into finer details.	
Loops	Loops task or sub process continues to iterate until the loop condition is true.	

INTERMEDIATE EVENTS

Following notation can be used to display the intermediate event, similar to start and end events.						
	BASIC	**MESSAGE**	**TIMER**	**RULE**	**LINK**	**MULTIPLE**
						

PROCESS END

All processes have to end somehow, general notation for a process models end will be a circle with a solid line.	
One can use simply use the *basic* end event as above, or you can use one of the different types of end event, to provide more detail, as described below:	

9 Appendix A: Business Process Modeling Notation Reference

If a process ends by something being sent via a message of some sort e.g., mail, email, document, following notation can be used.	MESSAGE End 
If the end of this process causes the start of another, following notation can be used.	LINK End 
If more than one consequence of the process ending, following notation can be used.	MULTIPLE End 

SWIMLANES

Pool	A *Pool* represents a participant in a Process. It is also acts as a "swimlane" and a graphical container for partitioning a set of activities from other Pools	
Lane	A *Lane* is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally. Lanes are used to organize and categorize activities.	

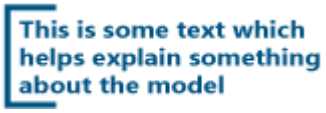
CONNECTORS

Sequence Flow	A *Sequence Flow* is represented by a solid line with a solid arrowhead (see the figure to the right) and is used to show the order (the sequence) that activities will be performed in a Process.	

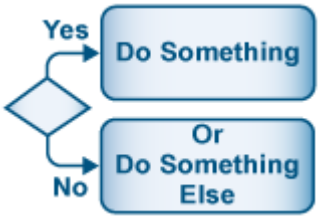
9 Appendix A: Business Process Modeling Notation Reference

Message Flow	A *Message Flow* is represented by a dashed line with an open arrowhead (see the figure to the right) and is used to show the flow of messages between two separate Process Participants. In BPMN, two separate Pools in the Diagram will represent the two Participants.	

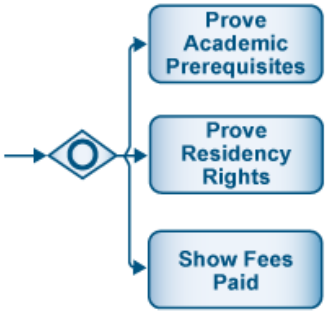
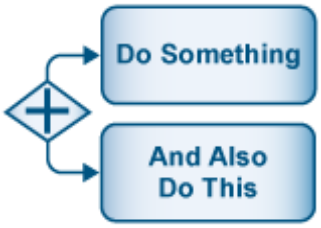
ARTIFACTS

Annotation	The ANNOTATION shape is used to add comments to a process model. It consists of text in a square left bracket	
Data Object	A data object represents a piece of data which is required or produced by the process eg. Customer details, output.	
Group	A grouping is purely for documentation or explanatory purposes. It has no impact on the model. It consists of a rectangle with dashed lines and rounded corners, usually enclosing other objects.	

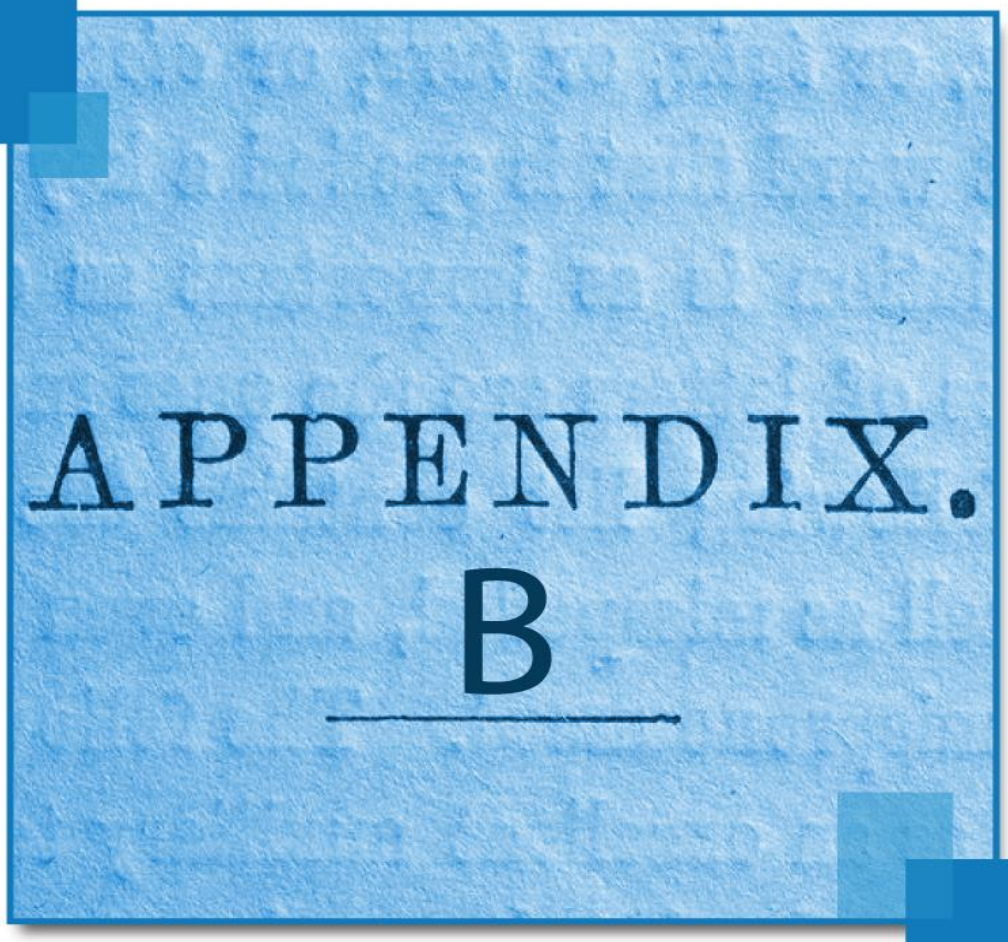
GATEWAYS

Exclusive	The values of the process are examined to determine which path to take	

9 Appendix A: Business Process Modeling Notation Reference

Inclusive	Each branch will be evaluated and will not stop when one branch condition becomes true.	
Parallel	Provides a mechanism to synchronise parallel flow and to create parallel flow.	

Appendix B: Chain of Infection



10 Appendix B: Chain of Infection

In order to control or prevent infection it is essential to understand that transmission stages of a pathogen resulting in infection requires the six vital links (Refer to the table below).

Each link mentioned below must be present for infection or colonization to proceed, and breaking any of the links can prevent the infection.

The section below details out the six stages:

Stage	Link	Description
1	Infectious Agent	Any disease-causing microorganism (pathogen)
2	The Reservoir Host	The organism in which the infectious microbes reside
3	The Portal of Exit	Route of escape of the pathogen from the reservoir.
4	The Route of Transmission	Method by which the pathogen gets from the reservoir to the new host
5	The Portal of Entry	Route through which the pathogen enters its new host
6	The Susceptible Host	The organism that accepts the pathogen

Link 1: Infectious Agent

The causative agent for infection is any microorganism capable of producing disease. Microorganisms responsible for infectious diseases include bacteria, viruses, rickettsiae, fungi, and protozoa. Sometimes, microorganisms are part of patient's own body flora and can cause infection in the immunocompromised host. These infections are called endogenous infections. Infections which are acquired from external sources are called exogenous infections.

Link 2: Reservoir Host

The second link in the chain of infection is the reservoir, i.e. the environment or object in or on which a microorganism can survive and, in some cases, multiply. Inanimate objects, human beings, and animals can all serve as reservoirs, providing the essential requirements for a microorganism to survive at specific stages in its life cycle.

10 Appendix B: Chain of Infection

Infectious reservoirs abound in health care settings, and may include everything from patients, visitors, and staff members to furniture, medical equipment, medications, food, water, and blood.

Link 3: Portal of Exit

The portal of exit is the path by which an infectious agent leaves its reservoir. Usually, this portal is the site where the microorganism grows. Common portals of exit associated with human reservoirs include the respiratory, genitourinary, and gastrointestinal tracts, the skin and mucous membranes and the placenta (transmission from mother to fetus)

Link 4: Route of Transmission

The microorganism can be acquired by inhalation (through respiratory tract), ingestion (through gastrointestinal tract), inoculation (through accidental sharp injury or bites), contact (during sexual intercourse) and transplacental transmission (microbes may cross placenta from the mother to fetus). It is important to remember that some microorganisms use more than one transmission route to get from the reservoir to a new host.

Of the six links in the chain of infection, the mode of transmission is the easiest link to break and is key to control of cross-infection in hospitals.

Link 5: The Portal of Entry

The portal of entry is the path by which an infectious agent invades a susceptible host. Usually, this path is the same as the portal of exit. For example, the portal of entry for tuberculosis and diphtheria is through the respiratory tract, hepatitis B and Human Immunodeficiency Virus enter through the bloodstream or body fluids and Salmonella enters through the gastrointestinal tract. In addition, each invasive device, e.g. intravenous line, creates an additional portal of entry into a patient's body thus increasing the chance of developing an infection.

Link 6: The Susceptible host

The final link in the chain of infection is the susceptible host. The human body has many defense mechanisms for resisting the entry and multiplication of pathogens. When these mechanisms function normally, infection does not occur. However, in immunocompromised patients, where the body defenses are weakened, infectious agents are more likely to invade the body and cause an infectious disease. In addition, the very young and the very old are at higher risk for infection because in the very young the immune system does not fully develop until about age 6 months, while old age is associated with declining immune system function as well as with chronic diseases that weaken host defenses.